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A Decomposition Analysis of the German Gender Pension Gap[1]

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Abstract

This paper discusses the gap in own old-age incomes of men and women and explores the causes for these differences by means of decomposition meth- ods using German micro-data of the survey 'Alterssicherung in Deutschland' (ASID). The Gender Pension Gap has decreased but still amounts to about 60 % as of 2007. We find that this gap is mainly explained by differences in labor market experience and education. The gap is especially high at the lower end of the pension income distribution. The contribution of differing labor market experiences to the explained gap is particularly pronounced for retirees with low pensions.

JEL-Classification: H550, J16

[1]The authors are especially thankful to Judith Flory for her contribution to an earlier study forming the basis of this work. (see Flory et al. (2013))

Keywords: Social Security, Public Pensions, Pension Gap, Decomposition

I Introduction

The difference between the average own pension incomes of German men and women amounted to 60 % in 2007 which is substantially larger compared to the gender differences in wages. Nonetheless this gap received significantly less attention. Therefore, the purpose of this paper is to gain deeper insight in the structure of the pension differences between the sexes, to provide evidence which income group is especially affected and to determine the factors causing this gap.

Different employment biographies as well as gaps in wages will immedi- ately translate into a gap in old-age incomes which therefore represents the gender differences accumulated over a working life. This gap is not only of importance from a welfare perspective, but the differences in *own* pension incomes are also strongly related to economic independence of women during an older age. Only in recent years, this view got into focus (see, for ex- ample, the European Commission publication by Bettio et al. (2013)), also suggesting an increasing general interest in the causes for gender differences in pensions.

A recent study of Frommert and Strauß (2013) is, to the best of our knowledge, the only German study exploring the causes for pension differ- ences by means of a decomposition and is therefore the work which is related the closest to this paper. Unlike this work, however, Frommert and Strauß (2013) project employment biographies of younger cohorts until their retire- ment age[2]. To avoid additional uncertainties due this forecasting process

[2]There are further smaller differences compared to this work - Frommert and Strauß (2013) only discuss own pension claims from the first pillar of the German pension system

and to first provide an analysis of the status quo, we use the decomposition method of Oaxaca (1973) and Blinder (1973) to receive a detailed picture of the causes for the gender differences in pensions for current retirees.

Going beyond the decomposition of the mean differences, this work extents the analysis to differences among the sexes for the entire old-age income distribution and decomposes its components for various income groups. This analysis is important, since it is unlikely that the gap in pensions is constant over the entire income distribution and that the causes for these differences will not differ over this distribution as well.

This paper is the first to use the detailed decomposition method for quantiles by Firpo et al. (2007) in the context of the income situation of German retirees and therefore provides further insight in the determinants of gender differences in old-age incomes. We observe that the Gender Pension Gap, the difference in non-derived pension claims, has decreased in the past but is still of significant size in the year 2007.

The results of the Oaxaca-Blinder-Decomposition suggest that the main factors determining the explained gap are disparities in employment years and education between men and women. Due to the developments in this area, one might expect that the Gender Pension Gap will continue to decrease in the future. It is further shown that the Gender Pension Gap decreases in the quantiles of the old-age income distribution. We find that a larger share of the gap can be explained by endowment differences at higher quantiles of the pension-income distribution. From the quantile results, it can be seen that the effect of the disparities in employment years on the

for younger West-German cohorts. Furthermore their specification contains information regarding employment times in full- and part-time, while this distinction is not available in our data

explained gap substantially differs over the income distribution - while it is major determinant for the lower quantiles, this effect gets substantially smaller for higher incomes.

The paper is structured as follows: First, we discuss the existing literature regarding differences in gender-specific old-age incomes. Section III provides information on the survey 'Alterssicherung in Deutschland' (ASID) of 2007 used in this analysis. In the following section, we briefly describe the German pension system. Then we introduce the concept of the Gender Pension Gap. The following section shows the most relevant descriptive statistics on the mean differences as well as on the distribution of old-age incomes between men and women. Section VII briefly explains the decomposition method of Oaxaca (1973) and Blinder (1973) as well as that of Firpo et al. (2007). Afterward, the results of the decomposition for the mean and for selected quantiles are presented and discussed. Section IX concludes.

II Literature

A comprehensive and recent overview on pension differences between the genders within the European Union can be found in Bettio et al. (2013). They find that Germany has the second-largest Gender Pension Gap behind Luxembourg. A detailed analysis for Germany is provided by Flory (2011). She reports that the Gender Pension Gap, i.e. the relative difference between the own pension incomes of men and women, amounted to about 60 % in 2007.

Oaxaca (1973) introduced a decomposition method to analyze the differ- ences in the mean wages of men and women which are found to be substantial.

He argues that a significant part of these wage differences can be attributed to discrimination[3]. As it is not in the focus of this study, we do not intend to review the vast body of literature concerning wage decompositions that covers various reasons for gender differences in wages, ranging from effects of human capital over discrimination to occupational choices[4]. Literature summaries and additional information on these issues can, for example, be found in Plantenga and Remery (2006), Blau and Kahn (2003) or Weichselbaumer and Winter-Ebmer (2005).

Various approaches have been developed in recent years that extent decompositions to other distributional moments besides the mean. Especially for the decomposition of the aggregate decomposition, many procedures are available (see, for example, Juhn et al. (1993), DiNardo et al. (1996) or Mata and Machado (2005)). Using RIF-regressions, Firpo et al. (2007) provide a method to receive detailed decompositions in the spirit of Oaxaca and Blinder. An excellent survey on decomposition methods, focusing on decompositions beyond the mean, can be found in Fortin et al. (2011).

Using decomposition methods in the context of old-age incomes, Johnson (1999) finds that the years of job tenure and wages are the most important determinants of the pension gap. Education or occupation are of no importance in this context. He explains that, when using men as reference group of the decomposition, the entire old-age income differences can be attributed to observable characteristics. In the same year, Levine et al. (1999) estimate that (in the US) approximately 85 % of the differences in retirement income

[3] see Jann (2008) for details on methodology

[4] see, for example, Blau and Kahn (1996)

can be attributed to earnings, the number of years worked and the choice of occupation. Even and Macpherson (2004) state that in the US the gender gap in old-age incomes has only slightly decreased. They find that differences in characteristics, especially with respect to salaries and experience, are the main forces which are causing the gap. Due to changes for working women with regard to this aspects, they expect that the old-age income differences are going to narrow in the future. Bardasi and Jenkins (2010) use decompo- sition techniques to explore the differences between private pension incomes of British men and women. They find that gender differences can mainly be attributed to the lower rewards for female characteristics, rather than to en- dowment differences. This contradicts the findings of Even and Macpherson for the US. In 2012, Frommert and Strauß (2013) use data from the survey 'Altersvorsorge in Deutschland'[5] on the old-age insurance of people currently being in their working life. They project those persons' employment biographies until retirement and conduct a decomposition analysis on the resulting old-age incomes for the West-German population.

III Data

The data used in this work originates from the latest wave of the survey 'Alterssicherung in Deutschland' (old-age provision in Germany; ASID[6]) from 2007 (more information can be found in Kortmann and Halbherr (2008)). In this year, the survey was carried out for the sixth time after 1986, 1992, 1995, 1999 and 2003 and was conducted each time by TNS Infratest on behalf of the German Federal Ministry of Labor and Social Affairs. It provides de-

[5] http://www.altersvorsorge-in-deutschland.de
[6] http://www.alterssicherung-in-deutschland.de/index.html

tailed information on the income situation of the elderly population. Persons over the age 55 and younger than 80 years old as well as their spouses were asked about their income, its determinants and socio-demographic character- istics. In our analysis, however, persons younger than 65 are excluded from the analysis as we are focusing on persons having reached the statutory re- tirement age. Especially information on the sources of old-age incomes (see section IV) is collected in great detail, such that the ASID presents itself as the most appropriate source for our purpose. Furthermore, with nearly
30.000 respondents, the ASID survey is large enough to allow for detailed examinations.

IV The German Pension System

The German pension system[7] in its present day arrangement is a combina- tion of three columns. The most important column is the statuary pension plan which consists of several mandatory insurance schemes like the 'German statutory pension insurance scheme' for gainfully employed persons. This column has historically been the most important one since the introduction of the 'German statutory pension insurance scheme' in 1889 and covers the majority of German pension entitlements. The German statutory pension insurance is designed as a pay-as-you-go scheme based on the principle of equivalence. This is achieved by an instrument called earning points. An employee receives one earning point per year when he earns the average of all incomes of employees liable to contribute to social security in this year.

[7] More detailed information about the German pension system can be found, for ex- ample, in Boersch-Supan and Wilke (2004). Even though this work is not a very recent contribution and thus cannot cover the most recent developments, it still provides a very good outline of the pension system, its development and downsides.

Earning more or less than this average, he will receive the corresponding frac- tion of an earning point - e.g. earning half the average will result in gaining
0.5 points. The maximum number of points to be received per year is lim- ited by the social security contribution ceiling, leading to the fact that just a little more than two points can be gained in a certain year. After retirement each earning point is evaluated with its current pension value leading to the pension income of this pillar.

Therefore, the old-age pension in this pillar of Germany's pension system is mainly driven by the relative income position during working life and the number of years worked therein. Additional benefits for periods of bringing up children are granted in the German pension system. For each child born after 1991, three earning points can be received by the up-bringer of the child
- for children born in 1991 and earlier one point is granted.

The second column of the German pension system consists of occupa- tional pension schemes which are designed by employers for their respective employees. Most notably here is the additional pension scheme for the public service[8].

The third column is formed by personal or individual pension schemes which have only recently gained some importance due to the introduction of certain personal pension schemes supported with tax breaks or pension supplements (e.g. the so called Riester Rente) by the federal government.

Due to the historic development of the German Pension system, columns two and three can be seen as 'additional pensions' which supplement the

[8]Public service employees have the statutory pension insurance as their main source of old-age income. The occupational pension scheme is an addition.

statuary pension plan.

Table 1 depicts the distribution of the column-specific old-age incomes by sex from ASID data. We can see, that almost all men (98.2 percent) and more than 90 % of women over 65 receive some kind old-age provision. This finding holds also for the Statuary Pension Plan which is not surprising since participation in this column is mandatory for many kinds of employ- ment. Women are less likely to be employed which is expressed in the lower percentage in comparison to men.

Table 1

Gender-specific distribution of old-age incomes

Pension	*Men*	*Women*
Statuary Pension Plan	97.90	91.00
Occupational Pension Schemes	36.80	13.80
Individual Pension Schemes	3.10	1.50
Any Form of Old-Age Income	98.20	91.10

Source: ASID 2007, authors' calculations, (in percent of the entire population older than 65 years)

Regarding occupational pension schemes men are more likely to gain in- come from such a pension scheme. This is mostly due to the fact that these pension schemes are normally additional schemes from certain employers (e.g. the public service) where men are more likely to be employed than women. Individual pension schemes have an overall small representation but men still are more present than women.

In the following decomposition, we will regard old-age incomes from all three columns of the German pension system. We do so, because we are in- terested in the total amount of old-age incomes and their differences between

men and women. Discussing just one column would not be adequate, as the shares of men and women differ among the three pillars. Men are particular strongly represented in the second and third column.

V The Gender Pension Gap

The Gender Pension Gap has been designed as a measure for the difference in male and female pension incomes (Flory (2011)). Following the lines of the so called 'Gender Pay Gap', which measures the inequality in earnings, the Gender Pension Gap measures the inequality in the old-age incomes as the percentage of the average female pension income in relation to the average male pension income[9]:

$$GPG = \left(1 - \frac{\text{average own pension income of women}}{\text{average own pension income of men}}\right) * 100 \qquad (1)$$

Here and in the following discussion, we are only regarding men and women with a positive income from either pillar of the German pension system as our interest focuses on the outcomes of the pension system and not specifically on the income during an older age. Consequently, this analysis does not cover the entire population over 65 years - the share of people excluded from the analysis is, however, very small, as only about five percent of the population in the respective age group do not receive payments from any pillar of the pension system (see Table 1). Therefore, the sample will also provide a good representation of the German population over 65. Additionally, we only regard own pensions - derived pension claims are not considered as it

[9] the treatment of quantiles is analogous

is our intention to solely capture the effects of an individual's employment history on the pension income, as the social security during old-age does not stand in the focus of this measure, but instead we are interested in economic independence which was achieved during a working career. This measure intends to quantify the differences in the average old-age incomes of men and women.

VI Male and Female Old-Age Incomes - Descriptive Results

In this section, we will have a closer look on the Gender Pension Gap and its development. At first, we discuss the average gender-differences, then, we have a closer look in the differences between the income distributions and present the Gender Pension Gap for different quantiles of the pension-income distributions.

Gender Pension Gap in Germany

Using the aforementioned definitions, we receive a Gender Pension Gap of about 60 % as of 2007 - on average, women received only 40 % of the own average pension incomes of men. It is obvious that the Gender Pension Gap is significantly larger than the Gender Pay Gap which is estimated to be as high as 22.2 % in the year 2011 by the German Federal Statistical Agency[10]. The reasons for this result are manifold. One explanation for this phenomenon is that in general women tend to have more breaks in their employment

[10] https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/VerdiensteArbeitskosten/VerdienstunterschiedeMaennerFrauen/Tabellen/GenderPayGap_EU.html?nn=50690

biographies. Secondly, we observed a steadily decreasing Gender Pay Gap in the past. As wages are a major influence for pension incomes, one might conclude that a decreasing Gender Pay Gap will lead to a lower Pension Gap in the future. This development can, however, only happen with a distinct time lag. The overall gap is mostly determined by the dominant role of the Statuary Pension Plan (the gap amounts 57 % in this pillar) - the gap in the second and third pillar is larger (80 % respectively 70 %) but these schemes play a less significant role.

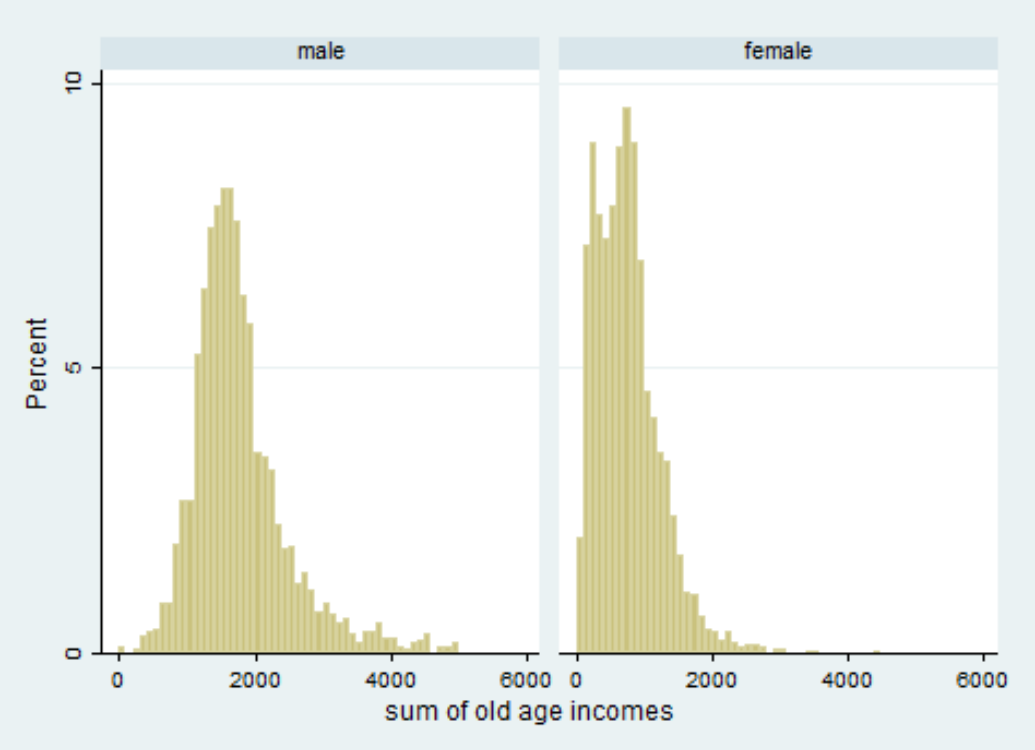
Naturally, we are interested in the development of the Gender Pension Gap over the past years. To accomplish this goal, previous waves of the ASID were analyzed - we are using the ASID waves of the years 1992, 1995, 1999 and 2003 in addition to the wave of 2007. The ASID of 1986 was excluded from the analysis, as we are expecting structural changes after the German reunification. We observe a steady (and increasing) decrease of the Gender Pension Gap since 1992. The gap amounted to approximately 76 % in 1992 and declined to less than 70 % in 2003 and even reached a level of 60 % in 2007. This decline does not come as a surprise, as the qualification of women enhanced and their labor force participation rates did increase in the past. As we still observe increasing labor force participation of women, one might expect this development of the gap to continue in the future. This is particularly the case, as the effect of changing employment patterns on old- age incomes carries over slowly. Many of those now receiving pension incomes ended their working lives more than 20 years ago and may well have started it before the 1950s. This basically means that we still observe glimpses of the social situation of this time in today's old-age incomes.

The Gender Distribution of Total Old-Age Incomes

In the following, we have a closer look at the differences between the pension income distributions of men and women. Here, we focus on the variable which will be investigated using the Oaxaca-Blinder-Decomposition: The sum of an individual's entire own monthly old-age incomes from all three pillars of the German pension system. Figure 1 shows the distribution of the individual sum of old-age incomes (in Euro) for each sex. It can be seen, that

Figure 1

Distribution of old-age incomes of men and women



Source: ASID 2007, authors' calculations

the sex specific distribution of old-age incomes are quite different. Relatively low incomes are more common for women than for men. We see that only

very few men have pension incomes of less than 500 Euros, while this is very common for women. This is caused by the fact that there is a significantly larger number of women with only short employment periods. On the other hand, incomes larger than 2,000 Euros are not unusual for men, whereas there is almost no woman that receives such a high old-age income.

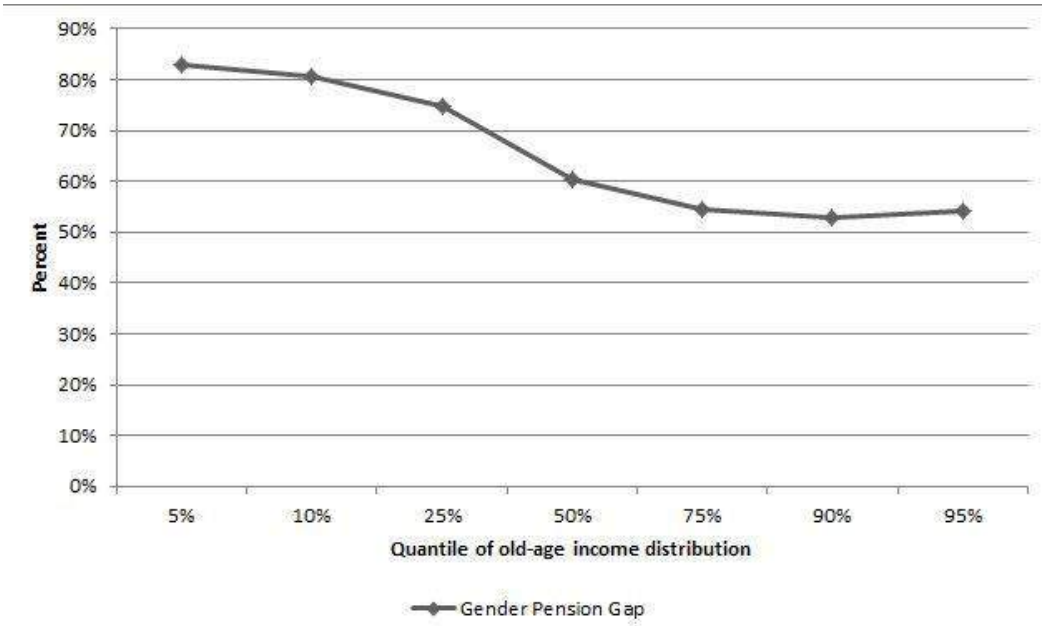
The results shown above suggest that the Gender Pension Gap might not be constant over the entire old-age income distribution. Figure 2 shows that there are in fact substantial differences in the gaps for different quantiles of the income distribution. For the lowest quantiles of the respective distribu- tions, the gap amounts to amounts to more than 80 %. For higher quantiles, the gap steadily decreases and reaches a level of about 50 % at the 75 % quantile. Afterward, the gap stays basically constant. We conclude that the size of the gap is mainly driven by the low income groups.

This pattern is similar to the results of Fitzenberger and Kunze (2005) or Heinze (2010) for German wages, who find that the wage gap decreases for increasing quantiles of the wage distribution[11]. One the one hand, charac- teristics of the wage distributions of men and women can certainly translate to similar characteristics in the old-age income distribution. On the other hand, especially differences in the number of employment years over the old- age income quantiles might well be a further major determinant of the above result. To gain further insight in the determinants of these different gaps, a decomposition analysis for selected quantiles is conducted (see section VIII).

[11] There is, however, no consensus with respect to this result. For example, Arulam- palam et al. (2007) find an u-shaped pattern with an increasing wage gap for the higher quantiles of the income distribution.

Figure 2

Gender Pension Gap per percentile



Source: ASID 2007, authors' calculations

VII Methods and Estimation

The two decomposition methods which are used in this work are be described in this section: At first the classic decomposition by Oaxaca and Blinder is briefly reviewed. Such a decomposition of the mean pension incomes seems to be an appropriate first step and basis for further research, as this paper is the first to provide a decomposition of the pension incomes of German retirees based on ASID data. Then, a method to decompose the pension incomes at different quantiles of its distribution by Firpo et al. (2007) will be described. This decomposition allows for decompositions in the spirit of Oaxaca and Blinder, but can be applied to other moments of the pension income distribution besides the mean.

Oaxaca-Blinder-Decomposition of the Mean

The method of Oaxaca (1973) and Blinder (1973) decomposes the mean gender gap in old-age incomes, in a part caused by differences in the aver- age endowments (e.g. employment years) and another part determined by the differences in the returns to these endowments (generally referred to as the 'explained' and the 'unexplained' part)[12]. Regressing the (log) old-age income on the explanatory variables and rearranging these terms, we receive the standard two-fold decomposition:

$$Gap = [\bar{X}^M - \bar{X}^F] * \beta^* + [\bar{X}^M * (\beta^M - \beta^*) + \bar{X}^F * (\beta^* - \beta^F)] \qquad (2)$$

$\bar{X}^M$ and $\bar{X}^F$ represent for the average endowments of men and women, while β^M and β^F are the respective coefficient vectors of old-age income regressions. β^* denotes an objective 'nondiscriminatory' coefficient vector. The choice of β^* is not a priori clear (see see appendix A for the consequences of differing choices for this vector on the gap's explained and unexplained part). We set $\beta^* = \beta^M$ and regard men as the reference group because we want to investigate how women's pensions deviate from those of men. This leads to
the following decomposition:

$$Gap = [\bar{X}^M - \bar{X}^F] * \beta^M + [\bar{X}^F * (\beta^M - \beta^F)] \qquad (3)$$

It has to be noted, that regarding the unexplained gap as a result of discrimination is even more problematic for pensions than it is for wages, as

[12] a comprehensive overview on the method can for example be found in Jann (2008)

pensions, at least in the first pillar, are determined by legislative processes that do not distinguish between the sexes. One might, however, argue, that differences returns to employment years or education are results of discrimi- nation, though this does not mean the pension system itself does discriminate against women.

Unconditional quantile regression

The method by Firpo et al. (2007) allows extending the methodology of Oaxaca and Blinder to additional moments of a distribution beyond the mean. As, unlike earlier approaches (see, for example, Mata and Machado (2005)), their method does not only allow the estimation of the explained and the unexplained gap (respectively the composition and the wage structure effect[13]), but also permits breaking down these to the contributions of the individual explanatory variables. This decomposition method is done in two steps: In the first step, the entire distribution is decomposed in a wage structure and a composition effect using reweighing methods (see DiNardo et al. (1996)). In the second step, the contribution of the variables to the gap is estimated using RIF regressions (see Firpo et al. (2009)).

In line with the reasoning of the treatment effects literature, Firpo et al. (2007) show that if the distributions of the error terms of the old-age income equations are, conditional on the explanatory variables, the identical for men and women (ignorablity) and if there is common support, a decomposition of the form

$$Gap = (v_m - v_c) - (v_c - v_f) = \Delta_s - \Delta_x \quad (4)$$

[13] In line with Firpo et al. (2009), we will stick to their terminology when discussing the decomposition of quantiles

is possible. In our specification, v represents a quantile of the old-age income distribution, respectively for men (v_m), women (v_f) and the counterfactual (v_c) received by reweighing the observations. Δ_s describes the changes in the wage structure while Δ_x represents the composition effect. In order to receive the counterfactual distribution, Firpo et al. (2009) define reweighing factors as

$$\omega_m(T) = \frac{T}{p}, \quad \omega_f(T) = \frac{1-T}{1-p}, \quad \omega_c(T) = \frac{p(X)}{(1-p(X_i))} * \frac{1-T}{p} \tag{5}$$

where $p(X_i)$ denotes the probability of being a man for given observables X_i which can be received by standard logit/probit estimation. p describes the share of men in the sample. T is an indicator, determining whether a person is a man or a woman.

Having decomposed the gap in their composition and wage structure ef- fect, the RIF regression method by Firpo et al. (2009) is used to compute the detailed decomposition. This recentered influence function (RIF) is defined as

$$RIF(Y_i, v_\tau) = v_\tau + \frac{\tau - I_{Y \leq \tau}}{f_Y(v_\tau)} \tag{6}$$

with $I_{(.)}$ denoting the indicator function being one if the old-age income is lower than quantile τ and zero otherwise. $f_Y(.)$ is the density function of the old age incomes. Assuming linearity, standard OLS can be used to estimate

$$E[RIF(Y, v_\tau)|X] = X\beta_\tau \tag{7}$$

As, by the law of iterated expectations, $E_X[E[RIF(Y, v_\tau)|X]$ is equal to

$E[X]\beta_\tau$, the OLS estimate of $\beta_\tau = (X^1X)^{-1}X^1RIF(Y, v_\tau)$ is in fact the marginal effect of a small change in X on the unconditional quantile. The empirical RIF function can be received by using the empirical counterparts of v_τ and $f_Y(v_\tau)$ for estimation.

Combining both steps, we receive the following wage structure and com- position effects

$$\hat{\Delta}_S^\tau = \bar{X}_m * (\hat{\beta}_m^\tau - \hat{\beta}_f^\tau) \quad (8)$$

$$\hat{\Delta}_x^\tau = (\bar{X}_m - \bar{X}_f) * \hat{\beta}_m^\tau + \hat{R} \quad (9)$$

where $\hat{R}^\tau$ denotes an approximation error.

VIII Decomposition Analysis

The following section describes the results of the decomposition analysis on the gender-specific old-age income differences. At first, the variables used in the decomposition are introduced. Thereafter, we present and discuss the de- composition results for the mean pension income differences. Afterward, we do the same for selected quantiles of the old-age income distribution. Finally, we discuss the robustness of these finding as well as possible extensions.

Variables and Descriptive Statistics

Various aspects can potentially influence gender pension differences: Most prominently, a small number of employment years will restrict the number of earning points to be gained. Here, not all sectors can be treated equally, as they can differ with respect to payment and pension arrangements. Sim-

ilar to the sectors worked in, the occupational status[14] will affect payment and pension regulations. Furthermore, differences in education will certainly influence wages and the likelihood of an employment. The marital status is potentially linked to employment characteristics, as, for example, married women are more likely to work part-time[15]. The effect of raising children has differing directions: On the one hand, for raising children additional earning points are granted. On the other hand, career interruptions will decrease the likelihood of future labor market participation and can negatively influence future wages due to human capital depreciation (see, for example, Becker (1964)). Furthermore, differences between East and West Germany will be included in the analysis, as earning points are evaluated at different Euro amounts in East in West Germany. Additionally, women in East-Germany are substantially more likely to work full-time and less likely to have career interruptions (Simonson et al. (2012)).

Table 2 depicts the average gender-specific endowments used in the decomposition in detail, where the average number of employment years constitutes the mean of the entire population and not just of those who were actually working in this sector.

It can be seen, that on average men have about 14 more years of working experience compared to women. The single most important difference can be found in the number of employment years in the private sector. Men were employed on average for more than 30 years in this sector while this value is less than 20 years for women. Differences in the other sectors are not as

[14] The status refers to the main type of occupational status during professional life.

[15] see Franz (2011)

Table 2

Endowment differences between men and women

Variable	Average Endowment Men	Average Endowment Women	Differences
Years of Employment: Self-Employed	3.69	2.66	1.03
Years of Employment: Private Industry	30.12	19.02	11.10
Years of Employment: Public Service	4.95	5.29	-0.34
Years of Employment: Civil Service	3.27	0.54	2.73
noncontinuous employment-history	0.03	0.47	-0.44
Has Never Been Employed	0.003	0.01	0.00
Worker	0.41	0.40	0.01
Employee	0.40	0.51	-0.11
Civil Servant	0.09	0.02	0.07
Self-Employed	0.10	0.07	0.03
No Training	0.13	0.40	-0.27
Occupational Training	0.51	0.47	0.05
Master Craftsperson, Polytechnics	0.21	0.04	0.17
University	0.09	0.03	0.06
Miscellaneous Training	0.06	0.05	0.00
Married	0.76	0.45	0.32
Widowed	0.13	0.41	-0.28
Divorced	0.06	0.07	-0.02
Single	0.05	0.07	-0.02
Children	1.57	2.03	-0.47
Region	0.20	0.22	-0.03

Source: ASID 2007, authors' calculations

pronounced. As expected, the share of women with one or more breaks in their employment career is considerably larger than that of men. The per- centage of women that has never worked is larger than that of men, though this proportion is small for both men and women.

With respect to the occupational status, two major differences between the sexes can be found: Women tended to work more likely as employees than men, while the civil service has been a predominantly male sector. Interestingly, the percentage of women and men stating to have been workers for most of their employment lives is equal. Furthermore, the data illustrates the substantial gap in past qualifications between men and women. While about 50 % of men and women received a vocational training, there is a huge disparity between shares of those who received no training at all 13 % for male but 40 % for female pensioners. A similar picture shows up for the highest qualification level - only 3 % of all women in the sample possessed a

university degree while 9 % of the men received this qualification.

The differences in the marital status mainly arise due to differences in life expectancy. Since women tend to live longer than their partners, they are more likely to be widowed compared to men. Single or divorced men and women only play a minor role in our sample. The disparity in the number of children is basically an artifact of the ASID's questionnaire design since only married men were asked whether they have children, while there is no information on remaining males. Here, the number of children for men without information was set to zero.

Information on wages is not included in the specification, as wages are to a large degree influenced by education and employment experience (as well as other included factors) and their inclusion would entirely determine the pensions claims, at least for the first pillar. As these pensions are, unlike wages, determined by legislative regulations, one might take the perspective that pensions are a proxy for wages accumulated over a professional life.

Results of the Decomposition at the Mean

Applying the Oaxaca-Blinder-Decomposition and using men as the refer- ence category, an explained part of 26 % can be found, while the remaining 74 % cannot be explained by endowment effects. As the sizes of the explained and unexplained part react sensitive towards the choice of the reference cat- egory (see Appendix A), these numbers should not be over-interpreted and especially not be seen as an indicator for a discrimination of women. Table 3 shows how much each variable contributes (in %) to the explained and unexplained part of the gap. The results of the regressions are presented

in greater detail in appendix B. In the following the major findings of this analysis will be discussed.

Table 3

Decomposition based gap contributions (in %)

Variable	*Contribution to explained Part*	*Contribution to unexplained Part*
Years of Employment: Self-Employed	2.39	-4.14
Years of Employment: Private Industry	41.45	-44.94
Years of Employment: Public Service	-1.48	-15.15
Years of Employment: Civil Service	21.00	-1.57
noncontinuous employment-history	12.55	6.73
Has Never Been Employed	0.04	0.11
Worker	-0.32	-1.41
Employee	-5.13	4.74
Civil Servant	2.73	-0.65
Self-Employed	-0.83	0.75
No Training	18.49	1.00
Occupational Training	-1.66	1.26
Master Craftsperson, Polytechnics	0.28	-0.42
University	6.47	0.20
Miscellaneous Training	-0.03	-0.06
Married	12.47	14.90
Widowed	-9.10	14.82
Divorced	1.01	-3.06
Single	0.30	-1.98
Children	0.80	-6.52
Region	3.34	-7.42
Constant	-	142.82

Source: ASID 2007, authors' calculations

Two main factors contribute to the fraction of the gap explained by en- dowment differences - the number of employment years and education. Due to the design of the German pension system's first (and most important) pillar, each year of employment will lead to a additional revenue in pension incomes. As we have seen in Table 2 that men were employed for a consid- erably larger number of years, the importance of this aspect does not come as a surprise. Next to the number of employment years, disparities in edu- cation play also a major role in the determination of the explained gap by influencing wages.[16]

Overall, the differences in employment years are the cause for nearly 60 % of the gap's explained part. Due to the importance of the private sector and

[16] see, for example, Mincer (1974)

the substantial differences in average employment years between the sexes, employment years in the private industry alone contribute to more than 40 % of this part of the gap. The second largest disparity in employment years is found in the civil sector, which directly translates, with about 20 %, to the second largest contribution to the gap's explained part. Due to the compar- atively little significance or small endowment differences, self-employment and the civil service sector only play a minor role in explaining the gap. The higher number of career interruptions for women can be attributed to another 13 % of this part of the gap (though we do not find a significant effect for this variable). Due to the ongoing increase in female labor force participation[17], one can expect, at least if coefficient estimates do not change dramatically, that the gap will continue to shrink in the future. Actually, this effect can already be discovered in ASID data, when regarding the youngest retirees, aged between 65 and 70. In view of the described development of the participation rates of women, it seems likely that this development will continue (though the increase in part-time work can not be considered in analysis based on ASID data).

As education influences wages and thereby pensions, differences in quali- fication significantly contribute to the gap. In total, almost 25 % of the ex- plained gap can be attributed to disparities in education. Most prominently, the larger fraction of women without any training leads to an increase of about 20 % in this part of the gap. Furthermore the higher share of men with a university degree also accounts for a sizable, though smaller, part. Similar to female participation rates, major improvements in education can

[17] see Bundesamt (2012)

be found - as of today, the qualification of men and women is very similar, with slight advantages for women.[18] In consequence, this development should lead to a reduced explained gap for future cohorts of pension beneficiaries.

The effect of the occupational status is relatively small. The largest contribution can be found for the status of an employee explaining another 5 %. Since married men tend to have higher wages compared to non-married men (see, for example, Chun and Lee (2001)) and due to their higher share than married women, we receive an increase in the gap of about 12 %. This effect is basically mirrored for widowed men and women. The effect of the remaining explanatory variables is only marginal.

The interpretation of the gap's unexplained part is more difficult. The fact that we find higher coefficients of employment years for women than for men[19] may be unexpected at first but could be caused by two effects: Firstly, economies of scale might cause that the average increase in wages (and therefore pension income) is smaller for men compared to women, as men, on average, worked for a substantially longer period of time. Secondly, the log-level specification measures the relative increase of pension incomes, such that this increase may be larger for women in relative than in absolute terms because of women's (on average) lower pensions. This difference in coefficients will, on the other hand, find its counterpart in the difference in regression constants (which one certainly should not interpret as some kind of 'baseline discrimination'). For education, on the other hand, we find only a minor (and for most categories insignificant) effect, suggesting the

[18] see Bildungsberichterstattung (2012)

[19] Negative sign of the gap contributions (gender specific coefficients are shown in Appendix B).

(percentage) effect of education on pension incomes is similar for men and women.

Results for the Quantile Decomposition

Using unconditional quantile regressions, we extend our decomposition of the previous section to look at different parts of the distribution of the log old-age incomes. This enables us to take a closer look at the gap and its division into explained and unexplained parts.[20]

Figure 3 depicts the distribution of the (absolute) log old-age incomes differences. Similar to the results shown in figure 2, we find a decreasing gap, especially below the median. (Only at the highest quantile, a slight increase in the gap is visible.) We see that the pension inequality is especially large for low-income groups.

The decrease is primarily driven by a reduction in the unexplained part while the explained difference stays relatively stable above the 25 % quantile. Figure 3 states that differences in endowments are more important for the lowest quarter of the distribution while for higher quantiles the lower gap is mainly due to the smaller differences between male and female returns. Figure 4 shows the contributions of certain variables on the explained part of the gap per quantile. Years in the private industry account for nearly 60

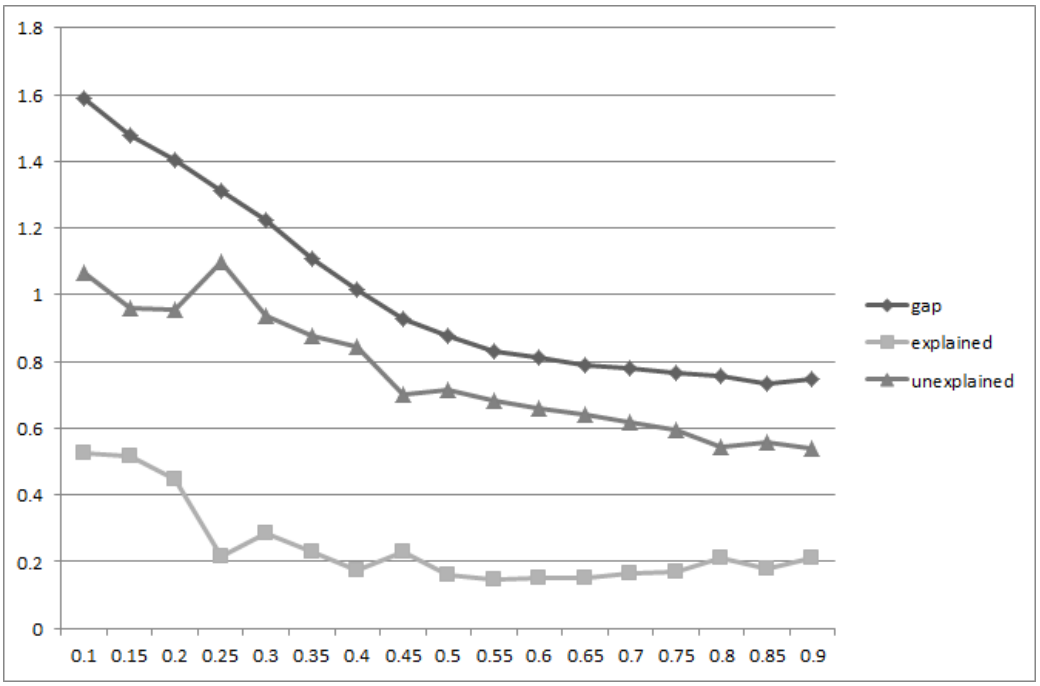
% of the explained part at the 10 % quantile and still over 50 % at the 50 % quantile.

For higher incomes, the contribution of the employment years in private industry drops heavily and is of substantially less significance. The contribution of the employment years in the civil sector is always positive

[20] Results of quantile decompositions at the 10 % , 25 %, 50 %, 75 % and 90 % quantiles are shown in appendix C

Figure 3

Gaps per Quantile



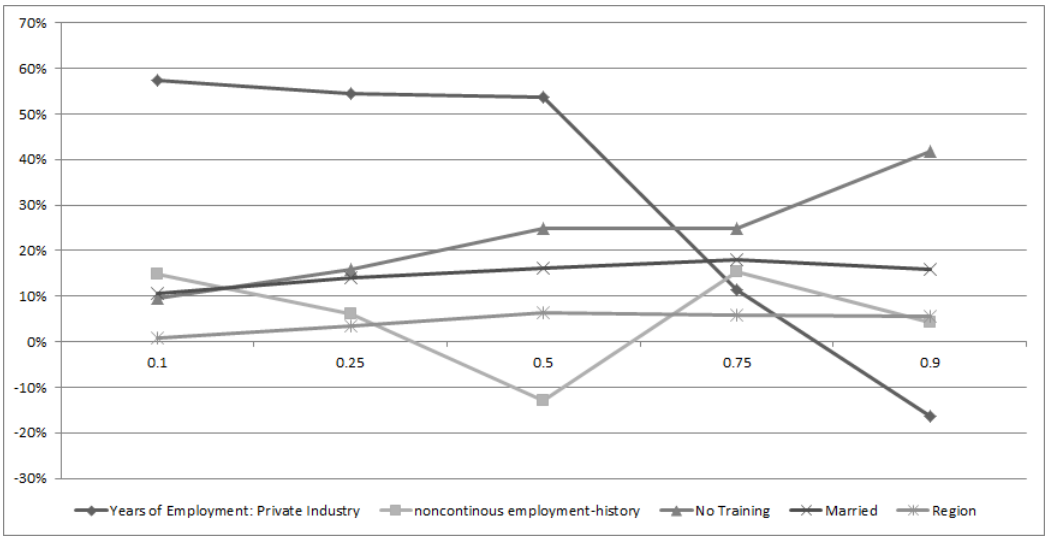
Source: ASID 2007, authors' calculations

along the entire distribution. After controlling for the number of employment years, a noncontinuous employment history does not have a significant effect. Having no Training is of increasing importance across the distribution. At the 10 % quantile it accounts for over 10 % of the explained part while at the the 90 % quantile it determines over 40 % of the explained part. Similarly, the contribution of an university degree contributes the most to the explained gap for the highest quantile.

The effect of being married is quite stable across the distribution hinting at the fact that male benefits from being married are independent of the position in the distribution of old-age incomes. Living in Eastern Germany is of little importance in terms of gap contribution in the lower parts of the distribution while for higher quantiles we find an increasing effect on the explained part.

Figure 4

Explained Effect per Quantile

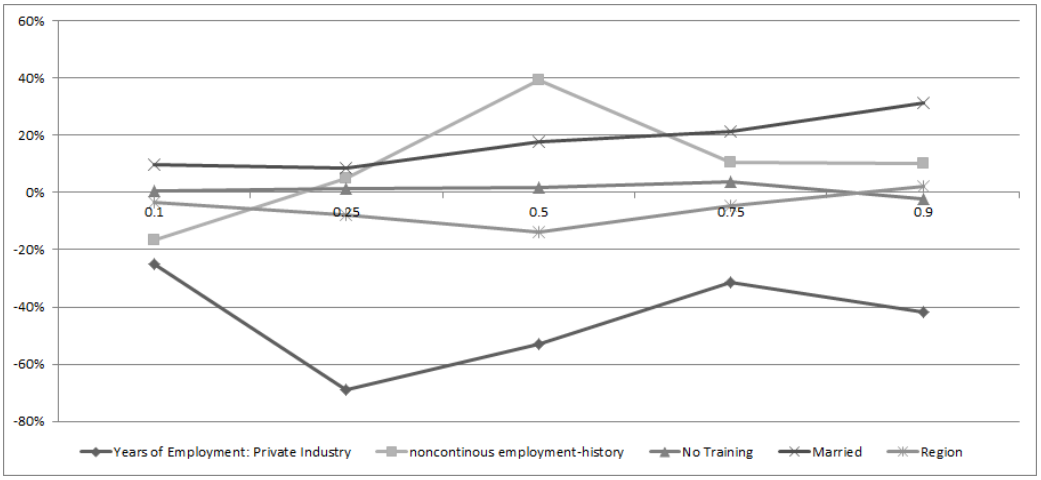


Source: ASID 2007, authors' calculations

Similar to the mean decomposition, the unexplained gap is mainly driven by differences in constants. Also like in the decomposition of the mean, the coefficient estimators for the effects of an additional year of employment in the private industry are, at each quantile, larger for women than for men, re- sulting in the largest contribution of this variable in reducing the unexplained gap (see figure 5). This difference in returns tends to be smaller for higher quantiles of the pension income distribution. A noncontinuous employment history has gap reducing effects on the 10 % quantile but increases the un- explained part above the 25 % quantile, whereas having no training has only little influence. Being married leads to higher returns for men across the dis- tribution with slightly more distinct effects for higher quantiles. The graph for the regional variable shows that living in Eastern Germany has less severe effects for women below the 90 % quantile. At the 90 % quantile differences in the effects of the region are nearly nonexistent and insignificant.

Figure 5

Unexplained Effect per Quantile



Source: ASID 2007, authors' calculations

Robustness

In the literature on wage decompositions selection biases related to em- ployment are a constant concern. Generally the correction approach of Heck- man (1979) is used to control for selection but finding valid exclusion re- strictions often pose some difficulties. In the context of old-age incomes in Germany selection is far less of a concern, as nearly every retiree (almost all men and more than 91 % of the women, see table 1) receives an income from a pillar of the German pension system. The reason is that the Statutory Pension Insurance even awards to a certain degree pension entitlements that are not related to employment. One example would be entitlements due to raising children. We therefore refrain from using a correction for potential selection.

Potential further biases might arise due to differences in the drop out behavior out of the sample (men dying younger than women, potential longer life expectancy for retirees with high income). Therefore, the analysis was replicated for the youngest age group in the sample (65 to 70) for whom mortality rates are comparatively low. As expected, the overall gap slightly decreased, the other major findings did, however, not change.

The size of the gap's explained and unexplained part strongly depend on the choice of the reference group, with explained part of the gap being the lowest for the chosen specification, but the relative importance of the major factors influencing the gap and its parts are not affected. For further details on the effects of the reference group choice, see appendix A.

IX Conclusion

This paper extends earlier work in providing a detailed discussion of the differences in all own pension incomes from all three pillars of the German pension system for current old-age pensioners in Germany. Furthermore, it is the first to provide descriptive and decomposition based results for quantiles of the old-age income distribution of German retirees.

We observe that the pension gap amounts to approximately 60 %. We argue that the gap has decreased in the past and will further lessen in the future. Using an Oaxaca-Blinder-Decomposition, we observe that a substan- tial fraction of the gap cannot, at least not within specifications possible with the ASID data, be explained by differences in endowments. The explained part of the gap is heavily influenced by two variables - employment years and education. The gap's size is mainly driven by the low quantiles of the pension income distribution, where differences in these quantiles are mainly explained by the numbers of employment years.

The disparities in employment years and education are major causes for the sizable gap in own pension incomes. It is apparent that the differences in these areas diminished over the last years and decades which leads to the conclusion that the Gender Pension Gap itself will shrink in the future. This finding is in line with our results that the Gender Pension Gap has already lessened over the past years. Obviously, this reduction can only happen slowly and with a long time lag. Therefore, a policy intending to decrease this gap by, for example, further increasing the labor force participation rates of women will only be successful in decreasing this gap in the (distant) fu-

ture. So, legal claims for child-care for pre-school children who have recently been introduced, should be able to encourage employment of mothers[21] and therefore reduce the Gender Pension Gap (though with a distinct time lag). Despite of differences in specification, the work of Frommert and Strauß (2013) is closest to this paper with respect to the decomposition of the mean Gender Pension Gap. Like this work, Frommert and Strauß (2013) find the Gender Pension Gap to be decreasing in the first pillar to be decreasing and it's explained part to be mainly driven by the number of employment years in private industry. Interestingly, they observe that differences in education play only an extremely small role in determining the explained gap. This is somewhat surprising as education plays a major role in the determination of wages[22] and disparities in education are still present also for these younger cohorts. However, the fact that the effect of education on the explained gap has decreased does not come as a surprise as the education gap has certainly decreased for younger cohorts.

One way forward for future research would be a decomposition in cohorts within the latest version of the ASID data. This proceeding would allow for a detailed analysis on gap and decomposition development and the effects of changes in employment on both. Furthermore, a prediction of the future gap in pensions could be carried out using these results.

[21] see, for example, Büchel and Spieß (2002)

[22] see, among others, Mincer (1974)

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A Choice of Reference Group

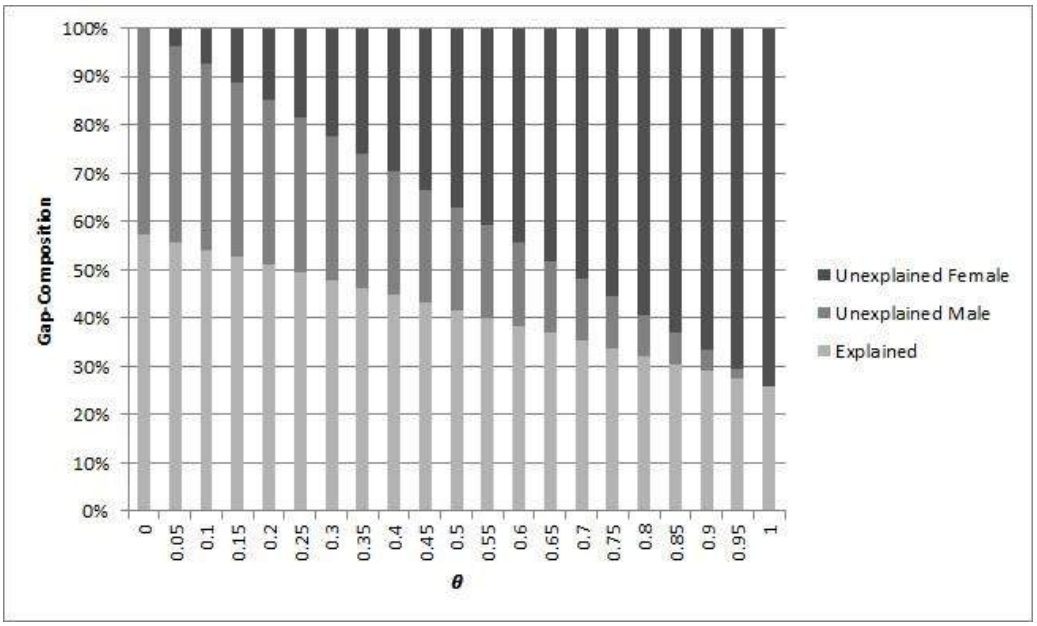
Various approaches have been suggested to select an appropriate reference group in the decomposition analysis (see for example Oaxaca (1973), Blinder (1973) or Cotton (1988)). It is well known that these choices are important as they substantially affect the sizes of the gap's explained and unexplained part (as well as each component of the explained and unexplained part). As, especially in the public discussion, 'unexplained' is still sometimes associated with 'discriminatory' and to provide a better intuition of the results, it seems to be important to consider this aspect and we therefore briefly describe how our decomposition results react to changes in the reference group. For this reason, we will depict the gap parts after a decomposition for varying choice of a reference group. At first, we show results with reference groups constructed as convex combinations of the male and female coefficient vector ($\beta^* = \theta * \beta^M + (1-\theta) * \beta^F, \theta \in [0,1]$).

Figure 6 shows that, depending on the choice of the reference category between β^M and β^F, the size of the gap's explained part lies in an interval of about 30 up to almost 60 %. These are certainly substantial differences. Another approach is to use the coefficient vector of a pooled regression with both men and women as reference (see Oaxaca and Ransom (1994) or Neu- mark (1988)). The results are shown in figure 7.

It as apparent that the explained part of the gap has further increased com- pared to the previous results using the pooled regression results as reference[23], underlining the effects of the reference group choice. This certainly shows

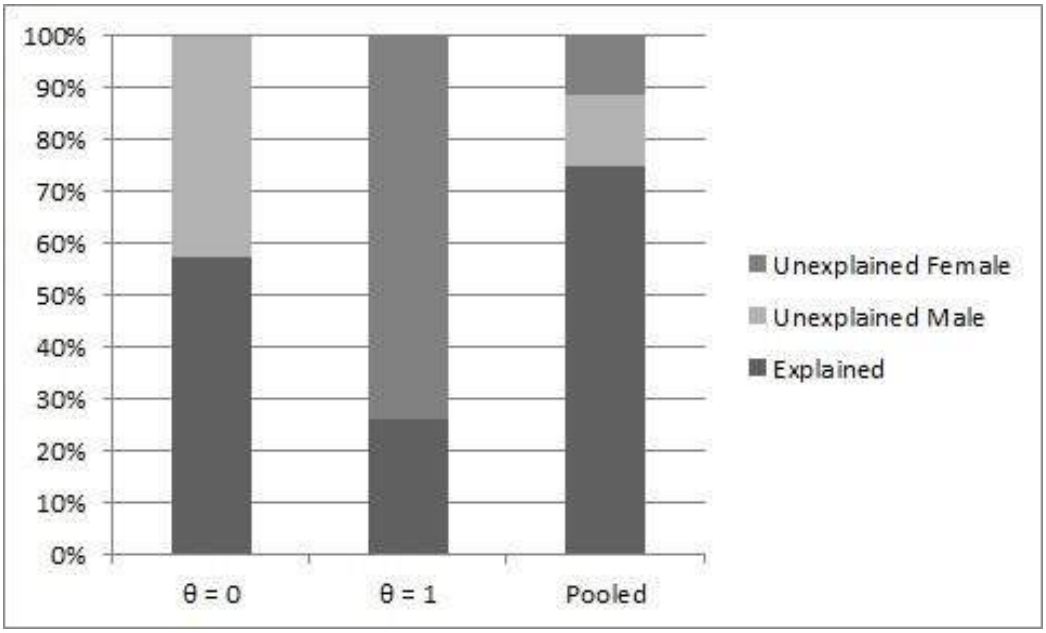
[23] for further details and potential methodological problems see Jann (2008)

Figure 6
Gap composition for increasing θ



Source: ASID 2007, authors' calculations

Figure 7
Gap composition for different β^*



Source: ASID 2007, authors' calculations

that the absolute sizes of the parts of the gap should not be over-interpreted and that instead the focus should be laid on those variables contributing the most to the gap.

B Results of the Mean Decomposition Analysis

Table 4

Results of Oaxaca-Blinder decomposition of own pension income

	Log Own Pension b
overall	
men	7.272***
women	6.226***
difference	1.046***
explained	0.271***
unexplained	0.775***
explained	
Years of Employment: Self-Employed	-0.006***
Years of Employment: Private Industry	0.112***
Years of Employment: Public Service	-0.004
Years of Employment: Civil Service	0.057***
noncontinuous employment-history	0.034
Has Never Been Employed	0.000
Worker	-0.001
Employee	-0.014***
Civil Servant	0.007
Self-Employed	-0.002
No training	0.050***
Vocational Training	-0.004***
Master Craftperson, Polytechnics	0.001
University	0.018***
Miscellaneous Training	-0.000
Married	0.034***
Widowed	-0.025***
Divorced	0.003**
Single	0.001
Children	0.002
Region	0.009***
unexplained	
Years of Employment: Self-Employed	-0.032***
Years of Employment: Private Industry	-0.348***
Years of Employment: Public Service	-0.117***
Years of Employment: Civil Service	-0.012**
noncontinuous employment-history	0.052

Has Never Been Employed	0.001
Worker	-0.011
Employee	0.037
Civil Servant	-0.005
Self-Employed	0.006
No training	0.008
Vocational Training	0.010
Master Craftperson, Polytechnics	-0.003**
University	0.002
Miscellaneous Training	-0.000
Married	0.115***
Widowed	0.115***
Divorced	-0.024***
Single	-0.015***
Children	-0.050***
Region	-0.058***
Constant	1.107***
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 5

Regression results - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.006***
Years of Employment: Private Industry	0.010***
Years of Employment: Public Service	0.012***
Years of Employment: Civil Service	0.021***
noncontinuous employment-history	-0.077
Has Never Been Employed	-0.057 Worker
	-0.0901***
Employee	0.127***
Civil Servant	0.100
Self-Employed	-0.080*
No Training	-0.182***
Vocational Training	-0.0916***
Master Craftperson, Polytechnics	0.004
University	0.312***
Miscellaneous Training	-0.043**
Married	0.107***
Widowed	-0.088***
Divorced	-0.156***
Single	-0.038
Children	-0.005
Region	-0.315***
Constant	6.880***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 6

Regression results - women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	0.006**
Years of Employment: Private Industry	0.028***
Years of Employment: Public Service	0.034***
Years of Employment: Civil Service	0.043***
noncontinuous employment-history	-0.188***
Has Never Been Employed	-0.220*
Worker	-0.062
Employee	0.055
Civil Servant	0.394
Self-Employed	-0.166 *
No Training	-0.201***
Vocational Training	-0.112***
Master Craftperson, Polytechnics	0.081***
University	0.268***
Miscellaneous Training	-0.035
Married	-0.151***
Widowed	-0.193***
Divorced	0.165***
Single	0.178***
Children	0.020***
Region	-0.060***
Constant	5.774***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

C Results of the Quantile Decomposition Analysis

Table 7
Decomposition for 10 % quantile

	Log Own Pension b
overall	
men	6.718***
women	5.130***
difference	1.588*
explained	0.523***
unexplained	1.065
explained	
Years of Employment: Self-Employed	-0.011*
Years of Employment: Private Industry	0.300***
Years of Employment: Public Service	-0.010***
Years of Employment: Civil Service	0.053***
noncontinuous employment-history	0.078
Has Never Been Employed	-0.0003*** Worker
	-0.001*
Employee	0.002
Civil Servant	0.024**
Self-Employed	-0.009**
No training	0.050***
Vocational Training	-0.002
Master Craftperson, Polytechnics	-0.002
University	0.015***
Miscellaneous Training	-0.0001
Married	0.055***
Widowed	-0.039**
Divorced	0.004**
Single	0.002
Children	0.013*
Region	0.004***
unexplained	
Years of Employment: Self-Employed	-0.098***
Years of Employment: Private Industry	-0.268*
Years of Employment: Public Service	-0.055
Years of Employment: Civil Service	-0.008
noncontinuous employment-history	-0.176*

Has Never Been Employed	0.002
Worker	-0.111
Employee	-0.114
Civil Servant	-0.0003
Self-Employed	0.014
No training	0.004
Vocational Training	-0.010
Master Craftperson, Polytechnics	-0.003
University	0.006
Miscellaneous Training	-0.005
Married	0.103***
Widowed	0.103***
Divorced	-0.026***
Single	-0.009
Children	-0.180***
Region	-0.035***
Constant	1.931**
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 8

RIF-regression results at 10 % quantile - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.011*
Years of Employment: Private Industry	0.027***
Years of Employment: Public Service	0.029***
Years of Employment: Civil Service	0.019***
noncontinuous employment-history	-0.177
Has Never Been Employed	0.160***
Worker	-0.136*
Employee	-0.014
Civil Servant	0.324**
Self-Employed	-0.333**
No Training	-0.181***
Vocational Training	-0.046
Master Craftperson, Polytechnics	-0.010
University	0.274***
Miscellaneous Training	-0.037
Married	0.174***
Widowed	0.142**
Divorced	-0.227**
Single	-0.089
Children	-0.028*
Region	-0.130***
Constant	5.766***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 9

RIF-regression results at 10 % quantile- women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	0.026***
Years of Employment: Private Industry	0.041***
Years of Employment: Public Service	0.040***
Years of Employment: Civil Service	0.034**
noncontinuous employment-history	0.199**
Has Never Been Employed	-0.146
Worker	0.141
Employee	0.209
Civil Servant	0.342
Self-Employed	-0.546
No Training	-0.192***
Vocational Training	-0.024
Master Craftperson, Polytechnics	0.056
University	0.114
Miscellaneous Training	0.046
Married	-0.055**
Widowed	-0.110**
Divorced	0.126***
Single	0.040
Children	0.060***
Region	0.208
Constant	3.835***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 10
Decomposition for 25 % quantile

	Log Own Pension b
overall	
men	7.022***
women	5.710***
difference	1.312***
explained	0.214***
unexplained	1.098**
explained	
Years of Employment: Self-Employed	-0.004**
Years of Employment: Private Industry	0.117***
Years of Employment: Public Service	-0.005***
Years of Employment: Civil Service	0.023***
noncontinuous employment-history	0.013
Has Never Been Employed	0.0001*
Worker	-0.001
Employee	-0.005
Civil Servant	0.013*
Self-Employed	-0.002
No training	0.034***
Vocational Training	-0.002
Master Craftperson, Polytechnics	0.004
University	0.009***
Miscellaneous Training	-0.00003
Married	0.030***
Widowed	-0.023***
Divorced	0.003***
Single	0.0006
Children	0.004
Region	0.007***
unexplained	
Years of Employment: Self-Employed	-0.060***
Years of Employment: Private Industry	-0.758***
Years of Employment: Public Service	-0.201***
Years of Employment: Civil Service	-0.019**
noncontinuous employment-history	0.057
Has Never Been Employed	0.002**

Worker	-0.046
Employee	-0.077
Civil Servant	-0.004
Self-Employed	0.011
No training	0.017
Vocational Training	0.011
Master Craftperson, Polytechnics	-0.002
University	0.001
Miscellaneous Training	-0.002
Married	0.095***
Widowed	0.116***
Divorced	-0.030***
Single	-0.006*
Children	-0.122***
Region	-0.084***
Constant	2.199***
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 11

RIF-regression results at 25 % quantile - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.004**
Years of Employment: Private Industry	0.011***
Years of Employment: Public Service	0.013***
Years of Employment: Civil Service	0.008***
noncontinuous employment-history	-0.029
Has Never Been Employed	-0.067*
Worker	-0.087
Employee	0.048
Civil Servant	0.174*
Self-Employed	-0.067
No Training	-0.123***
Vocational Training	-0.038
Master Craftperson, Polytechnics	0.022
University	0.156***
Miscellaneous Training	-0.017
Married	0.095***
Widowed	0.083***
Divorced	-0.149***
Single	-0.030
Children	-0.008
Region	-0.255***
Constant	6.644***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 12

RIF-regression results at 25 % quantile - women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	0.018***
Years of Employment: Private Industry	0.050***
Years of Employment: Public Service	0.051***
Years of Employment: Civil Service	0.043***
noncontinuous employment-history	-0.150*
Has Never Been Employed	-0.399**
Worker	0.028
Employee	0.199
Civil Servant	0.402
Self-Employed	-0.230
No Training	-0.166***
Vocational Training	-0.062
Master Craftperson, Polytechnics	0.070
University	0.143*
Miscellaneous Training	0.015
Married	-0.117***
Widowed	-0.202***
Divorced	0.264***
Single	0.055
Children	0.052***
Region	0.120***
Constant	4.445***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 13
Decomposition for 50 % quantile

	Log Own Pension
	b
overall	
men	7.275***
women	6.398***
difference	0.877***
explained	0.161***
unexplained	0.717**
explained	
Years of Employment: Self-Employed	-0.002
Years of Employment: Private Industry	0.087***
Years of Employment: Public Service	-0.004***
Years of Employment: Civil Service	0.029***
noncontinuous employment-history	-0.021
Has Never Been Employed	0.0003**
Worker	-0.001
Employee	-0.012
Civil Servant	0.016
Self-Employed	-0.001
No training	0.040***
Vocational Training	-0.002**
Master Craftperson, Polytechnics	0.005
University	0.009***
Miscellaneous Training	-0.00002
Married	0.026***
Widowed	-0.026***
Divorced	0.002***
Single	0.001
Children	0.004*
Region	0.010***
unexplained	
Years of Employment: Self-Employed	0.005
Years of Employment: Private Industry	-0.380***
Years of Employment: Public Service	-0.120***
Years of Employment: Civil Service	-0.002
noncontinuous employment-history	0.282***
Has Never Been Employed	0.001

Worker	0.015
Employee	0.085
Civil Servant	-0.007
Self-Employed	0.006
No training	0.012
Vocational Training	0.015
Master Craftperson, Polytechnics	-0.001
University	-0.001
Miscellaneous Training	-0.001
Married	0.127***
Widowed	0.126***
Divorced	-0.029***
Single	-0.014***
Children	-0.012
Region	-0.099***
Constant	0.709**
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 14

RIF-regression results at 50 % quantile - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.002
Years of Employment: Private Industry	0.008***
Years of Employment: Public Service	0.012***
Years of Employment: Civil Service	0.011***
noncontinuous employment-history	0.047
Has Never Been Employed	-0.157**
Worker	-0.127
Employee	0.113
Civil Servant	0.220
Self-Employed	-0.048
No Training	-0.145***
Vocational Training	-0.043**
Master Craftperson, Polytechnics	0.032
University	0.163***
Miscellaneous Training	-0.007
Married	0.082***
Widowed	0.092***
Divorced	-0.134***
Single	-0.040
Children	-0.009*
Region	-0.354***
Constant	6.984***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 15

RIF-regression results at 50 % quantile - women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.004
Years of Employment: Private Industry	0.028***
Years of Employment: Public Service	0.034***
Years of Employment: Civil Service	0.015*
noncontinuous employment-history	-0.554***
Has Never Been Employed	-0.288***
Worker	-0.165
Employee	-0.053
Civil Servant	0.637**
Self-Employed	-0.131
No Training	-0.174***
Vocational Training	-0.076**
Master Craftperson, Polytechnics	0.064
University	0.179***
Miscellaneous Training	0.006
Married	-0.202***
Widowed	-0.217***
Divorced	0.262***
Single	0.157***
Children	-0.004
Region	0.087**
Constant	6.275***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 16
Decomposition for 75 % quantile

	Log Own Pension b
overall	
men	7.534***
women	6.770***
difference	0.764***
explained	0.167***
unexplained	0.597***
explained	
Years of Employment: Self-Employed	-0.004**
Years of Employment: Private Industry	0.019* Years of
Employment: Public Service	-0.001***
Years of Employment: Civil Service	0.059***
noncontinuous employment-history	0.026
Has Never Been Employed	0.0001
Worker	-0.001
Employee	-0.020
Civil Servant	-0.002
Self-Employed	-0.0002
No training	0.042***
Vocational Training	-0.005***
Master Craftperson, Polytechnics	0.007
University	0.012***
Miscellaneous Training	0.000
Married	0.030***
Widowed	-0.013*
Divorced	0.002***
Single	0.001
Children	0.006*
Region	0.010***
unexplained	
Years of Employment: Self-Employed	-0.002 Years of
Employment: Private Industry	-0.188***
Years of Employment: Public Service	-0.094***
Years of Employment: Civil Service	0.003
noncontinuous employment-history	0.062**
Has Never Been Employed	0.0004

Worker	0.026
Employee	0.103
Civil Servant	-0.006*
Self-Employed	0.001
No training	0.023**
Vocational Training	0.021
Master Craftperson, Polytechnics	-0.006***
University	-0.002
Miscellaneous Training	0.006**
Married	0.126***
Widowed	0.088***
Divorced	-0.019***
Single	-0.018***
Children	0.018
Region	-0.029***
Constant	0.483**
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 17

RIF-regression results at 75 % quantile - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.004**
Years of Employment: Private Industry	0.002*
Years of Employment: Public Service	0.004***
Years of Employment: Civil Service	0.022***
noncontinuous employment-history	-0.058
Has Never Been Employed	-0.065
Worker	-0.089
Employee	0.184
Civil Servant	-0.024
Self-Employed	-0.006
No Training	-0.152***
Vocational Training	-0.096***
Master Craftperson, Polytechnics	0.041
University	0.210***
Miscellaneous Training	-0.003
Married	0.095***
Widowed	0.046*
Divorced	-0.117***
Single	-0.024
Children	-0.012*
Region	-0.344***
Constant	7.431***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 18

RIF-regression results at 75 % quantile - women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.003*
Years of Employment: Private Industry	0.012***
Years of Employment: Public Service	0.021***
Years of Employment: Civil Service	0.017***
noncontinuous employment-history	-0.191***
Has Never Been Employed	-0.137***
Worker	-0.155**
Employee	-0.017
Civil Servant	0.323*
Self-Employed	-0.014
No Training	-0.209***
Vocational Training	-0.141***
Master Craftperson, Polytechnics	0.181***
University	0.274***
Miscellaneous Training	-0.104***
Married	-0.187***
Widowed	-0.171***
Divorced	0.134***
Single	0.224***
Children	-0.021***
Region	-0.216***
Constant	6.949***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 19
Decomposition for 90 % quantile

	Log Own Pension b
overall	
men	7.871***
women	7.112***
difference	0.749***
explained	0.210***
unexplained	0.539***
explained	
Years of Employment: Self-Employed	-0.008**
Years of Employment: Private Industry	-0.034*
Years of Employment: Public Service	0.002**
Years of Employment: Civil Service	0.127***
noncontinuous employment-history	0.009
Has Never Been Employed	0.0001
Worker	-0.001
Employee	-0.021**
Civil Servant	-0.010
Self-Employed	0.001
No training	0.088***
Vocational Training	-0.013***
Master Craftperson, Polytechnics	-0.013
University	0.041***
Miscellaneous Training	-0.0001
Married	0.033***
Widowed	-0.002
Divorced	0.003**
Single	-0.001
Children	-0.003
Region	0.012***
unexplained	
Years of Employment: Self-Employed	-0.009 Years of
Employment: Private Industry	-0.226***
Years of Employment: Public Service	-0.176***
Years of Employment: Civil Service	-0.007
noncontinuous employment-history	0.054
Has Never Been Employed	0.0004

Worker	0.056
Employee	0.130*
Civil Servant	-0.008
Self-Employed	-0.0003
No training	-0.012
Vocational Training	-0.026
Master Craftperson, Polytechnics	-0.007
University	0.006
Miscellaneous Training	0.005
Married	0.170***
Widowed	0.097***
Divorced	-0.018***
Single	-0.026***
Children	0.067*
Region	0.011
Constant	0.459**
Observations	16519

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 20

RIF-regression results at 90 % quantile - men

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.008**
Years of Employment: Private Industry	-0.003*
Years of Employment: Public Service	-0.006**
Years of Employment: Civil Service	0.047***
noncontinuous employment-history	-0.020
Has Never Been Employed	-0.055
Worker	-0.054
Employee	0.195**
Civil Servant	-0.132
Self-Employed	0.046
No Training	-0.319***
Vocational Training	-0.261***
Master Craftperson, Polytechnics	-0.080
University	0.726***
Miscellaneous Training	-0.066
Married	0.105***
Widowed	0.007
Divorced	-0.150**
Single	0.037
Children	0.006
Region	-0.405***
Constant	7.948***
Observations	7280

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

Table 21

RIF-regression results at 90 % quantile - women

	Log Own Pension Coefficient
Years of Employment: Self-Employed	-0.004*
Years of Employment: Private Industry	0.009***
Years of Employment: Public Service	0.027***
Years of Employment: Civil Service	0.059***
noncontinuous employment-history	-0.135***
Has Never Been Employed	-0.134*
Worker	-0.193**
Employee	-0.060
Civil Servant	0.336
Self-Employed	0.050
No Training	-0.291***
Vocational Training	-0.206***
Master Craftperson, Polytechnics	0.087
University	0.564***
Miscellaneous Training	-0.154*
Married	-0.275***
Widowed	-0.231***
Divorced	0.095*
Single	0.411***
Children	-0.027***
Region	-0.453***
Constant	7.489***
Observations	9239

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: ASID 2007, authors' estimations

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