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Stung by pension reforms: the unequal impact of changes in state pension age on UK women and their partners

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Stung by Pension Reforms:

The unequal impact of changes in state pension age on UK women and their partners

Marina Della Giusta [a b]

Simonetta Longhi [a b]

[a] Department of Economics, University of Reading (UK)

[b] Institute for the Study of Labour (IZA), Bonn (Germany)

Abstract

We investigate the heterogeneity of the effect of having to wait for longer than expected to reach State Pension Age (SPA) on different groups of women and their partners. We find a positive impact on employment and labour force participation, but also large negative impacts on personal, financial, mental wellbeing and life satisfaction. The effects are larger for women with low education and for those without a partner, suggesting that changes in the SPA exacerbate existing inequalities. Our results caution against considering changes in SPA in isolation from personal and family circumstances, given that these affect outcomes significantly.

Highlights

- We study the heterogeneous impact of the change in State Pension Age in the UK
- We find positive impacts on employment but negative impact on wellbeing
- The negative impacts are larger for low-education and for single women
- State Pension Age reforms should account for the indirect increases in inequalities

1. Introduction

Between 2010 and 2020, women born in the UK in the 1950s have been affected by several reforms of the state pension age (SPA), resulting in increases of up to six years. Partly because of ack of effective communication, a large proportion of these women were not aware of the changes, thus leading to public discontent, campaigning and several parliamentary discussions (Thurley and McInness, 2020).

The overall effects of pension reforms are complex but are often analysed only partially. In their report to the European Commission, Bettio et al. (2013) remarked that gender imbalance in pensions is affected by three separate sets of factors. The first is ageing: women have higher life expectancy and their past employment patterns typically differ substantially to those of men both in participation and remuneration (Costa Dias et al., 2016); in addition, the effect of family arrangements are also asymmetrically distributed as evidence on the child wage penalty indicates (Kleven et al., 2019). The second factor is past pension reforms and particularly the asymmetric effects occurring from the privatisation of risk that has accompanied the shift from entitlement-based to benefit-based pensions. The third factor is the effect of short-term pressures connected to the different responses of women and men to labour market changes and economic crisis. In addition to reduced working lives due to caring responsibilities, pay and career gaps, women also make up the majority of those giving and receiving late life care (McKenna, 2017). The pension gap can thus be seen as the cumulative outcome of gender inequalities accumulated over the life course that determine women's lower pensions entitlements (Arcanio, 2019; Burkevica et al., 2015; Tinios et al, 2015).

Using changes in the UK SPA as a natural experiment, in this paper we concentrate on the effects that waiting longer than anticipated to reach SPA has on labour market participation, mental health and life satisfaction of women affected by the reform. To our knowledge, the effect on mental health and life satisfaction has not been analysed before. In addition, we investigate time use changes, income and financial wellbeing as possible mechanisms that affect wellbeing. Not only we analyse the effect on women, but also investigate spill-over effects on their partners which to our knowledge have rarely been considered in the large literature on gender impacts of pension reforms. Finally, we also provide novel evidence on the heterogeneity of the effects by showing that changes in the SPA have larger negative effects on women who already are more vulnerable to low income and poverty.

Ours is the first comprehensive analysis of the direct and indirect effects that the changes in the SPA in the UK had on cohorts of women born in the 1950s. Cribb et al. (2016)

and Cribb and Emmerson (2019) have analysed the impact of the change in the SPA on employment, income, poverty and deprivation using either cross-section or a very short panel of 5 quarters, focussing only on the first part of the reform By analysing the impact of the full reform that ended up equalising the SPA between men and women and by using an eight-year long panel data we control better for various confounding factors and are able to identify heterogeneous effects across groups of women by level of education, partnership status and phase of the reform. With the additional investigation of spill-over effects on partners, we provide important information for the design of future reforms wishing to redress gender inequality in later life.

2. Background

2.1. The Equalisation of the State Pension Age in the UK

Women born in the 1950s saw their SPA increase by as much as 6 years. This group was affected by several changes (Thurley and Keen, 2018): from the 1940s until April 2010, the SPA was 60 for women and 65 for men. The Pensions Act 1995 was intended to increase the SPA for women from 60 to 65 over the period April 2010 to 2020. However, the Coalition Government legislated a new Pensions Act in 2011 to accelerate the latter part of the increase: starting from April 2016 when women's SPA was 63, the new pension age would be increased to 65 by November 2018 rather than April 2020. The equalised SPA will then rise to 66 for both men and women by October 2020 (extended from the initial April proposal as concerns were raised about the short notice involved for some women to whom the increase would have been as much as two years). Provision to increase the equalised SPA from 66 to 68 in stages over the period 2024 to 2046 was included in the Pensions Act 2007, while the Pension Act 2014 brought forward the increase in SPA to 67 to the period 2026-2028.

Figure 1 below from Thurley and Keen (2018) illustrates these different changes in women's SPA. the figure allows us to see changes in expectation compared to the horizontal line (age 60) and compared to previous reforms. While the green line shows the timetable in the Pensions Act 1995 and Pensions Act 2007, the yellow line shows the timetable after the Pensions Act 2011, and the red line shows the timetable for increases to 67 after the Pensions Act 2014. The SPA that actually applies at the given points in time is the "upper bound" of the three curves.

FIGURE 1 ABOUT HERE

Thurley and Keen (2018) estimate that the number of women born in the 1950s affected by changes to the SPA exceeds 1.5 million. The document covers all UK-resident women born between 6 April 1950 and 5 April 1960 and incorporates SPA changes legislated for by the Pension Acts 1995, 2007 and 2011.

A large campaign was formed to protest against the reforms by the group of women who have been most affected, as several of them did not receive proper communication of the changes. WASPI (Women Against State Pension Inequality) was formed in 2015 to argue for the government to provide transitional payments to women born in the 1950s receiving their pension after the age of 60 and women who now receive a state pension but had to wait longer. This campaign, and associated ones, have been growing in strength with a petition with more than 100,000 signatories to Parliament resulting in a Parliamentary debate and legal action to challenge the decisions made and their communication to the women affected by them. Several parliamentary discussions on the issue have since occurred, but despite the debate, to date, there is still no comprehensive systematic evidence on the overall impact of the reform on affected women and on the heterogeneity of the impacts across different groups of women. One recent paper has for example highlighted how it is extremely likely that the way changes have been communicated has likely impacted women's ability to plan for retirement differentially by cognitive ability so that women of particular socioeconomic backgrounds are less likely to know about the changes (Holman et al 2020).

2.2. Effects of State Pension Age Reforms across Europe

Redressing gender inequalities resulting from pension systems alongside financial sustainability were officially announced as priorities for reform by the Lisbon European Council in 2000, and the request that pension provisions be reviewed to ensure equal treatment of women and men was established at the Laeken Summit in 2001. Bettio et al. (2013) estimated the gross gender pensions gap (the difference in average pensions before tax between women and men over 65) for 2013 across Europe at an average of 39% (the figure for the UK was 45% in that year), and the corresponding figures when estimated with median pensions were 42% for the EU average and 36% for the UK. When looking at the real values of mean pensions, it becomes evident that only two countries, Bulgaria and Cyprus, had mean pensions that were above the poverty line (the UK was exactly at the poverty line). When compared with pay gaps, pension gaps are generally wider across countries but there is no systematic relationship between the two, since they refer to two different groups of people, with women

now retired having probably experienced much wider pay gaps than younger women do. The UK belongs to the group of countries in which the pension system reproduces the labour market and amplifies – rather than reducing – gender inequality.

Even when legislation prohibits discrimination on the grounds of sex, indirect discrimination can still exist if a provision or criterion appears neutral but in practice impacts women negatively. The gender impact of reforms have been evaluated in a number of European countries: for example Bonnet et al (2015) for France, Corsi and D'Ippoliti (2009) for Italy and (Peinado, 2014) for Spain, finding negative impacts on women of increases to the number of years used to calculate the reference salary. In the UK, the review by the Pensions Commission in 2004[1] observed that the UK state pensions were amongst the least generous in the developed world (the basic state pension in 2012 was less than half the minimum wage for a 3 hour work week- £107 vs £217 and since 2016 the minimum wage -national living wage has risen by 21% to £305.20 a week compared to pension increases of 12% to £175.20 a week)[2] and that women experienced particular disadvantage, making recommendations to include those who had periods out of the labour market for caring responsibilities. As noted by Ginn and MacIntyre (2013), the review failed to account for the caring responsibilities that accrue to women in their 50s and 60s, when they often provide unpaid care for grandchildren, partners and other family members. Thus, even reforms that were intended to redress inequality failed to move from a breadwinner model and are thus not likely to reduce gender inequalities in older age (Foster et al., 2017). Indeed McKenna (2017) argues that the focus of reforms has been on improving financial sustainability of the system and reducing pressure on the working population, but encouraging work into later life can only be responded to by those who are able to do so and have no other constraints. Hence, men retiring in the UK in 2017 will be 45% better off than their female peers, leaving women vulnerable to poverty and more reliant on state support (Foster et al, 2014). Overall, these studies show that an equalisation of SPA combined with existing gender norms can still leave women facing higher risks of poverty and in fact may exacerbate the very gender inequalities it seeks to redress.

The income and labour market effects of the pension reforms in the UK have been analysed by Cribb et al. (2016) and Cribb and Emmerson (2019), who have found that increased earnings for those who were able to continue work partially offset the loss of state pension

[1] https://publications.parliament.uk/pa/cm200506/cmselect/cmworpen/1068/106804.htm

[2] In most of the 27 EU Member States the proportion of pensioners at risk of poverty (i.e.their equivalised disposable income after transfers was below 60% of the median) was between 10% and 25% in 2017. Between 2010 and 2017 the proportion of female pensioners at risk of poverty was around 2-3 percentage points higher than the rate for male pensioners (Eurostat News 15/01/2019).

income. This still left affected women's household incomes on average £32 per week lower due to the reform. The effect was larger for lower-income women (with an increased income poverty rate for women aged 60-62), who are also likely to be employed in less rewarding jobs. Cribb and Emmerson (2019) found the effects not to persist upon reaching SPA and that women managed to smooth consumption over the period. The displacement of caring activities provided by women upon retirement has been investigated cross-sectionally by Carrino et al. (2019), who show that an increase in employment substantially reduces the intensity of informal care with those working 30 hours/week reducing care-intensity by 6.6 hours/week, and the probability of providing intensive care (more than 20 hours per week) by 4 percentage points, with effects driven by women working in physically and psychologically demanding jobs.

Retirement is usually associated with improved mental health: using data from the Survey of Health, Ageing and Retirement in Europe Kolodziej and García-Gómez (2019) causally show that higher wellbeing is driven by selection into working later in life by exploiting differences in eligibility and retirement ages across countries, as well as changes within countries. They find protective effects of retirement on mental health across all countries, with larger protective gains for those close to the (clinically defined) threshold of being at risk of depression, and larger preserving effects for women and blue collar workers, perhaps suggesting once more that the nature of the job matters. Di Gessa et al. (2016) arrive at similar conclusions considering the association between working beyond SPA and measures of mental health among men aged 65-74 and women aged 60-69 who participate in the English Longitudinal Study of Ageing (waves 2-4) who were in paid work beyond the SPA. They found that it was those who were in good health and more socioeconomically advantaged that were working beyond the SPA to begin with, highlighting again the problem of self-selection and heterogeneous effects that SPA reforms are eliciting. It can thus be expected that having to work for longer than anticipated will at the very least delay an increase in wellbeing, and possibly worsen wellbeing on account of having to revise one's expectations. A recent paper focussing on the mental health effects of job strain shows that raising the SPA leads to an increase of up to 12 percentage points in the probability of depressive symptoms, alongside an increase in self-reported medically diagnosed depression among women in lower occupational grades (Carrino et al 2020).

3. Empirical Strategy

3.1. Data: the UK Household Longitudinal Study

We estimate the impact of the change in women's SPA using the Special Licence version of Understanding Society, the UK Household Longitudinal Study (UKHLS) [3] and use all waves available to date, from 2009-10 (wave 1) to 2016-17 (wave 8). UKHLS has various advantages over datasets that have been used in the past to evaluate the impact of changes in the SPA. First, its longitudinal nature allows us to combine a difference-in-difference approach with individual fixed effects, thus allowing a better identification of the causal impact of a transition from being below to being above retirement age. As the survey includes information on the month but not the day of birth, we assume that the treatment applies to women born from the 1st of the month instead of the 6th; hence, only a small proportion of women will be misclassified between control and different treatments. This minor issue applies also to previous research (e.g. Cribb et al. 2016; Cribb and Emmerson 2019).

Our sample includes women born between 1949 and 1965 and aged between 44 and 69. Women born in 1949 and up to March 1950 turn 60 in 2009/2010, and as they were not affected by the reform, they are our control group. Women born between April 1950 and March 1953 were affected by the first reform and reached their SPA between the ages of 60 plus one month, and 63 (i.e. between May 2010 and March 2016 depending on their month of birth). Women born between April 1953 and November 1953 were affected by the second reform, which saw a steeper increase in SPA. They reached their SPA between the ages of 63 plus three months and 65, between July 2016 and November 2018. Women born after December 1953 will reach their SPA in 2019; this wave is not available to date. As we use individual fixed effect in our estimation strategy, data for these younger cohorts of women contribute to the estimation of the coefficients for our covariates, but not to the estimation of the effect of the reform (as discussed in Section 3.2); hence, these cohorts do not fall in our control group. Sensitivity analyses discussed in Section 4.2 show that the results are robust to the exclusion of women born on or after 1954. Tables A1a and A1b in the Appendix show the number of observations by age and either year of the interview or year of birth. Overall, we observe 1,247 transitions: 125 among women not affected by the reform and 1,122 among women affected by the reform.

The second advantage of UKHLS is that it includes various individual characteristics, as well as information on attitudes and behaviours, thus allowing a more complete analysis of the socio-economic impact of the reform on various aspects of women's lives. We analyse the

[3] University of Essex, Institute for Social and Economic Research. (2019). *Understanding Society: Waves 1-8, 2009-2017 and Harmonised BHPS: Waves 1-18, 1991-2009: Special Licence Access*. [data collection]. *10th Edition*. UK Data Service. SN: 6931, http://doi.org/10.5255/UKDA-SN-6931-9.

impact of the reform on labour force participation and employment (as Cribb et al. 2016), but also on caring activities, on measures of subjective financial wellbeing, mental wellbeing, satisfaction with life overall, with household income, and with the amount of leisure time.

Third, the household nature of the data, whereby all adult members of the household are interviewed, allows us to analyse the impact of the reform on women with different living situations, thus comparing those with and without a partner, and, most importantly, it allows us to analyse the impact that the reform had on male partners' employment and wellbeing.

3.2. Method: Difference-in-Differences with Individual Fixed Effects

The reform allows us to analyse the labour market behaviour and wellbeing of affected women and their partners using a difference-in-difference approach (Angrist and Pischke 2015). The reform can be considered exogenous as it affects women depending on their year and month of birth. In addition, as discussed above, it is argued that the reform was largely unanticipated and women affected did not have enough time to adjust to it.

Similarly to Cribb et al. (2016) and Cribb and Emmerson (2019), the treatment (T_{ict}) is represented by a dummy which is 1 for women who are below the SPA. This treatment affects women born after (5th) April 1950, and younger women are treated for a longer period than older women. Our first set of models is:

$$y_{it} = \alpha T_{it} + \alpha_i + \lambda_t + \sum_{a=44}^{69} \delta_a (age_{it} = a) + X_{it}\beta + \varepsilon_{it} \quad (1)$$

Where T_{it} identifies the treatment; this is one if woman *i* is below SPA at time *t*, and zero if she is above it. The coefficient α is the additional effect of still being below SPA in comparison with a woman with similar age and characteristics who has already reached her SPA. The model also includes dummies for the survey year (λ_t), dummies for each year of age ($\sum_{a=44}^{69} \delta_a (age_{it} = a)$) as well as individual fixed effects (α_i). Dummies for cohort or year of birth are unnecessary since they would be perfectly collinear with the individual fixed effects.

Although the difference-in-difference method does not require that we observe women who transition between below to above the SPA (Atalay and Barret, 2015; Staubli and Zweimuller, 2013; Cribb et al 2016), the identifying assumption is that in the absence of the treatment the change in the dependent variable would have been comparable between treatment and control groups after controlling for background characteristics. Indeed, Staubli and Zweimuller (2013) suggest that the estimated effect of the reform in Austria decreases when

additional explanatory variables are included in the model. The advantage of using individual fixed effects is that they allow a better estimate of the causal impact of the reform by controlling for time-invariant individual-specific unmeasured factors that may vary between treated and control group (for example, work identity or gender role attitudes, which may vary across cohorts and affect the outcome variable of interest). In addition, the inclusion of individual fixed effects implies that only women who are observed both below and above SPA during the observation period (i.e. observed switching from one to zero) contribute to the identification of the effect of the reform. Since data for those not observed transitioning are not used for the identification of the treatment effect, this results in smaller samples but has the advantage of focusing on changes in behaviour of those women who are directly affected by the reform. While on the one hand our estimates may gain precision by only focusing on women who are observed transitioning, on the other hand the precision may be reduced by the smaller sample size. A sensitivity analysis comparing the results of models with and without individual fixed effects is discussed at the end of Section 4.2.

Our models also include standard additional explanatory variables that are likely to affect all our outcome variables (discussed below); these are: a dummy for married or cohabiting as opposed to single, widowed or divorced; a dummy for homeowners as opposed to renters, a dummy for having a long term health issue, and a dummy for the presence of other adults in the household. We also include a dummy identifying those who, from wave 6 onwards move from face-to-face to web interviews since this change may affect the way respondents answer to some of the survey questions.

Since our aim is to give an overview of the effect of the change in the SPA on different aspects of women's lives, we use a variety of dependent variables (y_{it}). First, in line with the previous literature, we focus on employment and economic activity to test whether the reform of the SPA increases the probability of women working. Our first dependent variable identifies labour force participation and is one for women who are either in paid employment, self-employment, or unemployed, and zero for those who are inactive. Our second dependent variable identifies employment and is one for women who are either employed or self-employed, and zero for those who are either unemployed or inactive. The difference between these two variables is only in the way unemployment is coded. The comparison between these two dependent variables is useful as it may be more difficult for older women to find a job compared to other demographic groups. In addition, previous studies suggested that changes in SPA may have increased the uptake of unemployment benefits (Staubli and Zweimuller, 2013).

Whether because of financial needs or because a change in the SPA represents a signal on the appropriate retirement age (Cribb et al. 2016), we would expect women affected by the reform to be more likely to be active in the labour market (i.e. working or willing to work) and/or employed than those not affected by the reform. Our third dependent variable distinguishes between bands of working hours: 0 (for those who do not work), more than 0 and up to 15, more than 15 and up to 30, and more than 30 hours per week. Working hours is the sum of hours spent on main and second jobs, and/or on self-employment per week.

Besides increasing employment, an increase in the SPA may have an effect on women's wellbeing due to changes in expectations, in time spent working vs. other commitments, changes in the financial situation, etc. While the descriptive literature finds that people who work later in life have higher levels of wellbeing, Kolodziej and García-Gómez (2019) causally show that this is driven by selection into working in later life. If working in older age is a constraint, e.g. because of the change in SPA, rather than a choice, we would expect a negative impact of the treatment on wellbeing. Our third and fourth dependent variables therefore are satisfaction with life overall and GHQ (General Health Questionnaire). Life satisfaction and GHQ measure different aspects of wellbeing: while life satisfaction is an overall long-term assessment of one's life, GHQ is a short-term evaluation of wellbeing which is associated to mental health. The measure of GHQ used here is a battery of 12 questions covering various aspects of mental wellbeing such as being able to concentrate, loss of sleep, anxiety, confidence, depression, and so on, with answers on a 4-point Likert scale. Each answer is then rescaled from 0 to 3 and answers to all questions are summed up to obtain an indicator ranging from 0 to 36, where higher values indicate worse mental health (Institute for Social and Economic Research, 2020). For ease of interpretation, we reverse-coded the GHQ measure so that higher values indicate better mental health. Life satisfaction is an ordered variable that varies between 1 (completely dissatisfied) to 7 (completely satisfied); higher values indicate higher levels of satisfaction.

We investigate two types of mechanisms that may lead to an effect of the change in the pension age on wellbeing. The first relates to time use: women who have to continue working may have to compromise on the amount of voluntary work they do, the amount of caring they provide to household and non-household members, and/or their amount of leisure time. While volunteering may easily change as a result of additional commitment, such as work, if the provision of care is related to needs, women may not be able to reduce the amount of care provided even if they remain active in the labour market. In this case it is likely that they will compensate with a reduction in volunteering and/or in their leisure time. We therefore estimate

models similar to those in Equation (1) where the dependent variable is either a dummy for whether women provide any amount of care either to household or non-household member, a dummy for whether women engage in any volunteering work, or a measure of satisfaction with the amount of leisure time, again measured on a scale from 1 to 7. The results are robust to different ways of measuring caring and volunteering, as discussed in Section 4.2.

The second mechanism we investigate is related to income and financial wellbeing. Cross-sectional evidence suggests that, despite increasing employment, the increase in the SPA also reduces household income and partially increases the risk of poverty (Cribb and Emmerson 2019). Here we focus on three subjective measures of financial wellbeing. The first measure reflects answers to the question "How well would you say you yourself are managing financially these days?" and results in a dummy which is zero for those who say either that they are "living comfortably" or "doing alright", and one for those who say they are "just about getting by", "finding it quite difficult", or "finding it very difficult" (the results are robust to the re-coding of "just about getting by" from one to zero). The second measure is a dummy which is one for those who say they are behind with some or all bills (results are robust to the inclusion of mortgage payment in the variable, but at the cost of a reduced sample size, since not all households have a mortgage). Our third and final measure is satisfaction with income, measured on a scale from 1 to 7.

Most models are estimated using OLS. Although satisfaction is an ordinal variable, it is commonly modelled as continuous to allow for the inclusion of individual fixed effects (Ferrer-i-Carbonell and Frijters 2004). Similarly, although labour force participation and employment are dummies, non-linear models including fixed effects do not allow a proper estimation of marginal effects; hence, for simplicity of interpretation, in our main specifications we use Linear Probability Models (LPMs). In contrast, as the dependent variable is categorical ordered and linear models would be inappropriate, the models for work hours are estimated using correlated random effects and the tables show the marginal effect for the four categories. Finally, we cluster our standard errors by year and month of birth to account for shocks in employment that might be correlated for women in the same cohort (we have more than 200 clusters).

3.3. Heterogeneous Effects and Spill-over Effects

We investigate various sources of possible heterogeneous effects of the increase in the SPA. First, the reform was designed in such a way that women were differently affected by the reform depending on their date of birth. Women affected by the first reform each month of

birth cohort had to wait one additional month to reach their SPA compared to the previous month of birth cohort. The second reform increased the SPA much more steeply as each month of birth cohort had to wait three additional months compared to the previous month of birth cohort. It is possible that women react differently to the treatment depending on the size of the treatment, which was three times as large for those affected by the second reform. On the other hand, younger women, who were affected by the second reform, had more time to update their expectations and behaviour and adapt to the change in SPA, and this may have partially reduce the impact of the reform on their wellbeing. To analyse heterogeneous effects of the two reforms we re-estimate all models discussed above with a different operationalisation of the treatment variable T_{it}. Following Beerli et al. (2018) the treatment variable is split into three mutually exclusive treatments, which distinguish the two reforms and the control group.

$$y_{it} = \alpha_0 T_{it} I(d_i = 0) + \alpha_1 T_{it} I(d_i = 1\ ) + \alpha_2 T_{it} I(d_i = 2\ ) + \alpha_i + \gamma_t + \lambda_t + \sum_{a=44}^{69} \delta_a (age_{it} = a) + X_{it}\beta + \varepsilon_{it} \quad (2)$$

Where the impact of the treatment is allowed to vary by type of reform: α_0 refers to women born before April 1950, and whose SPA was 60 (the control group); α_1 is the effect of treatment on those who were affected by the first reform (those born between April 1950 and March 1953); while α_2 is the effect on those who were affected by the second reform (those born between April 1953 and November 1953). Women born after November 1953 have not yet reached their SPA and, as they are not observed transitioning, they do not contribute to the estimation of the impact of the reform (hence, an additional term identifying this cohort would be deleted due to collinearity).

Heterogeneity of the impact of the reform may also depend on the individual situation of each woman. First, it is likely that the reform had a smaller impact on women with higher levels of education, since this group has a higher attachment to the labour market compared to women with lower levels of education (Lauder and Mayhew, 2020). We test if this is the case by re-estimating our models as in equation (1) after the inclusion of an interaction term between the treatment dummy and a dummy for holding a university degree.

Second, women who are living with a partner may be less affected by the reform if they can rely on additional income and support from their partner, while we may expect the reform to have a larger impact on women who are single, widowed or divorced (e.g. Cribb et al. 2016).

We test if this is the case by re-estimating our models as in equation (1) after the inclusion of an interaction term between the treatment dummy and the dummy for marital status.

Finally, we analyse spill-over effects by focusing on the male partners of those women who were affected by the reform. By affecting income, labour force participation and wellbeing of women, the reform may also have had an indirect effect on those who live with them. Therefore, we re-estimate the previous models where the treatment still refers to the female partner, but the dependent and other explanatory variables refer to the male partner. The sample includes men born between 1949 and 1965 and aged between 44 and 69 in the period 2009-2018 and who are either married or cohabiting with women in the estimation sample used in the rest of the analysis. Besides all other covariates, these models also include a dummy for whether the female partner has a job or not.

4. Empirical Results

4.1. Descriptive Analysis

Table 1 reports descriptive statistics for our control and treated groups. Given their different average age, the proportion of women still below their SPA at the time of the interview is lowest for the earlier cohorts, ranging from less than 5% for those born before April 1950 (first column of Table 1) who reached their SPA in the first two waves of the survey, to more than 97% for those born in April-November 1953 (third column of Table 1), who reached their SPA only from wave 7. Women born from December 1953 onwards (fourth column of Table 1), do not reach their SPA within the observation period, hence, 100% of the person-year observations are observed below their SPA.

Also related to age and SPA, the proportion of women who are active in the labour market and the proportion of those who have a job is larger for the younger cohorts. While the proportion of women who do not work or work less than 15 hours per week is lower for younger cohorts, the proportion of those who work more than 15 hours is larger. In terms of wellbeing, both GHQ and life satisfaction seem to be worse for younger cohorts. While there is no obvious pattern for the proportion of those who engage in caring activities, volunteering seems more likely for the older cohorts, who also show higher satisfaction with amount of leisure time. In contrast, the proportion of those who struggle financially and have problems paying bills seems larger for younger cohorts, as satisfaction with income is lower. Finally, while homeownership is more likely among the older cohorts, the presence of other adults in the household seems more likely for younger cohorts.

TABLE 1 ABOUT HERE

An initial indication of the impact of the reform on labour force participation is shown in Figure 2a. The figure plots the proportion of women who are active in the labour market (employed, self-employed or unemployed) across the four cohorts discussed above. There are clear differences in employment across the four groups. All four trends line seem rather close at age 55-57, after which they start to diverge. For women born before April 1950 the graph shows a steep decrease in labour force participation at 60 (their SPA), which we do not observe for the younger cohorts (whose SPA is after 60). For women born between April 1950 and March 1953, whose SPA is between 60 plus one month and 63 we see a gradual decrease in labour force participation, and the trend joins that of the older cohort around age 64-65. Labour force participation remains comparatively higher for the two younger cohorts, who show similar trends. For comparison, Figure 2b shows trends in labour force participation for men in the same cohorts, for whom there has been no change in the SPA: differences across men are smaller compared to differences across women.

FIGURES 2A AND 2B ABOUT HERE

The figures for the other dependent variables (for women only) are shown in the Appendix, Figures A1-A8. The figure for employment is very similar to Figure 2a, and clear cohort differences appear for the proportion of those who struggle financially as well as for satisfaction with income (Figures A6 and A8). For GHQ, life satisfaction and for the proportion of women engaged in caring activities differences are less clear (Figures A2 to A4), while there seem to be no differences across cohorts in the proportion of those struggling financially, of those having problems paying bills, and for satisfaction with leisure time or with finances (Figures A5 to A8).

4.2. Effect of the Increase in State Pension Age

Table 2 shows the impact that the reform had on women's labour market and wellbeing outcomes. Columns (1) and (2) suggest, in line with the previous literature, that being below the SPA increases women's probability of being in the labour market by 10.5 percentage points, and increases their probability of having a job by about 7.7 percentage points. Our estimates for employment are only marginally larger than what found by Cribb et al. (2016) using the

Labour Force Survey, focusing on the first part of the reform, and not including individual fixed effects.

In terms of hours worked, the marginal effects of the ordered probit model in Columns (5) show a decrease of about 7.3 percentage points in the probability of not working (working 0 hours) and an increase of about 6.6 percentage points in the probability of working full time (more than 30 hours). The changes in probabilities of working more than 0 hours but less than 30 (the two middle categories) are both small and less than 1 percentage point, but they are both statistically significant. Descriptive statistics show considerable inertia, with some exceptions, and that most moves are to the next category up. In particular, more than 90% of women who do not work do not transition to other categories. Among those working 0.1-15 hours, only about 59% do not change their state; almost 19% stop working, while 18% move to the next category (working 15.1-30 hours). Among those working 15.1-30 hours almost 75% do not change their state, while 11% move to working more than 30 hours per week. Finally, 85% of those working more than 30 hours per week remain in the same state.

Although Table 2 confirms that the increase in the SPA had the desired effect of keeping women in employment, Columns (3) and (4) also suggest clear negative impacts on wellbeing: women below the SPA have worse mental health (GHQ) as well as lower levels of life satisfaction.

TABLE 2 ABOUT HERE

Does the increase in women employment have a negative impact on other activities typically performed by women of this age such as caring activities? The first column of Table 3 suggests that this is not the case and there is no statistically significant difference in the probability of providing care. This result is robust to changes in the definition of caring: besides a dummy for providing any care (Table 3), we also experimented with dummies separating caring provided to household members vs. non-household members, as well as with dummies separating those who spend a significant amount of time in caring activities (we experimented with more than 5, 10 and 20 hours per week), including and excluding those who provide no care at all. This is in contrast with Carrino et al. (2019) who also use the UKHLS but do not exploit the panel nature of the data. Our results are consistent with the nature of caring activities, which are generally provided on the basis of need, and irrespectively on the working situation of the person who provides the informal care.

Not only the increase in the SPA did not seem to have any relevant effect on the probability of providing care, it also did not seem to have any relevant effect on the probability of volunteering, as shown in Column (2) of Table 3 (the smaller sample size is because questions on volunteering are only asked every other wave: 2, 4, 6, 8). These results are robust to changes in the definition of volunteering: we also estimated models using the number of hours spent volunteering, including and excluding those who do not engage in this activity. Descriptive statistics suggest that about half of women in our sample who provide care or engage in volunteering do not work, while the remaining half have a job. These proportions only vary slightly across waves, thus suggesting a lack of relationship between working and caring/volunteering; in contrast, among those who provide caring or volunteering more than 80% engage in only one of these two activities.

Column (3) of Table 3 suggests that women who are below the pension age experience a lower level of satisfaction with the amount of leisure time. This is consistent with the previous results: women below the SPA are more likely to work, but having the same probability of providing volunteering and informal care to household and non-household members, is likely to result in a decrease in the amount of leisure time compared to what desired, and a consequent decrease in satisfaction with it.

TABLE 3 ABOUT HERE

Besides time use, the increase in the SPA also had a negative financial impact. The bottom part of Table 3 suggests that women who are below the SPA are more likely to say that they are finding difficult to manage on their income (Column (4)), they are slightly more likely to be behind with bills (Column (5)) and are less satisfied with their household income (Column (6)).

As a sensitivity analysis, we have re-estimated the models in Tables 2 and 3 on a more restricted sample of women born between 1949 and 1953 and aged between 55 and 69. The results are robust to this change, with the only exceptions of the effects on life satisfaction, which is now statistically significant only at the 10% level, and on mental wellbeing, which is now not statistically significant. The results are reported in the Appendix, Tables A4a and A4b. We have also re-estimated our models without the individual fixed effects. In line with the previous literature, we have used non-linear models where appropriate (instead of LPMs) and included in the models additional explanatory variables: dummies for year of birth (cohort), dummies for levels of education, a dummy for those who are non-white British (i.e. ethnic

minority or immigrant). The estimated effects are slightly smaller for work and slightly larger for wellbeing but do not affect our conclusions. The results are reported in the Appendix, Tables A5a and A5b. Finally, we have re-estimated our models using correlated random effects probits instead of LPMs. The coefficients are consistent with the one discussed above, these results are available on request.

In summary, although the reform in the SPA had the desired effect of increasing women's employment and participation in the labour market, our results show that it also had a negative impact of various aspects of their wellbeing.

4.3. Heterogeneity and Spill-over Effects

While previous literature only focused on the first reform of the SPA (Cribb et al., 2016; Cribb and Emmerson, 2019), it is interesting to analyse whether the two reforms had similar impacts. While the second reform meant a much steeper increase in the SPA, it also allowed women more time to adapt their expectation to the norm of longer working lives. It is therefore an open question whether the second reform had a larger or smaller negative impact on wellbeing of affected women. The results of models separating women affected by the two different reforms, as discussed in equation (2), are in Table 4. Although for most models the three sets of dummies are not statistically different from each other, the results show a clear pattern. The increase in the probability of being in the labour market, the probability of having a job, as well as hours worked are relatively stable across groups, although with slightly smaller effects for those affected by the second reform. Although all groups seem to show a worsening in both life satisfaction and mental health, this is statistically significant only for women affected by the first reform (Columns (3) and (4)). In line with the previous results, there is no clear difference in the probability of providing care or volunteering across groups (Columns (6) and (7)), while satisfaction with leisure time and with income decrease (Columns (8) and (11)). The probability of struggling financially and the probability of having problems paying bills increase (Columns (9) and (10)). The effects are statistically different from zero only for the group of women who are affected by the first reform.[4] The effects are not statistically different from zero for women affected by the second reform; this may be partly affected by comparatively smaller sample sizes for this group. The results are also consistent with the hypothesis that women in this group had enough time to adapt their behaviour and expectations,

[4] For satisfaction with leisure time, satisfaction with income, and for the variable problems paying bills, the coefficients for the first reform are statistically different from the other two coefficients (not affected by the reform, and affected by the second reform) at the 10% level.

with a consequent comparatively lower negative impact on wellbeing; however, previous evidence suggests that, because of the lack of communication, even this group of women was unaware of how much they would have been affected by the additional changes in the SPA (Carrino et al. 2019).

TABLE 4 ABOUT HERE

Table 5 compares women with and without a university degree. The coefficient for the treatment group refers to women without a university degree, while the interaction term shows the differential impact on women with a university degree. Column (1) shows an increase in the probability of being active in the labour market, which does not differ between women with and without a degree. However, Column (2) also suggests that the increase in the probability of having a job is comparatively higher for women with a degree. As the difference between these two dependent variables is only in the way unemployment is coded, this suggests that the higher level of activity among women without a degree may result in higher unemployment, while this does not seem to be the case for women without a degree. Changes in hours worked do not show statistically significant differences between women with and without a university degree (Columns (5)).

There seem to be striking differences between women with and without a degree in their level of mental health. Column (3) shows a worsening in mental health among women without a university degree, while the interaction term suggests that the effect for women with a university degree is overall close to zero or possibly even positive. This is in line with research suggesting that the positive relationship between working later in life and wellbeing is the result of self-selection into working later in life (Graham, 2014); this positive self-selection is much more likely for women with a degree, who usually hold highly paying – and possibly more satisfying – jobs. The increase in the SPA has therefore resulted in increased inequalities in mental health between women with different levels of education. Accordingly, Columns (9) to (11) suggest that while women without a degree are much more likely to say they struggle financially, have problems paying bills and have lower level of satisfaction with their income, the interaction term suggests that, in contrast, women with a degree seem not to be affected on this front. On the other hand, there seems to be no difference between women with and without a university degree in their level of satisfaction with life (Column (4)), in their satisfaction with the amount of leisure time (Column (8)), nor in their probability of engaging in caring or volunteering activities (Columns (6) and (7)).

TABLE 5 ABOUT HERE

Table 6 compares women with and without a partner: the coefficient for the treatment group refers to women without a partner, while the interaction term shows the differential impact on women with a partner. We might expect the increase in the SPA to have a smaller effect on women with a partner since they may have additional savings, income and support to stop working at age 60 and before reaching their new SPA. Column (1) shows an increase in the probability of being active in the labour market, which does not differ between women with and without a partner, while Column (2) also suggests a small positive additional effect on having a job for those with a partner. Changes in hours worked do not show statistically significant differences between women with and without a partner (Columns (5)).

In terms of wellbeing, Columns (3) and (4) show a worsening in mental health and satisfaction with life among women without a partner; for women with a partner, however, the negative effect is greatly reduced. Similarly, Columns (9) to (11) suggest that while women without a partner are much more likely to say they struggle financially, have problems paying bills and have lower level of satisfaction with their income, the effect is again much reduced for women with a partner, consistent with the idea that partnered women may be able to fall back on comparatively larger overall household income and savings. However, this also suggest that the change in the SPA has increased inequalities in wellbeing between women with and without a partner. In addition, the probability of engaging in caring activities seems to reduce, while there seems to be no effect on the probability of volunteering, with no differences between women with and without a partner.

TABLE 6 ABOUT HERE

Finally, Table 7 focuses on spill-over effects and analyses whether there has been a change in behaviour and wellbeing of male partners of those women who have been affected by the reform. While the sample is now different (men instead of women), the model estimated is very similar to the one in equation (1): dependent and explanatory variables refer to men with the only exception of the variable “under state pension age”, which refer to the female partner. The results suggest that the reform of women’s pension age does not spill-over to their partners: the effects are all rather small and not statistically significant. The only exception is

the probability of engaging in caring activities, which seems to increase for men by 3.2 percentage points.

TABLE 7 ABOUT HERE

5. Conclusions

In this paper we have analysed the causal direct and indirect impact of reforms equalising state pension age (SPA) between women and men in the UK. We used the UK Household Longitudinal Study (UHKLS) for the period 2009-10 (wave 1) to 2016-17 (wave 8) to combine a difference-in-difference approach with individual fixed effects.

In line with Cribb et al. (2016) we find that the increase in the SPA increased women's probability of being in the labour market by 11.6 percentage points, their probability of having a job by about 9.3 percentage points, and their working hours by about 2 hours per week. However, we also found that the increase in the SPA had a negative financial impact on those affected, as we find that they are more likely to state that they find it difficult to manage on their income, they are behind with bills and, possibly as a consequence, are less satisfied with their household income. This suggests that consumption smoothing may not in fact be taking place (or not to satisfactory levels). We also investigated time use effects and found no statistically significant difference in the probability of providing care, but a lower level of satisfaction with the amount of leisure time; this suggests that women are likely to take on more responsibilities of both care and work as the SPA increases, with a negative impact on their leisure time. Perhaps not surprisingly, we also found that the increase in the SPA had a negative impact on mental health (GHQ) and on life satisfaction; these effects are stronger for those who have to wait for longer to reach SPA.

Although all groups seem to show a worsening in mental health, this is statistically significant only for those who must wait two or more additional years to reach their new SPA. Life satisfaction, on the other hand, seem to be worse for all women who must wait more than six months. This provides evidence of the damage caused by unanticipated changes in women's expectations, as well as the direct effect of leisure displacement and financial impacts. This is an important aspect of the effects of the reforms that has not been formally considered up to now.

We also found that both education and the presence of a partner helps mitigate some of these effects: it is those women without a degree who experience a pronounced worsening in

mental health while the effect for women with a university degree is overall close to zero or possibly even positive; moreover, for all outcomes analysed, the regression coefficients are consistently larger for women without a partner, thus suggesting that this group of women is particularly negatively affected by the reform. Finally, men whose female partner is affected by the increase in the SPA also show a higher probability to be active in the labour market and to have a job although, as one would expect, the magnitude of the effect is smaller than for women. Despite the change in employment behaviour, the reform had no impact on the male partners' mental health or wellbeing.

Our results provide insights on direct and indirect effects that pension reforms may have, and since they are not specific to the UK, they can be generalised to other countries that are seeking to implement similar pension age reforms. It is important that the positive fiscal impact of the increase in the SPA should be weighed against the negative effect on wellbeing and the consequent increase in inequality between those who can and those who cannot afford to retire at their preferred age. Additional inequalities are also created based on family structure (e.g. partnered vs. non-partnered women) and should be taken into account, suggesting that reforms should be not only communicated more effectively but also should target different groups differently accounting particularly for education levels and partnership status

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Figures and Tables

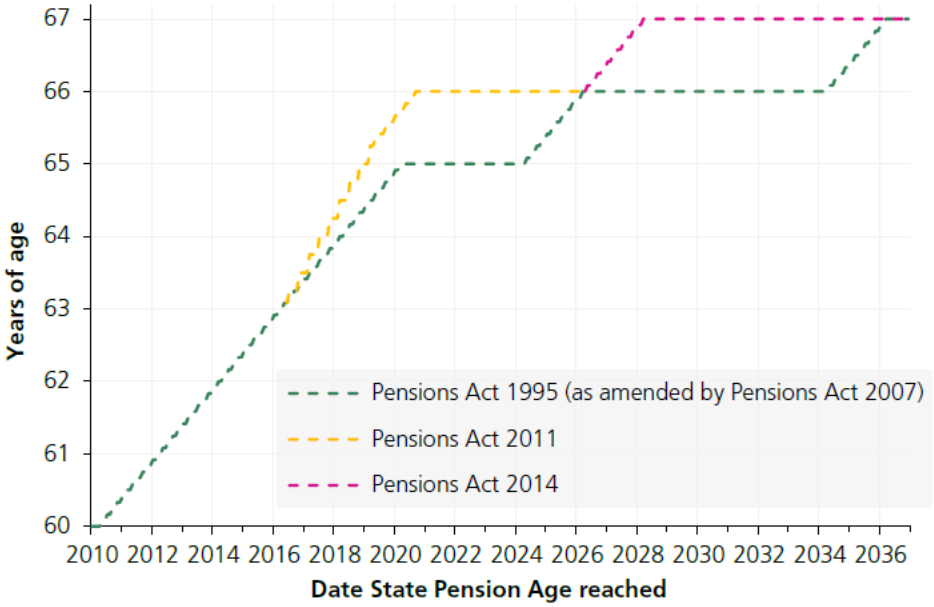

Figure 1: *"State Pension Age for women 2010 to 2036"* Source: Thurley and Keen (2018), page 5

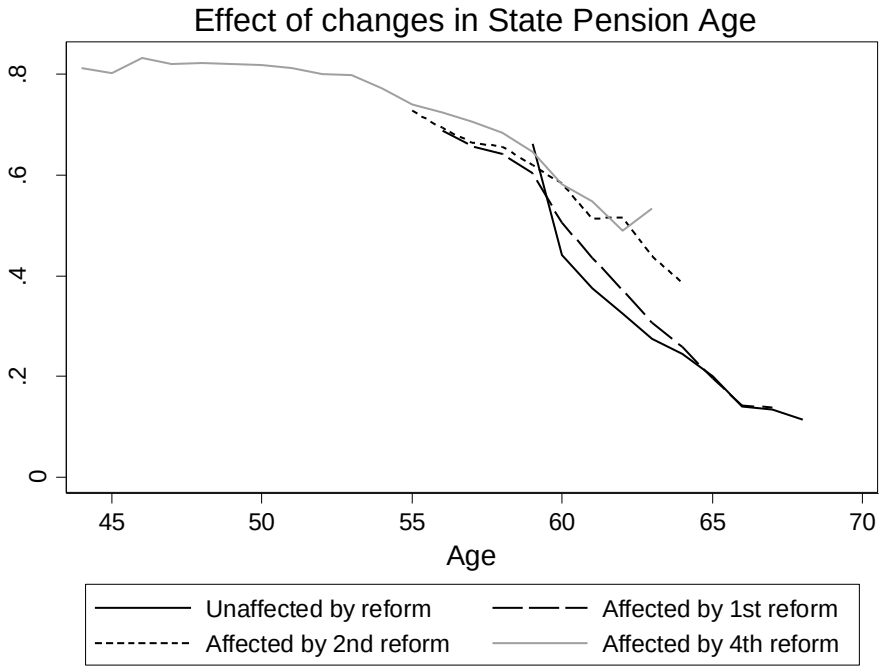

Figure 2a: Proportion of women active in the labour market, by cohorts

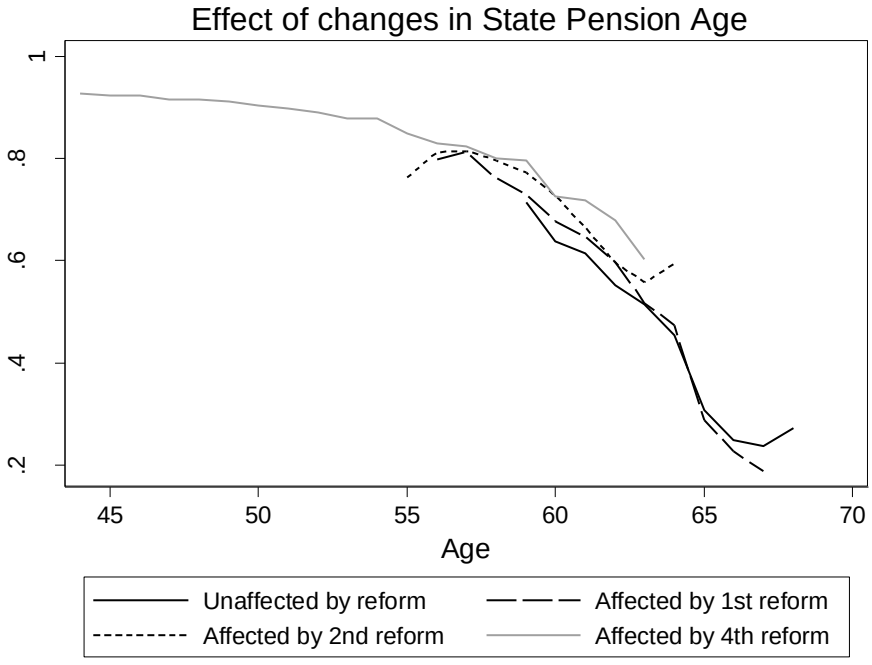

Figure 2b: Proportion men active in the labour market, by cohorts

Table 1: Descriptive statistics by cohorts

Born:	Before April 1950	April 1950 to March 1953	April 1953 to November 1953	From December 1953
Proportion observations under SPA	0.046	0.529	0.973	1
Proportion active (with a job or unemployed)	0.293	0.448	0.597	0.769
Proportion with a job (paid job or self-employed)	0.289	0.419	0.557	0.724
No work (0 hours)	0.691	0.573	0.441	0.277
Works 0.1-15 hours per week	0.107	0.083	0.093	0.073
Works 15.1-30 hours per week	0.108	0.163	0.211	0.253
Works more than 30 hours per week	0.094	0.181	0.255	0.397
GHQ	-11.06	-11.41	-11.81	-12.13
Satisfaction with life	5.344	5.223	5.162	4.956
Proportion caring	0.333	0.349	0.311	0.318
Proportion volunteering	0.254	0.215	0.206	0.195
Satisfaction with amount of leisure time	5.343	5.094	4.820	4.462
Proportion struggling financially	0.283	0.304	0.303	0.393
Proportion having problems paying bills	0.023	0.029	0.034	0.051
Satisfaction with income	4.849	4.725	4.653	4.397
Proportion answering via web	0.044	0.039	0.047	0.041
Average age	63.11	60.90	59.18	52.47
Proportion married or cohabiting	0.711	0.696	0.702	0.711
Proportion homeowners	0.849	0.798	0.765	0.765
Proportion having a long term illness	0.481	0.481	0.489	0.392
Proportion with other adults in the household	0.205	0.266	0.330	0.444
Person-year observations min	1,656	4,123	1,019	19,165
Person-year observations max	3,443	8,634	2,131	40,356

The minimum number of observations refer to volunteering, as this question is asked every other wave. The number of observations for most other variable is equal or close to the maximum number of observations.

Table 2: Effect of being below SPA on employment and wellbeing

	(1) Active in the labour market	(2) Has a job	(3) Mental health (GHQ)	(4) Life satisfaction
Under SPA	0.105***	0.077***	-0.476***	-0.116**
	(0.012)	(0.012)	(0.170)	(0.054)
Average of depended variable:	0.681	0.642	-11.94	5.03
Observations (person/year)	54564	54564	48303	48094

Hours worked	(5a) 0 hours	(5b) 0.1-15	(5c) 15.1-30	(5d) More than 30 hours
Under SPA	-0.073***	-0.002***	0.008***	0.066***
	(0.009)	(0.000)	(0.001)	(0.008)
Percentages in each category	0.356	0.075	0.228	0.338
Observations (person/year)			54564	

All coefficients are estimated using linear models with individual fixed effects with the exception of hours worked; for hours worked the table shows marginal effect from a correlated random effects ordered probit model.

Standard errors in parenthesis are clustered by year-month of birth.

* Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Other covariates included: a full set of dummies for year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A2. GHQ ranges between -36 and 0.

Table 3: Effect of being below SPA on caring, volunteering, and financial wellbeing

	(1)	(2)	(3)
	Caring	Volunteering	Satisfaction with amount of leisure time
Under SPA	-0.016	0.021	-0.143***
	(0.015)	(0.014)	(0.049)
Average of the depended variable:	0.323	0.202	0.63
Observations (person/year)	46686	25963	48066

	(4)	(5)	(6)
	Struggles financially	Problems Paying bills	Satisfaction with income
Under SPA	0.080***	0.013**	-0.196***
	(0.012)	(0.005)	(0.054)
Average of the depended variable:	0.369	0.045	4.49
Observations (person/year)	52766	54460	48088

All coefficients are estimated using linear models with individual fixed effects. Standard errors in parenthesis are clustered by year-month of birth. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Other covariates included: a full set of dummies year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A3.

Table 4: Effect of being below SPA by type of reform

	(1) Active in the labour market	(2) Has a job	(3) Mental health (GHQ)	(4) Life satisfaction	(5a) 0 hours	(5b) 0.1-15	(5c) 15.1-30	(5d) More than 30 hours
Under SPA x Before reform	0.125***	0.118***	-0.321	-0.037	-0.071***	-0.005**	0.003***	0.073***
	(0.038)	(0.035)	(0.419)	(0.095)	(0.025)	(0.002)	(0.001)	(0.027)
Under SPA x First reform	0.104***	0.075***	-0.469***	-0.119**	-0.047***	-0.003***	0.003***	0.046***
	(0.013)	(0.013)	(0.174)	(0.056)	(0.008)	(0.001)	(0.000)	(0.008)
Under SPA x Second reform	0.086***	0.065***	-0.956	-0.165	-0.033**	-0.002*	0.002***	0.033**
	(0.024)	(0.024)	(0.620)	(0.198)	(0.015)	(0.001)	(0.001)	(0.015)
Observations (person/year)	54564	54564	48303	48094			54564	

Women with a degree	(6) Caring	(7) Volunteering	(8) Satisfaction with amount of leisure time	(9) Struggles financially	(10) Problems paying bills	(11) Satisfaction with income
Under SPA x Before reform	0.050	0.039	-0.060	0.086**	-0.009	-0.106
	(0.059)	(0.067)	(0.129)	(0.039)	(0.014)	(0.155)
Under SPA x First reform	-0.019	0.020	-0.160***	0.079***	0.014***	-0.212***
	(0.014)	(0.014)	(0.051)	(0.012)	(0.005)	(0.054)
Under SPA x Second reform	-0.057	0.035	0.158	0.075	0.017	0.092
	(0.078)	(0.032)	(0.175)	(0.068)	(0.016)	(0.162)
Observations (person/year)	46686	25963	48066	52766	54460	48088

All coefficients are estimated using linear models with individual fixed effects with the exception of hours worked; for hours worked the table shows marginal effect from a correlated random effects ordered probit model. Standard errors in parenthesis are clustered by year-month of birth. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Before reform: applies to women born before April 1950, their SPA was 60. First reform: applies to women born between April 1950 and March 1953, their SPA increased at the slower rate, and was between age 60 plus one month, up to 64, depending on month of birth. Second reform: applies to women born between April 1953 and December 1953, their SPA increased at a faster rate, and was between age 64 plus three months and 66 depending on month of birth.

Other covariates included: a full set of dummies for year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A6.

Table 5: Effect of being below SPA by education level

	(1) Active in the labour market	(2) Has a job	(3) Mental health (GHQ)	(4) Life satisfaction	(5a) 0 hours	(5b) 0.1-15	(5c) 15.1-30	(5d) More than 30 hours
Under SPA	0.098***	0.062***	-0.633***	-0.132**	-0.065***	-0.002***	0.007***	0.060***
	(0.012)	(0.012)	(0.195)	(0.061)	(0.009)	(0.000)	(0.001)	(0.008)
Under SPA x University Degree	0.043	0.080***	0.707**	0.074	-0.025	-0.001	0.002	0.025
	(0.029)	(0.029)	(0.302)	(0.077)	(0.017)	(0.001)	(0.001)	(0.017)
Observations (person/year)	54149	54149	47998	47893			54149	

Women with a degree	(6) Caring	(7) Volunteering	(8) Satisfaction with amount of leisure time	(9) Struggles financially	(10) Problems paying bills	(11) Satisfaction with income
Under SPA	-0.025*	0.019	-0.142***	0.098***	0.017***	-0.247***
	(0.015)	(0.015)	(0.054)	(0.013)	(0.006)	(0.056)
Under SPA x University Degree	0.045	0.004	-0.011	-0.094***	-0.019**	0.223***
	(0.033)	(0.032)	(0.087)	(0.020)	(0.009)	(0.080)
Observations (person/year)	46478	25849	47865	52403	54050	47887

All coefficients are estimated using linear models with individual fixed effects with the exception of hours worked; for hours worked the table shows marginal effect from a correlated random effects ordered probit model. Standard errors in parenthesis are clustered by year-month of birth. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Other covariates included: a full set of dummies for year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A7.

Table 6: Effect of being below SPA by marital status

	(1) Active in the labour market	(2) Has a job	(3) Mental health (GHQ)	(4) Life satisfaction	(5a) 0 hours	(5b) 0.1-15	(5c) 15.1-30	(5d) More than 30 hours
Under SPA	0.102***	0.049**	-0.940***	-0.248***	-0.080***	-0.002***	0.009***	0.072***
	(0.018)	(0.019)	(0.232)	(0.081)	(0.017)	(0.000)	(0.003)	(0.015)
Under SPA x Married/Cohabiting	0.004	0.040*	0.674***	0.192**	0.009	0.000	-0.001	-0.008
	(0.018)	(0.021)	(0.232)	(0.086)	(0.017)	(0.001)	(0.001)	(0.017)
Observations (person/year)	54564	54564	48303	48094			54564	

Women with a degree	(6) Caring	(7) Volunteering	(8) Satisfaction with amount of leisure time	(9) Struggles financially	(10) Problems paying bills	(11) Satisfaction with income
Under SPA	-0.046**	0.006	-0.212***	0.162***	0.026***	-0.400***
	(0.023)	(0.020)	(0.076)	(0.019)	(0.009)	(0.096)
Under SPA x Married/Cohabiting	0.036	0.021	0.100	-0.120***	-0.019**	0.297***
	(0.024)	(0.022)	(0.080)	(0.020)	(0.009)	(0.095)
Observations (person/year)	46686	25963	48066	52766	54460	48088

All coefficients are estimated using linear models with individual fixed effects. Standard errors in parenthesis are clustered by year-month of birth. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Other covariates included: a full set of dummies for year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A8.

Table 7: Effect of being below SPA on their (male) partners

	(1) Active in the labour market	(2) Has a job	(3) Mental health (GHQ)	(4) Life satisfaction	(5a) 0 hours	(5b) 0.1-15	(5c) 15.1-30	(5d) More than 30 hours
Female partner's Under SPA	-0.006	-0.006	0.137	-0.034	0.001	0.000	0.000	-0.002
	(0.018)	(0.018)	(0.185)	(0.066)	(0.011)	(0.001)	(0.002)	(0.014)
Average of the depended variable:	0.812	0.770	-10.43	5.20	0.237	0.032	0.079	0.653
Observations (person/year)	25272	25272	20434	22209			25272	

Women with a degree	(6) Caring	(7) Volunteering	(8) Satisfaction with amount of leisure time	(9) Struggles financially	(10) Problems paying bills	(11) Satisfaction with income
Female partner's Under SPA	0.032*	0.004	0.082	0.019	0.000	-0.100
	(0.019)	(0.020)	(0.076)	(0.018)	(0.005)	(0.074)
Average of the depended variable:	0.224	0.200	4.67	0.316	0.029	4.66
Observations (person/year)	11117	20339	20337	22093	25233	20345

All coefficients are estimated using linear models with individual fixed effects. Standard errors in parenthesis are clustered by year-month of birth. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Other covariates included: a full set of dummies for year of the survey, for each year of age, a dummy for those who are married or cohabiting (as opposed to single, divorced, widowed), one for homeowners (as opposed to renters), and one for having a long term illness, one for the presence of other adults in the household, and one for mode of interview. Full results in the Appendix, Table A9.