ESSAYS ON GENDER AND SUBJECTIVE WELLBEING AMONG OLDER ADULTS FROM THE DEVELOPING WORLD

Clémence Marie Joan KIENY

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FACULTÉ DES HAUTES ÉTUDES COMMERCIALES

DÉPARTEMENT D'ÉCONOMIE

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THÈSE DE DOCTORAT

présentée à la

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pour l'obtention du grade de
Docteure ès Sciences Économiques,
mention « Économie politique »

par

Clémence Marie Joan KIENY

Directeur de thèse
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Jury

Prof. Marianne Schmid Mast, présidente
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CH-1015 Lausanne

I M P R I M A T U R

Sans se prononcer sur les opinions de l'autrice, la Faculté des Hautes Etudes Commerciales de l'Université de Lausanne autorise l'impression de la thèse de Madame Clemence Marie Joan KIENY, titulaire d'un bachelor en Science politique de l'Université de Genève, et d'un master en Économie politique de l'Université de Lausanne, en vue de l'obtention du grade de docteure ès Sciences économiques, mention « économie politique ».

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La Doyenne

Marianne SCHMID MAST

Members of the Thesis Committee

Prof. Jürgen MAURER

University of Lausanne, Faculty of Business and Economics

Thesis supervisor

Prof. Rafael LALIVE

University of Lausanne, Faculty of Business and Economics

Internal member of the thesis committee

Prof. Eric BONSANG

University Paris-Dauphine, Laboratoire d'économie et de gestion des organisations de santé

External member of the thesis committee

University of Lausanne
Faculty of Business and Economics

PhD in Economics
Subject area Political Economy

I hereby certify that I have examined the doctoral thesis of

Clemence KIENY

and have found it to meet the requirements for a doctoral thesis.
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made during the doctoral colloquium
have been addressed to my entire satisfaction.

Signature: _____ Date: ____04.11.2021__

Prof. Jürgen MAURER
Thesis supervisor

University of Lausanne
Faculty of Business and Economics

PhD in Economics
Subject area Political Economy

I hereby certify that I have examined the doctoral thesis of

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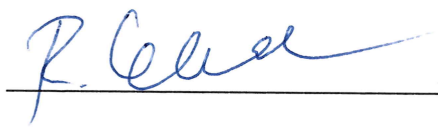
Signature:  Date: 3.11.2021

Prof. Rafael LALIVE
Internal member of the doctoral committee

University of Lausanne
Faculty of Business and Economics

PhD in Economics
Subject area Political Economy

I hereby certify that I have examined the doctoral thesis of

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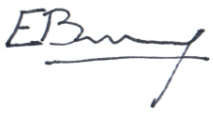

Signature: Date: 04/11/2021

Prof. Eric BONSANG
External member of the doctoral committee

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Introduction

This thesis consists of three independent essays focusing on the subjective well-being (SWB) of older adults in developing countries, with a specific attention to gender inequalities. A better understanding of the drivers of SWB among older adults may provide relevant information to policy-makers regarding the targeting of interventions and potential levers for policies to increase the SWB of this growing part of the population. Moreover, women represent the majority – and often the most vulnerable part – of the older population worldwide. Analyzing potential gender differences in SWB in older adults is thus essential.

SWB measures are increasingly recognized as essential complements to traditional indicators of economic performance and social progress (Dolan et al. 2011; Stiglitz et al. 2009). Indeed, an essential objective of public policy should be to maximize the welfare of citizens, and individuals are arguably the best judges of their own interests and well-being. Moreover, there is growing evidence that SWB measures are related to objective indicators of health (Krueger and Stone 2014). SWB is a multidimensional concept, comprising at least two distinct dimensions, commonly referred to as evaluative and emotional well-being (Dolan et al. 2017; OECD 2013; Pavot et al. 1991). Evaluative well-being captures individuals' cognitive appraisal of their own quality of life, while emotional (and in particular experienced) well-being aims to represent individuals' affective experiences in daily life (OECD 2013; Stone et al. 2013).

This research exploits data from the World Health Organization's Study on Global AGEing and Adult Health (SAGE) (2007-2010), a survey of individuals aged 50 and above conducted in low- and middle-income countries. In addition to extensive individual- and household-level information, SAGE includes a large array of questions regarding individuals' SWB, covering both evaluative and emotional well-being dimensions. Remarkably, SAGE also contains an abbreviated version of Kahneman's Day Reconstruction Method (DRM) (Kahneman et al. 2004), which combines data on time use with measurements of affective experiences through time, allowing the construction of an experienced well-being measure of emotional well-being.

Chapter 1, entitled *"Assessing and decomposing gender differences in evaluative and emotional well-being among older adults in the developing world "* is co-authored with Gabriela Flores and Jürgen Maurer, and published in the *Review of Economics of the Household* (Kieny et al. 2021). This first step of my research investigates potential gender differences in SWB among older adults in five low- and middle-income countries (China, Ghana, India, Russia, and South Africa). We compare and contrast the association of gender with two measures of evaluative well-being – *life satisfaction* and the *WHOQoL-8 index* – and two measures of emotional well-being – the *emotion score* and *experienced well-being*.

Moreover, we assess both *age-adjusted* and *multivariable-adjusted* associations of gender and each SWB measure. *Age-adjusted* results uncover the *de facto* differences in well-being across genders. *Multivariable-adjusted* analyses account for potential gender differences in individual characteristics and life circumstances, and thus isolate the partial association of gender and SWB *ceteris paribus.* Finally, we perform Oaxaca-Blinder decompositions to disaggregate the gender gaps in SWB into explained parts - attributable to gender differences in individual characteristics and life circumstances - and unexplained parts - related to gender differences in the association between life circumstances and subjective well- being. Our results show that women tend to be disadvantaged in terms of both evaluative and emotional well-being, and that this disadvantage is mostly driven by less favorable life circumstances of older women, such as gender differences in socio-economic status and health.

Chapter 2, *"Deconstructing gender differences in experienced well-being among older adults in the developing world: the roles of time use and activity-specific affective experiences"* is co-authored with Gabriela Flores and Jürgen Maurer and published in *Social Indicators Research* (Flores et al. 2020). In the second part of this research, I deepen the understanding of the relationship between gender and SWB by concentrating specifically on one measure of SWB, i.e. experienced well-being. After quantifying gender differences, we deconstruct them into the contributions of the two components of experienced well-being: time use and activity-specific net affect. As in Chapter 1, we perform all our analyses using both *age-adjusted* and *multivariable-adjusted* regressions (referred to as *fully-adjusted* in Chapter 2 to comply with the nomenclature used in the published article). Our *time use* results show that women spend more time performing housework than men, while men spend more time working and traveling. Moreover, our findings regarding gender differences in *activity-specific net affect* show that women have lower affective experiences than men across most activities. This difference is however not linked to intrinsic gender differences, but to the conditions under which these activities are performed, and in particular to the higher level of disability and lower income of older women compared to men of the same age. Finally, using a thought experiment, we show that the *age-adjusted* gender difference in experienced well-being is mostly linked to women reporting lower net affect for all activities, rather than to differences in time use, due to a compensation between the two activities considered most unpleasant, work – performed mostly by men – and housework – performed mostly by women. However, *ceteris paribus*, gender differences in time use also contribute to lower levels of experienced well-being of women compared to men, as the time spent in unpleasant activities by women exceeds that of men with similar individual characteristics and life circumstances.

Finally, Chapter 3, entitled *"Is retirement bliss? Assessing the impact of work cessation on subjective well-being in Russia"* focuses on one of the major transitions facing older adults and entailing many consequences likely to affect SWB. This chapter analyzes the causal impact of work cessation at

retirement age on SWB in Russia, independently from any potential income effect associated with retirement. I focus on the Russian Federation because of its universal and well-defined pension system over the study period (2007-2010). Recognizing that retirement experiences may be different for men and women, I analyze the impact of work cessation on SWB separately by gender. In order to circumvent the issue of the endogeneity of retirement decisions, I exploit the strict age-based eligibility rules for old-age pension in Russia to construct an instrument variable for work cessation and use a Fuzzy Regression Discontinuity Design approach. As in Chapter 1, I evaluate the effects of work cessation at pensionable age on all four well-being measures as well as on an alternative version of the *emotion score* that includes only pure emotions, removing indicators of physical discomforts. My findings demonstrate that emotional well-being improves in the overall study population – especially for men – while evaluative well-being is mostly unaffected by work cessation for both genders. Moreover, I show that the absence of impact of work cessation on evaluative well-being is not due to a compensation between different life domains, and that the positive impact on emotional well-being is linked both to an increase in positive as well as to a decrease in negative emotions, but is not associated with physical discomfort variables. I posit that the determinants underlining each dimension of SWB may explain the fact that only emotional well-being is affected by work cessation. On the one hand, the absence of impact on evaluative well-being may be explained by the fact that retirement is a socially accepted transition, thus not affecting individuals' judgement of their own life. On the other hand, the improvement in emotional well-being may be due to a change in time use, with pleasurable leisure activities replacing unpleasant work duties.

This thesis provides several important contributions to the current body of knowledge. In particular, Chapters 1 and 2 contribute to the methodological debate regarding the use of control variables (Blanchflower and Oswald 2008; 2009; Glenn 2009). In the context of this debate we contrast all our descriptive analyses first controlling for age only, and then for a rich set of control variables. We find that each approach yields different results, shedding a complementary and equally important light on the association between gender and SWB. In addition, our review of the empirical literature reveals an inconsistency of results regarding the relationship between gender and SWB - in particular discrepancies between studies focusing on emotional vs. evaluative dimensions. It is plausible that these apparent contradictions may be attributable to the use of different databases or methodological approaches. Chapters 1 and 2 of this thesis thus provide a valuable opportunity to assess these relationships comprehensively, using information on both the evaluative and emotional well-being of the same individuals, while contrasting partial and total associations. Moreover, conducting this research simultaneously in several countries allows us to confirm the robustness of our findings across different geographic regions, cultures and stages of economic development. Similarly, Chapter 3

provides the first causal evidence on the impact of work cessation on several measures of both evaluative and emotional SWB in the same study sample. Moreover, while previous studies regarding the impact of retirement on SWB often concentrate on men only (e.g., Bonsang and Klein 2011; Horner 2014), our research not only includes women but also specifically analyzes gender differences. Finally, this research is among the few to assess the impact of work cessation independently from the income effect associated with retirement, and the first to do so in the context of Russia.

My research contributes to improving the understanding of the drivers of older persons' SWB — especially in low- and middle-income countries. As such, it may provide relevant insights to policymakers considering options to improve the welfare of older adults, and to reduce gender-based inequalities in this population.

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1 Chapter 1: Assessing and decomposing gender differences in evaluative and emotional well-being among older adults in the developing world

Clémence Kieny (University of Lausanne)

Gabriela Flores (University of Lausanne)

Jürgen Maurer[1] (University of Lausanne)

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[1] Corresponding author: Clémence Kieny, is a PhD candidate at the University of Lausanne, Internef, Dorigny, 1015 Lausanne, Switzerland (phone: +41 76 380 98 82; email: clemence.kieny@unil.ch).
Gabriela Flores, PhD, contributed to this work during her employment at the University of Lausanne, Faculty of Business and Economics. She has since then become an employee of the World Health Organization (Health financing department), 20 avenue Appia CH-1211 Geneva 27, Switzerland, (email: floressg@who.int). The arguments made in this paper are entirely those of the authors. They do not necessarily represent the views of the World Health Organization.
Jürgen Maurer, PhD, is a professor of Economics at the University of Lausanne, Faculty of Business and Economics, Internef, Dorigny, 1015 Lausanne, Switzerland (email: jurgen.maurer@unil.ch). Jürgen Maurer acknowledges support for this research by the Swiss Agency for Development and Cooperation (SDC) and the Swiss National Science Foundation through the Swiss Programme for Research on Global Issues for Development (r4d programme) by the grant "Inclusive social protection for chronic health problems" (Grant number: 400640_160374).

Abstract

Using data from the World Health Organization's Study on Global AGEing and Adult Health (SAGE), we evaluate the relationship between gender and several measures of subjective well-being among older adults in developing countries. Furthermore, we contrast the partial associations of gender with these well-being measures when controlling only for age (*age-adjusted* analyses) with the corresponding partial associations when including individual characteristics and life circumstances as controls (*multivariable-adjusted* analyses). While *age-adjusted* analyses reveal that older women have lower levels of evaluative well-being than older men, *multivariable-adjusted* analyses show that - given similar life circumstances - they have equal or slightly higher evaluative well-being. This suggests that the gender gap in evaluative well-being may be explained by less favorable life circumstances of older women. *Age-adjusted* results also show that older women tend to have lower levels of emotional well-being. However, we find no reversal, but merely an attenuation of these gender differences in emotional well-being when controlling for additional individual characteristics and life circumstances. Finally, we perform Oaxaca-Blinder decompositions to disaggregate the gender gaps in well-being into *explained* parts - attributable to gender differences in individual characteristics and life circumstances - and *unexplained* parts - related to gender differences in the association between life circumstances and subjective well-being. These results further corroborate our findings that women tend to be disadvantaged in terms of both evaluative and emotional well-being, and that this disadvantage is mostly driven by observable factors related to the explained part of the decomposition, such as gender differences in socio-economic status and health.

Keywords: Subjective Well-being; Evaluative Well-being; Emotional Well-being; Gender; Low- and Middle-income Countries; Decomposition Analysis

JEL : I31, J16, J14

1.1 Introduction

In spite of encouraging trends towards the reduction of gender inequalities in many aspects of life during the last decades (Stotsky et al. 2016), women continue to face circumstances that often inequitably affect their well-being. For example, data collected between 2000 and 2016 in about 90 countries indicate that women spend roughly three times as many hours in unpaid domestic and care work as men (United Nations Publication 2018), which may contribute to gender differences in subjective well-being in favor of men (Flores et al. 2020). Moreover, women tend to be overrepresented among the poor (Quisumbing et al. 2001; OECD 2013) and often control a lower share of households' resources (Grabka et al. 2015), while also being less likely to influence their household's financial and other important family decisions (Bernasek and Bajtelsmit 2002; Luhrmann and Maurer 2008). Corresponding life-long gender differences in wealth accumulation may thereby impact the well-being of older women in particular by hindering their financial security (Grabka et al. 2015). Finally, although women generally outlive men, women nonetheless often have higher prevalence of functional health limitations than men (Verbrugge 1985; Denton et al. 2004). In view of the above differences, and according to the *double jeopardy hypothesis*, older women may be particularly vulnerable. Indeed, being both old and female, older women belong to a population group that may be subject to the *"combined negative effects of occupying two stigmatized statuses"*, which can be *"greater than occupying either status alone"* (Chappell and Havens 1980, p. 157). Moreover, living in poorer countries may further exacerbate this vulnerability relative to corresponding old-age gender differences in high-income countries (Jayachandran 2015).

However, old age may not always result in lower levels of subjective well-being, as suggested by several theories such as the *socio-emotional selectivity theory* (Carstensen 1995; Carstensen et al. 1999), the *emotional maturity theory* (Kato et al. 1996; Ticehurst et al. 1996), or the *selective optimization with compensation theory* (Baltes and Baltes 1990) as well as corresponding empirical work on this topic (Blanchflower and Oswald 2008; Stone et al. 2010; Carstensen et al. 2011; Dolan et al. 2017; Kieny et al. 2020). By contrast with the *double jeopardy hypothesis*, the *age as leveler hypothesis* argues that gender inequalities may be decreasing in old age, as all individuals suffer from the physical effects of age (Markides and Black 1996). In addition, as argued by Knodel and Ofstedal (2003), older men may be disadvantaged as compared to older women in some spheres. From a life course perspective, for example, women may benefit from greater role continuity as care-givers, while men may suffer from role disruption and loss of social status after retirement, which can lead to reduced self-esteem and loss of social support. Moreover, older mothers may benefit from greater emotional loyalty from their adult children than older fathers (Knodel and Ofstedal 2003).

Against this background, our study aims at investigating and interpreting gender differences in subjective well-being among older adults from several low- and middle-income countries. Subjective well-being is a multifaceted concept comprising at least two key dimensions: evaluative and emotional well-being[2]. Quantitative analyses of evaluative well-being are more common in the well-being literature in economics and intend to capture the cognitive evaluation that individuals have of their own life. Assessments of emotional well-being, by contrast, quantify and contrast the positive and negative affective experiences of individuals such as feeling calm, relaxed, worried, or angry. Positive and negative affects may also be combined into an overall affect balance score, capturing so-called "net affect". Measures of evaluative well-being may be more influenced by memory, individual reporting biases, cultural disposition and self-conceptualization than measures of emotional well-being (Kahneman and Krueger 2006; Kahneman and Riis 2005). Beyond capturing complementary aspects of subjective well-being, evaluative and emotional well-being differ with respect to their antecedents and consequences (Kahneman and Riis 2005), and thus often show different associations with individual life circumstances such as employment status (Knabe et al. 2010) or income (Kahneman and Deaton 2010).

We use data from the World Health Organization's Study on Global AGEing and Adult Health (SAGE), to compare gender differences in evaluative and emotional well-being in five low- and middle- income countries. In the first part of our analysis, we compare the partial association between subjective well-being and gender when adjusting only for age ("*age-adjusted* models" hereafter) with the corresponding partial association in models that incorporate a large set of additional covariates ("*multivariable-adjusted* models" hereafter). The use of control variables in well-being research is subject to a methodological debate. Supporters of an approach using few or no control variables (Glenn 2009) argue that the "total effects" (i.e., the sum of direct and any indirect effects through other variables) obtained through uncontrolled regressions are most relevant for informing policy decisions, especially if some adjusters represent so-called "bad controls" (Angrist and Pischke 2009). By contrast, advocates of approaches based on more extensive multivariable adjustments claim that understanding of the relationship between age and well-being cannot be achieved through focusing solely on bivariate relationships (Blanchflower and Oswald 2008; Blanchflower and Oswald 2009). We use both approaches in our study: The *age-adjusted* models allow us to examine gender differences in subjective well-being keeping only age fixed, which is more akin in spirit to simple population group comparisons, while the *multivariable-adjusted* models allow us to estimate the partial association

[2] Some definitions of subjective well-being also include the concept of "eudaimonic" well-being, which focuses on a person's functioning and realization of her potential. (Kapteyn et al. 2015)

between gender and well-being *ceteris paribus*. Contrasting the estimates from these models allows us to further investigate the potential role of individual characteristics and life circumstances on the two dimensions of subjective well-being and corresponding gender differences, even if we cannot identify any causal effects in our cross-sectional study design.

Differences in subjective well-being between men and women may be due to corresponding gender differences in the occurrence of observable characteristics (i.e., one gender having different characteristics or life circumstances, such as health, education, and income levels in addition to gender), but could also be due to the way men and women respond to these individual characteristics and life circumstances, e.g., through gender differences in resilience in the face of adversity. Indeed, there is evidence from the psychological literature that men and women show marked differences in their perceptions of and reaction to similar circumstances (Hyde 2007). Therefore, in the second part of our analysis, we use Oaxaca-Blinder decompositions to explore how much of the happiness gap can be attributable to the different observable conditions of men and women as compared to the different ways in which men and women react to the same objective conditions.

Our findings show that women report lower levels of both evaluative and emotional well-being than men of the same age. However - when life circumstances and individual characteristics are controlled for - we find that the gender gap in subjective well-being diminishes drastically, suggesting that differences cannot be attributed solely to an intrinsic gender effect.

1.2 Data and measures

We use individual- and household-level data from respondents aged 50 and over living in five low- and middle-income countries (China, India, Ghana, Russia and South Africa), which were collected as part of the first wave (2007-2010) of the World Health Organization's Study on Global AGEing and Adult Health (SAGE)[3]. SAGE's database contains comprehensive information on respondents' socio-demographic characteristics, social environment, health and healthcare use, as well as subjective well-being and quality of life. The well-being section includes information regarding both evaluative and emotional well-being. In particular, SAGE contains an abbreviated version of the Day Reconstruction Method (DRM) (Kahneman et al. 2004), which can be used to construct a measure of experienced well-being. A validation study by Miret et al. (2012) shows that SAGE's abbreviated version of the DRM yields similar data to the administration of a full DRM and therefore delivers a reliable measure of experienced well-being.

[3] Specifically, data was collected between 2007 and 2010 in China, in 2007 and 2008 in Ghana, in 2007 in India, in 2007, 2008 and 2010 in Russia, and in 2007-2008 in South Africa.

We compare evaluative and emotional measures of subjective well-being using four different variables: *Life Satisfaction* and the *WHO Quality of Life Index* to measure evaluative well-being, and *Emotion Score* and *Experienced Well-Being* to assess emotional well-being.

1.2.1 Life Satisfaction

Life Satisfaction is measured using a scale from 1 to 5 based on respondents' answer to the question *"Taking all things together, how satisfied are you with your life as a whole these days?"*, where 1 corresponds to very dissatisfied and 5 to very satisfied.

1.2.2 WHO Quality of Life Index (WHOQoL-8 index)

The *WHO Quality of Life Index* is a composite measure of satisfaction encompassing eight areas: general quality of life, health, energy for everyday life, ability to perform activities of daily living, self-esteem, personal relationships, financial situation, and living conditions. Respondents report their level of satisfaction in each area on a scale from 1 (very dissatisfied) to 5 (very satisfied). The *WHOQoL-8* index (also referred to as *EUROHIS-QOL 8* index) is then constructed by aggregating answers from all domains (Power 2003).

1.2.3 Emotion Score

The *Emotion Score* quantifies respondents' affective experiences over the previous day. Individuals report whether they experienced certain emotions during the previous day, disaggregated between 11 negative (feeling worried, rushed, irritated, depressed, tense/stressed, lone/bored, physical pain, sleepiness, stomach ache, headache) and three positive emotions (feeling calm, feeling relaxed, and smiling or laughing a lot). We construct the *Emotion Score* as the sum of positive minus negative experiences.

1.2.4 Experienced Well-Being

Experienced Well-Being is a duration-weighted measure of emotional experiences as people go about their everyday lives. We combine time use and activity-specific affect information provided by the abbreviated DRM module of the SAGE data. Respondents report ten successive activities from a list of 22 potential activity types, which they performed during a predetermined period of the day preceding the interview. Respondents indicate how much time they spent in each activity and the prevalence and intensity of two positive (feeling calm or relaxed, and feeling enjoyment), and five negative emotions (feeling worried, rushed, irritated or angry, depressed, tense or stressed). The intensity of each emotion is measured on a three-point scale and aggregated into a measure of "net affect" (Kahneman and Krueger 2006). Due to the large number of potential activity types, some of the 22 activities are reported with low frequencies. Following previous research (Flores et al. 2015; Flores et

al. 2020; Kieny et al. 2020), we thus reclassify the 22 activities into five broader activity groups[4] - work, housework, travel, leisure, and self-care - to facilitate statistical estimation.

Following Kahneman and Krueger (2006), we define respondent i's net affect during activity group a, $u_{i,a}$, as:

$$u_{i,a} = \sum_{s=1}^{10}\left(\sum_{\mathrm{l}} h_{is} PA_{is}^{l} - \sum_{\mathrm{k}} h_{is} NA_{is}^{k}\right) \forall a = 1, \ldots, 5 \quad \textbf{(1)}$$

Where $PA_{is}^{l}$is the l'th positive affect and $NA_{is}^{k}$is the k'th negative affect recounted by respondent i for each spell s of possibly multiple reports of activity group a. We take the time-weighted average of positive and negative affect scores in order to control for multiple incidences of the same activity group. The net affect of activity a, $u_{i,a}$, is the weighted sum of net affects over all the occurrences of activity group a in the previous day, where the weight h_{is} is the proportion of time spent on each spell s during which activity group a was reported, compared to the total time spent in this activity group. By simply summing positive and negative affects, we assume that net affects are cardinal and that the utility function is time-separable.

We then define *Experienced Well-Being* as the duration weighted sum of net affects by activity group:

$$U_i = \sum_{\mathrm{a}} \tau_{\mathrm{ia}} u_{ia} \quad \textbf{(2)}$$

Where $\tau_{\mathrm{ia}} = \frac{T_{ia}}{T_i}$ represents the share of non-sleeping time T_{ia} spent on activity group a by individual i, relative to the total time covered by the 10 successive activity groups reported, T_i, and $u_{i,a}$ represents respondent i's net affect during activity group a.

1.2.5 Explanatory variables

While the *age-adjusted* regressions control only for age besides gender, the *multivariable-adjusted* regressions control for a considerably larger set of respondents' sociodemographic characteristics and measures of economic status, namely age, household permanent income quartiles[5], marital status, number of adults and children living in the household, urban or rural residence, education level and employment status. These models also incorporate measures of respondents' health status by including the WHO disability index (includes information regarding cognition, mobility, self-care, getting along, life activities, and participation), and self-assessed pain (measures the degree of pain

[4] **Work:** working, subsistence farming. **Housework:** preparing food, doing housework, watching children, shopping, providing care to someone. **Travel**: walking somewhere, traveling by bicycle, traveling by car/bus/train. **Leisure**: rest (including tea/coffee break), chatting with someone, playing (including cards/ games), reading, listening to radio, watching TV, exercising or leisure walk, other leisurely activity. **Self-care**: grooming or bathing (self), eating, religious activity, intimate relations/sex.

[5] We construct household income quartiles based on SAGE's permanent income variable as a proxy for living standards of individual household members.

and discomfort experienced in the last month, and whether it caused difficulties in everyday life). Finally, these *multivariable-adjusted* regressions also include measures of social cohesion such as community involvement (participation in social activities), trust in different groups (neighbors, co-workers or strangers), feeling of safety in the neighborhood and suffering of a violent crime in the last 12 months. It is of note that some factors which are known to affect well-being and may vary by gender and age are not controlled for. Among others, we are not able to control for the share of joint resources controlled by the woman in couples and families[6], the ability to make one's own decisions within the household, how one's situation compares to others' in the community, or the recent deaths of loved ones.

1.3 Econometric models

1.3.1 Partial associations

Evidence shows that well-being measures depend strongly on cultural background (Diener et al. 2003). We, therefore, estimate regressions first on the full sample including country-specific binary variables to control for country differences in intercepts (called pooled models) (equations 3.1. and 4.1. below) before moving to country-specific estimations on each country's subsample (equations 3.2. and 4.2 below). The multi-country setting of our data provides a valuable way of checking the robustness of our findings across countries. In addition, all our measures of subjective well-being are standardized at the country level, which allows us to interpret coefficients in terms of multiples of standard-deviation units within the country-specific distributions of the subjective well-being measure under consideration.

We begin our analysis by evaluating whether there is a gender gap in subjective well-being when controlling only for age. We regress each measure of subjective well-being on our $Female$ variable and ten-year age dummies (as well as country dummies in the case of estimation on the pooled sample). Specifically, we estimate the following models on the pooled sample (3.1) and the country-specific samples (3.2), respectively:

$$SWB_i = \alpha^A + \beta^A\, Female_i + Age_i\vartheta^A + Country_i\theta^A + \epsilon_i^A \quad \textbf{(3.1)}$$

$$SWB_i = \alpha^A + \beta^A\, Female_i + Age_i\vartheta^A + \epsilon_i^A \quad \textbf{(3.2)}$$

We then evaluate how the partial association of gender with each measure of subjective well-being changes when controlling for additional personal characteristics and measures of individual life circumstances. Hence, we estimate *multivariable-adjusted* gender gaps in subjective well-being by

[6] Evidence shows that there may be strong income inequality within households, and that women are the poorer partner in a majority of cases (Haussen 2019).

performing the same regressions while controlling for a larger set of explanatory variables X_i into our models. X_i , thereby, includes ten-year age dummies as well as explanatory variables related respondents' sociodemographic characteristics, economic status, health, and social cohesion (as described in the previous section).

$$SWB_i = \alpha^F + \beta^F Female_i + X_i\gamma^F + Country_i\theta^F + \epsilon_i^F \textbf{ (4.1)}$$

$$SWB_i = \alpha^F + \beta^F Female_i + X_i\gamma^F + \epsilon_i^F \textbf{ (4.2)}$$

To ensure the accurate estimation of the corresponding conditional means of subjective well-being for obtaining mean differences in subjective well-being across population groups (Solon et al. 2013), we estimate these regressions by OLS using sample weights.

1.3.2 Decomposition analyses

In the second part of our analysis, we explore to what extent differences in objective life circumstances explain differences in subjective well-being between women and men. We use a decomposition analysis based on Neumark (1988) and inspired by that used by Case and Paxson (2005) to analyze sex differences in morbidity and mortality. This decomposition allows us to assess the role of gender-specific differences in the prevalence of participant's observable characteristics in the unconditional gender differences in subjective well-being. The decomposition is based on estimating separate linear models for the whole population and for each gender:

$$SWB_i = z_i'\beta^{All} + \varepsilon_i^{All} \textbf{ (5)}$$

$$SWB_i = z_i'\beta^{Women} + \varepsilon_i^{Women} \; if \; Female = 1 \textbf{ (6)}$$

$$SWB_i = z_i'\beta^{Men} + \varepsilon_i^{Men} \; if \; Female = 0 \textbf{ (7)}$$

where the vectors of β parameters include intercepts and z_i refers to the vector of explanatory variables. z_i includes 10-year age dummies, as well as covariates related to respondents' sociodemographic characteristics, economic status, health, and social cohesion (the full list of explanatory variables is described in the data section above). In addition, in pooled sample regressions, z_i includes country dummies.

Following Neumark (1988), the unconditional mean gender difference in subjective well-being can be expressed as follows:

$$\Delta = \overline{SWB}^{Men} - \overline{SWB}^{Women}$$

$$= \bar{z}^{Men\prime}\beta^{Men} - \bar{z}^{Women\prime}\beta^{Women}$$

$$= \underbrace{(\bar{z}^{Men} - \bar{z}^{Women})'\,\beta^{All}}_{Explained} + \underbrace{\left[\bar{z}^{Men\prime}\left(\beta^{Men} - \beta^{All}\right) + \bar{z}^{Women\prime}\left(\beta^{All} - \beta^{Women}\right)\right]}_{Unexplained} \textbf{ (8)}$$

where β^{All} is the vector of coefficients from the full-sample model, and $\bar{z}^{Men}$ and $\bar{z}^{Women}$ are vectors of explanatory variables evaluated at the means for men and women, respectively.

The explained part represents the part of the unconditional difference in subjective well-being that is due to differences in endowments, i.e., individual characteristics and life circumstances, between the two genders. It measures the contribution of differences in the prevalence of different factors in Z between men and women. The unexplained part represents the part of the unconditional difference in subjective well-being that is related to differences in coefficients. This part of the decomposition amounts to differences in the way men and women react to or evaluate their objective circumstances as indicated by their gender-specific partial associations with the different subjective well-being measures. The unexplained part also captures potential gender differences due to other unobserved factors, which are reflected in gender differences in the intercepts of the regression.

1.4 Descriptive statistics

Table 1 presents sample summary statistics by gender and corresponding gender differences in characteristics for the pooled sample as well as for each country. We observe that individual characteristics and life circumstances of men and women differ widely in our sample. To begin with, women are considerably less likely to be married in all countries, which may reflect the fact that they generally live longer and marry older men, resulting in earlier and more frequent widowhood. We also observe small differences in household composition, where women appear to live in smaller households (which may also be linked to the higher likelihood of being a widow). In addition, older women generally have lower socio-economic status than older men: Older women are significantly less educated and less likely to work compared to older men. Everywhere but in India and China, women are more likely to be in the two lowest quartiles of the household permanent income distribution and less likely to be in the highest quartile. Moreover, women appear to have significantly worse health than men, as indicated by higher levels of both disability score and self-assessed pain. Finally, women are less likely to report trusting others or feeling safe in their neighborhoods than men, and tend be less involved in community activities in all countries but South Africa and Russia.

Table 1: Summary statistics of explanatory variables by gender and country

	Pooled				Ghana				China				India				South Africa				Russia			
	All	**Female**	**Male**	**Diff.**	**All**	**Female**	**Male**	**Diff.**	**All**	**Female**	**Male**	**Diff.**	**All**	**Female**	**Male**	**Diff.**	**All**	**Female**	**Male**	**Diff.**	**All**	**Female**	**Male**	**Diff.**
Age	62.27	62.75	61.76	0.99***	64.21	64.27	64.16	0.11	62.47	62.91	62.02	0.88***	61.42	61.40	61.44	-0.04	61.44	61.76	60.92	0.84	63.56	64.81	61.75	3.06***
Age 50-59	0.47	0.45	0.50	-0.05***	0.41	0.39	0.42	-0.02	0.45	0.44	0.47	-0.04***	0.49	0.47	0.50	-0.03	0.50	0.49	0.53	-0.05	0.48	0.42	0.56	-0.15***
Age 60-69	0.230	0.30	0.30	0.00	0.27	0.28	0.26	0.02	0.32	0.31	0.32	-0.01	0.31	0.32	0.30	0.02	0.31	0.31	0.31	-0.00	0.23	0.24	0.22	0.03
Age 70-79	0.18	0.20	0.16	0.04***	0.23	0.24	0.23	0.01	0.19	0.21	0.17	0.04***	0.16	0.16	0.16	0.00	0.14	0.16	0.11	0.05**	0.21	0.25	0.15	0.09***
Age 80+	0.05	0.06	0.05	0.01***	0.09	0.09	0.09	-0.00	0.04	0.05	0.04	0.01**	0.04	0.05	0.04	0.01	0.05	0.05	0.05	0.00	0.09	0.10	0.07	0.03*
Rural	0.56	0.53	0.60	-0.07***	0.59	0.58	0.60	-0.02	0.53	0.50	0.57	-0.08***	0.74	0.73	0.75	-0.02	0.38	0.39	0.37	0.02	0.28	0.26	0.31	-0.05
Married	0.74	0.63	0.87	-0.25***	0.58	0.30	0.85	-0.55***	0.85	0.80	0.9	-0.10***	0.76	0.61	0.91	-0.30***	0.47	0.32	0.72	-0.39***	0.54	0.42	0.71	-0.30***
Number of children in household	0.90	0.89	0.92	-0.03	1.90	1.79	2.01	-0.22**	0.22	0.22	0.21	0.01	1.92	1.97	1.88	0.10	0.91	0.98	0.78	0.20**	0.16	0.15	0.17	-0.02
Number of adults in household	3.36	3.21	3.52	-0.31***	3.60	3.32	3.86	-0.55***	2.47	2.44	2.50	-0.06**	4.84	4.70	4.98	-0.29***	3.01	3.01	3.01	0.00	2.21	2.06	2.42	-0.36***
Education years	5.89	4.85	7.00	-2.15***	4.19	2.81	5.44	-2.63***	5.53	4.50	6.56	-2.05***	3.71	1.57	5.78	-4.21***	6.13	5.86	6.54	-0.68**	11.17	10.96	11.47	-0.52**
Working	0.43	0.30	0.58	-0.28***	0.70	0.67	0.73	-0.07***	0.44	0.35	0.54	-0.19***	0.43	0.21	0.64	-0.44***	0.32	0.25	0.45	-0.20***	0.41	0.35	0.50	-0.15***
Q1: Permanent Income	0.22	0.23	0.21	0.02**	0.23	0.25	0.21	0.04**	0.21	0.21	0.21	0.01	0.24	0.25	0.23	0.02	0.26	0.25	0.29	-0.05	0.21	0.24	0.18	0.06**
Q2: Permanent Income	0.24	0.25	0.22	0.02***	0.26	0.28	0.23	0.05***	0.23	0.24	0.23	0.01	0.23	0.24	0.23	0.01	0.28	0.31	0.24	0.07*	0.24	0.27	0.21	0.06*
Q3: Permanent Income	0.26	0.25	0.27	-0.01	0.26	0.26	0.26	0.00	0.29	0.28	0.30	-0.01	0.24	0.23	0.25	-0.02	0.21	0.23	0.19	0.04	0.24	0.25	0.24	0.01
Q4: Permanent Income	0.28	0.27	0.30	-0.03***	0.26	0.21	0.30	-0.09***	0.27	0.27	0.27	0.00	0.29	0.28	0.29	-0.01	0.24	0.22	0.28	-0.06**	0.30	0.25	0.38	-0.13***
WHO disability index	0.00	0.15	-0.16	0.31***	0.00	0.17	-0.15	0.32***	0.00	0.09	-0.09	0.18***	-0.00	0.22	-0.21	0.43***	-0.00	0.07	-0.11	0.19**	0.00	0.14	-0.21	0.35***
Self-assessed pain	-0.00	0.14	-0.15	0.29***	0.00	0.13	-0.12	0.25***	0.00	0.10	-0.10	0.20***	-0.00	0.19	-0.19	0.38***	0.00	-0.07	0.11	-0.17**	0.00	0.14	-0.21	0.35***
Community involvement	0.00	-0.16	0.17	-0.34***	-0.00	-0.15	0.13	-0.28***	0.00	-0.05	0.05	-0.11***	-0.00	-0.37	0.36	-0.73***	0.00	0.02	-0.03	0.05	0.00	-0.01	0.02	-0.03
Trust	0.00	-0.08	0.08	-0.16***	-0.00	-0.08	0.07	-0.14***	0.00	-0.02	0.02	-0.03	0.00	-0.20	0.19	-0.40***	-0.00	-0.06	0.10	-0.16**	-0.00	0.00	-0.01	0.01
Safety	-0.00	-0.13	0.14	-0.266***	-0.00	-0.08	0.07	-0.15***	-0.00	-0.16	0.17	-0.33***	0.00	-0.10	0.10	-0.20***	-0.00	-0.06	0.10	-0.16**	-0.00	-0.12	0.17	-0.29***
Victim of a violent crime (last 12m)	0.02	0.02	0.02	0.00	0.04	0.04	0.04	0.00	0.02	0.02	0.01	0.00	0.03	0.03	0.03	-0.00	0.07	0.05	0.08	-0.03*	0.01	0.02	0.01	0.01
Observations	21,478	11,504	9,974		3,026	1,452	1,574		8,996	4,765	4,231		4,832	2,392	2,440		1,999	1,211	788		2,625	1,684	941	

*(p < 0.10), ** (p < 0.05), ***(p < 0.01)

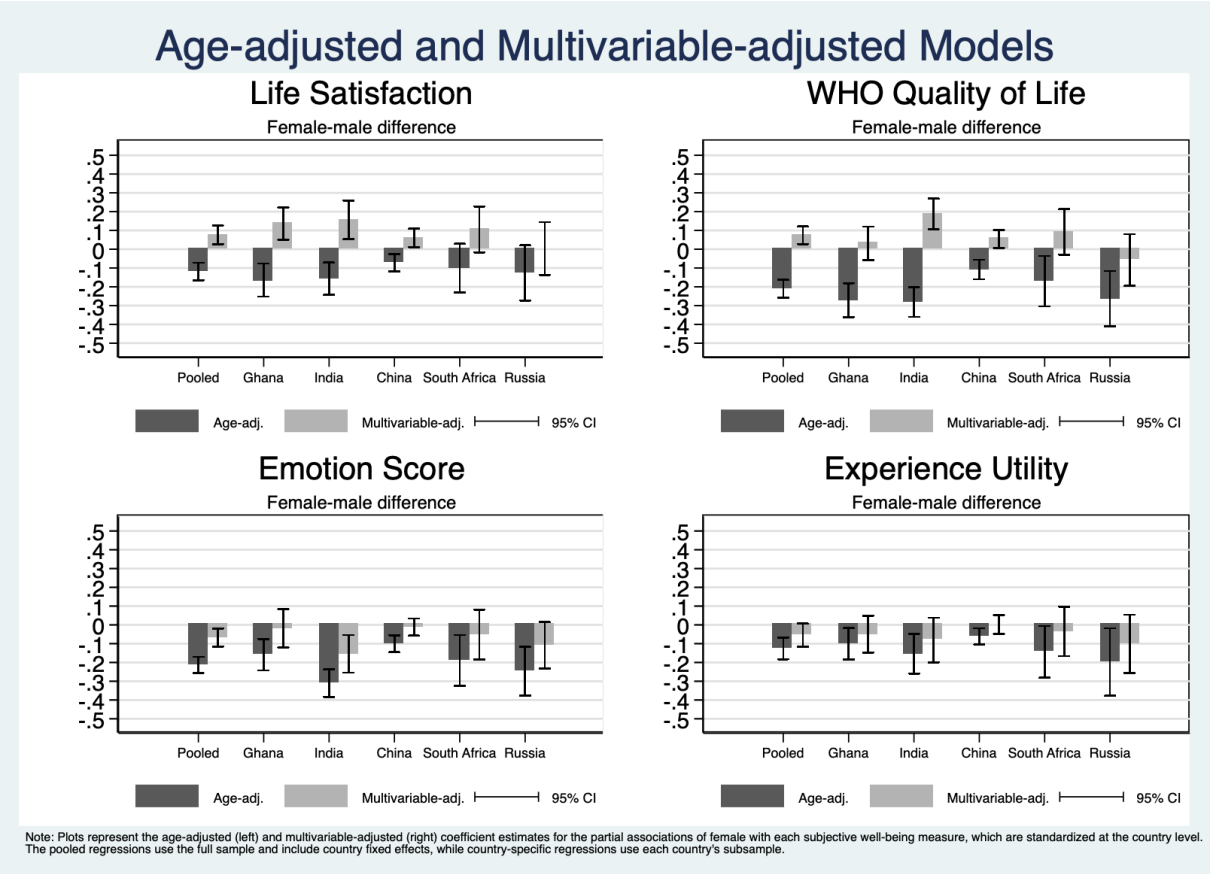
Note: The entries in each column are averages by gender and the associated difference in sample averages. The pooled averages are based on the full sample from all countries, while country-specific averages use each country's subsample. Differences between genders are computed by running a regression of the respective explanatory variables on the gender-dummy (and country fixed effects in the case of the pooled sample). The reported significance of the difference between genders is based on a standard t-test. WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level, such that differences in these measures are measured in country-specific standard deviation units of each variable.

1.5 Results

1.5.1 Age-adjusted and multivariable-adjusted partial associations.

Figure 1 contrasts our estimates of the *age-adjusted* and *multivariable-adjusted* partial associations between gender and each of our four measures of subjective well-being. We observe that the *age-adjusted* partial associations of being a woman with all four measures is negative in all countries, and statistically significantly so in most cases. However, once we control for a larger set of individual characteristics and life circumstances, we notice a reversal of the partial association between being female and both measures of evaluative well-being (the associations become positive – although not always statistically significantly – everywhere, except for *WHOQoL-8* in Russia). Meanwhile, the partial associations between being female and emotional well-being measures remain negative but get smaller (and mostly statistically insignificant at the 5% level) when moving from the *age-adjusted* to the *multivariable-adjusted* models.

Fig. 1: Partial associations between female and the four measures of emotional well-being (*Life Satisfaction, WHO Quality of Life, Emotion Score* and *Experienced Utility*) for the pooled sample and each country individually. Each coefficient is represented by a box and a 95% confidence interval. The dark boxes represent the female coefficients in *age-adjusted* regressions while the light boxes represent the female coefficients of the *multivariable-adjusted* regressions.



Note: Plots represent the age-adjusted (left) and multivariable-adjusted (right) coefficient estimates for the partial associations of female with each subjective well-being measure, which are standardized at the country level. The pooled regressions use the full sample and include country fixed effects, while country-specific regressions use each country's subsample.

Figure B1 in the Online Appendix further shows that our results are robust to a different construction of the *Emotion Score* measure, which does not include reports of physical issues (i.e., physical pain, sleepiness, stomachache, headache).

In order to analyze the role of gender differences in individual characteristics and life circumstances to account for differences in subjective well-being, we further investigate the detailed associations in the *age-adjusted* and *multivariable-adjusted* regressions in Tables 2 to 5 below. However, for conciseness, we will limit our below discussion to consistently significant associations only. As stated earlier, all measures of subjective well-being are standardized at the country level. We thus interpret coefficients in terms of multiples of standard-deviation units (SDU) within the country-specific distributions of the subjective well-being measure under consideration.

Tables 2 and 3 present the details of the *age-adjusted* (Panel A) and *multivariable-adjusted* (Panel B) models linking gender with evaluative measures of subjective well-being: *Life Satisfaction* and the *WHOQoL-8* index, respectively. Examining the impact of other explanatory variables, we notice that higher income levels (and belonging to the highest income quartile in particular) increase both *Life Satisfaction* (with coefficients ranging from 0.31 to 0.62 SDU) and the *WHOQoL-8* index (coefficients ranging from 0.27 to 0.73 SDU). Similarly, working is positively associated with *Life Satisfaction* in Ghana (0.09 SDU) and China (0.13 SDU), and with the *WHOQoL-8* index (from 0.11 to 0.19 SDU) in all countries but Russia. In addition, health status seems to play an important part in evaluative well-being. In particular, higher WHO disability index scores are associated with both reduced *Life Satisfaction* (coefficients ranging from 0.24 to 0.41 SDU) and lower levels of the *WHOQoL-8* indices (between -0.33 and -0.49 SDU). Finally, variables reflecting social cohesion, such as level of community involvement, trust in others, and feeling of safety in one's neighborhood are almost always positively associated with *Life Satisfaction* (ranging from -0.04 to 0.16 SDU) and the *WHOQoL-8* index (from -0.02 to 0.12 SDU). By means of comparison, the association of gender with *Life Satisfaction* (between 0.00 and 0.16 SDU) and with the *WHOQOL-8* index (between -0.06 and 0.19 SDU) is approximately between 2 and 7 times smaller than the associations of a one standard deviation increase in the WHO disability index and of belonging to the highest quartile of permanent income, the two variables with the largest associations with evaluative well-being.

Table 2: Partial Association between Gender and *Life Satisfaction*

	(1) Pooled	(2) Ghana	(3) India	(4) China	(5) South Africa	(6) Russia
Panel A. Age-adjusted						
Female	-0.12***	-0.16***	-0.16***	-0.07***	-0.10	-0.13*
60-69	-0.09***	-0.14***	-0.14***	-0.01	0.03	-0.13
70-79	-0.19***	-0.27***	-0.22***	-0.08*	0.10	-0.38***
80+	-0.39***	-0.67***	-0.54***	-0.23***	-0.11	-0.42***
Constant	0.14***	0.24***	0.18***	0.07**	0.04	0.22***
Country	Yes	No	No	No	No	No
Panel B. Multivariable-adjusted						
Female	0.08***	0.14***	0.16***	0.06**	0.11*	0.00
60-69	0.08***	0.08*	0.02	0.14***	0.19***	0.07
70-79	0.19***	0.18***	0.09**	0.30***	0.35***	0.11
80+	0.27***	0.08	0.04	0.42***	0.35**	0.35***
Rural	0.06	-0.05	0.09	-0.01	-0.07	0.06
Married	0.01	0.16***	-0.01	0.08**	0.19***	-0.06
Number of adults in household	-0.00	-0.01	0.01	-0.03	0.02	-0.04
Number of children in household	-0.00	-0.01	0.00	-0.02	-0.01	-0.08
Education (nb of years)	-0.00	0.00	0.01	-0.00	-0.01	-0.02
Working	0.03	0.09*	0.01	0.13***	0.12	-0.11
Q2: Permanent Income	0.17***	0.11*	0.06	0.30***	0.31***	0.13
Q3: Permanent Income	0.24***	0.18***	0.12**	0.42***	0.50***	0.04
Q4: Permanent Income	0.40***	0.43***	0.31***	0.50***	0.62***	0.36***
WHO disability index	-0.31***	-0.41***	-0.38***	-0.24***	-0.38***	-0.35***
Self-assessed pain	-0.13***	-0.10***	-0.08***	-0.16***	-0.09**	-0.14**
Community Involvement	0.07***	0.04	0.09***	0.05***	-0.04	0.12***
Trust	0.08***	0.06***	0.05**	0.09***	-0.00	0.09*
Safety	0.09***	0.03	0.03*	0.11***	0.10***	0.16***
Victim	-0.01	-0.16	0.03	-0.07	0.19*	-0.15
Constant	-0.55***	0.31*	0.18	-0.98***	0.26	-0.05
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in column (1) use the whole sample and include country fixed effects. Columns (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table 3: Partial Association between Gender and *WHO Quality of Life*

	(1) Pooled	(2) Ghana	(3) India	(4) China	(5) South Africa	(6) Russia
Panel A. Age-adjusted						
Female	-0.21***	-0.26***	-0.29***	-0.11***	-0.16**	-0.26***
60-69	-0.19***	-0.26***	-0.24***	-0.09***	-0.01	-0.29***
70-79	-0.41***	-0.49***	-0.43***	-0.25***	-0.06	-0.69***
80+	-0.64***	-0.94***	-0.73***	-0.51***	-0.28*	-0.75***
Constant	0.27***	0.39***	0.32***	0.15***	0.12	0.43***
Country	Yes	No	No	No	No	No
Panel B. Multivariable-adjusted						
Female	0.07***	0.05	0.19***	0.05**	0.10	-0.06
60-69	0.04**	0.01	-0.01	0.09***	0.19***	0.03
70-79	0.12***	0.05	0.01	0.21***	0.27***	0.09
80+	0.25***	-0.03	0.08	0.29***	0.33**	0.41***
Rural	0.01	-0.07	0.02	-0.08	-0.09	0.12
Married	0.06**	0.06	0.07	0.06*	0.20***	0.09
Number of adults in household	-0.00	-0.01	0.01	-0.03	-0.01	-0.07**
Number of children in household	0.01	-0.01	0.02**	0.02	-0.02	-0.02
Education (nb of years)	0.00	0.01	0.01**	0.00	-0.00	-0.00
Working	0.11***	0.15***	0.11***	0.19***	0.16**	0.06
Q2: Permanent Income	0.19***	0.16***	0.09*	0.24***	0.36***	0.23***
Q3: Permanent Income	0.24***	0.15***	0.21***	0.35***	0.48***	-0.00
Q4: Permanent Income	0.41***	0.45***	0.37***	0.45***	0.73***	0.27***
WHO disability index	-0.40***	-0.49***	-0.46***	-0.33***	-0.39***	-0.48***
Self-assessed pain	-0.18***	-0.12***	-0.13***	-0.21***	-0.18***	-0.19***
Community Involvement	0.08***	0.09***	0.12***	0.05***	0.04	0.09***
Trust	0.10***	0.09***	0.09***	0.11***	-0.02	0.09**
Safety	0.10***	0.04*	0.07***	0.12***	0.08**	0.12***
Victim	-0.10*	-0.15*	-0.08	-0.10	0.07	-0.26**
Constant	-0.52***	0.33*	-0.03	-0.75***	0.23	0.38
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Observations	21477	3026	4832	8995	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in column (1) use the whole sample and include country fixed effects. Columns (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Tables 4 and 5 show the detailed estimation results of the *age-adjusted* (Panel A) and *multivariable-adjusted* (Panel B) models linking gender with our two measures of emotional well-being: *Emotion Score* and *Experienced Well-Being*. We observe that being in the highest quartile of the income distribution is associated with higher levels of emotional well-being (from 0.14 to 0.3 SDU for *Emotion Score* and from 0.16 to 0.38 SDU for *Experienced Well-Being*), and that higher levels of disability are associated with lower levels of *Emotion Score* (between -0.01 and -0.33 SDU) and *Experienced Well-Being* (from -0.08 to -0.23 SDU). In addition, self-assessed pain scores are significantly negatively associated with both measures of emotional well-being (from -0.05 to -0.11 SDU), everywhere but in Ghana for *Experienced Well-Being*. Among the social cohesion variables, community involvement seems to be positively associated with the *Emotion Score* (coefficients ranging from 0.01 to 0.13 SDU), but only feeling safe in one's neighborhood is consistently associated positively with both measures of emotional well-being (0.00 to 0.11 SDU for *Emotion Score* and 0.04 to 0.15 SDU for *Experienced Well-Being*). Moreover, we observe that working is either not or negatively associated with emotional well-being (with the exception of a strong positive association with *Emotion Score* (by 0.33 SDU) in Ghana). By means of comparison, the association between gender and emotional well-being variables range from -0.02 to -0.15 SDU for *Emotion Score* and from 0.00 to -0.10 SDU for *Experienced Well-Being*. The relationship between the two most important identified factors - i.e., belonging to the highest quartile of permanent income and the standardized WHO disability index - and emotional well-being is thus up to 24 times larger than the association between gender and emotional well-being in *multivariable-adjusted* models.

Finally, comparing *ceteris paribus* gender differences in each of our four subjective well-being measures, we observe that the *multivariable-adjusted* gender differences are generally largest for the *WHO Quality of Life Index* (between 0.12 and 0.35 SDU), followed by the *Emotion Score* (between 0.1 and 0.27 SDU), *Life Satisfaction* (between 0.08 and 0.18 SDU), and *Experienced Well-Being* (between 0.06 and 0.11 SDU).

Table 4: Partial Association between Gender and *Emotion Score*

	(1) Pooled	(2) Ghana	(3) India	(4) China	(5) South Africa	(6) Russia
Panel A. Age-adjusted						
Female	-0.21***	-0.16***	-0.31***	-0.10***	-0.19***	-0.25***
60-69	0.01	-0.10**	0.01	0.03	0.19**	-0.03
70-79	-0.01	-0.12**	-0.02	0.06	0.19*	-0.17*
80+	-0.11**	-0.27***	-0.05	-0.10	0.38***	-0.22**
Constant	0.11***	0.15***	0.15***	0.04	0.01	0.21**
Country	Yes	No	No	No	No	No
Panel B. Multivariable-adjusted						
Female	-0.07***	-0.02	-0.15***	-0.01	-0.05	-0.11*
60-69	0.14***	0.04	0.13***	0.12***	0.29***	0.20**
70-79	0.28***	0.16***	0.20***	0.30***	0.37***	0.30***
80+	0.41***	0.14*	0.40***	0.35***	0.71***	0.46***
Rural	-0.04	-0.03	-0.05	-0.14***	-0.16*	0.11
Married	0.03	0.07	-0.04	0.12***	0.14*	0.02
Number of adults in household	0.01	-0.02	0.01	-0.01	-0.03	0.03
Number of children in household	-0.00	0.01	0.00	0.00	-0.01	-0.22***
Education (nb of years)	0.00	-0.00	-0.00	-0.00	0.00	-0.01
Working	-0.05*	0.33***	-0.14***	-0.02	0.01	0.08
Q2: Permanent Income	0.06	0.10*	0.04	0.07	0.09	0.01
Q3: Permanent Income	0.14***	0.23***	0.16***	0.19***	0.06	-0.04
Q4: Permanent Income	0.26***	0.29***	0.30***	0.24***	0.16	0.14
WHO disability index	-0.24***	-0.01	-0.33***	-0.17***	-0.11*	-0.27***
Self-assessed pain	-0.18***	-0.17***	-0.19***	-0.19***	-0.16***	-0.14***
Community Involvement	0.03***	0.12***	0.02	0.05***	0.13***	0.01
Trust	0.03**	-0.11***	0.01	0.03**	-0.04	0.05
Safety	0.06***	0.11***	0.01	0.09***	-0.00	0.07*
Victim	-0.21***	0.11	-0.28***	-0.16	0.03	-0.17
Constant	0.07	-0.72***	0.93***	-0.46***	-0.11	0.29
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in column (1) use the whole sample and include country fixed effects. Columns (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table 5: Partial association between Gender and *Experienced Well-Being*

	(1) Pooled	(2) Ghana	(3) India	(4) China	(5) South Africa	(6) Russia
Panel A. Age-adjusted						
Female	-0.13***	-0.10**	-0.15***	-0.06***	-0.14**	-0.20**
60-69	0.06**	0.12**	0.07	0.06**	0.28***	-0.01
70-79	0.12***	0.09*	0.13*	0.14***	0.14	0.08
80+	0.03	0.06	-0.10	0.13**	0.25**	0.05
Constant	0.02	-0.01	0.04	-0.02	-0.03	0.10
Country	Yes	No	No	No	No	No
Panel B. Multivariable-adjusted						
Female	-0.05*	-0.05	-0.08	0.00	-0.03	-0.10
60-69	0.12***	0.18***	0.12***	0.11***	0.36***	-0.00
70-79	0.27***	0.22***	0.25***	0.27***	0.25*	0.19
80+	0.32***	0.26**	0.14	0.40***	0.49***	0.28*
Rural	-0.09*	-0.06	-0.06	-0.28***	-0.06	0.07
Married	-0.01	-0.00	-0.08*	0.09*	0.17**	-0.11
Number of adults in household	-0.01	-0.04***	0.01	-0.04**	-0.09*	0.03
Number of children in household	0.01	0.00	0.01	0.00	0.04	-0.03
Education (nb of years)	0.00	0.00	0.01	0.00	0.01	-0.01
Working	-0.10***	0.08	-0.09**	-0.03	-0.05	-0.25**
Q2: Permanent Income	0.12***	0.07	0.07	0.13***	0.07	0.21*
Q3: Permanent Income	0.18***	0.18***	-0.01	0.30***	0.18*	0.20
Q4: Permanent Income	0.30***	0.21***	0.21***	0.31***	0.16	0.38***
WHO disability index	-0.18***	-0.10***	-0.26***	-0.08***	-0.17***	-0.23***
Self-assessed pain	-0.06***	0.03	-0.05*	-0.06***	-0.11**	-0.07*
Community Involvement	-0.02	0.08***	-0.05*	0.03	-0.00	-0.09**
Trust	0.00	0.01	0.00	0.02	-0.04	-0.03
Safety	0.12***	0.04*	0.10***	0.15***	-0.02	0.13***
Victim	-0.03	0.05	-0.08	0.02	0.07	-0.01
Constant	-0.13	-0.39**	0.51***	-0.92***	0.60***	0.68**
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in column (1) use the whole sample and include country fixed effects. Columns (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Tables B1 to B4 in the Online Appendix[7] further investigate how the coefficient on female changes with age dummies and adding more controls variables by meaningful grouping in a telescoping sequence (no control, age, demographic, socio-economic, health, and community engagement variables). This analysis shows that all the control variable groups contribute to the higher experienced well-being of women, compared to the situation without controls. For all four measures, adding socio-economic and health variables led to the highest increase in women's subjective well-being. Moreover, we confirm the robustness of our results to different age specifications, using 5-year age bands (Tables B5 to B8 in the Online Appendix), as well as including a second order age polynomial (Tables B9 to B12).

1.5.2 Decomposition analysis

We now decompose the differences in subjective well-being between men and women into two parts. Specifically, we assess how much of the gender gap in subjective well-being is attributable to differences in the objective conditions of men and women ("explained part"), and how much is attributable to differences in the way men and women react to the same objective conditions as well as to differences in intercepts that cannot be directly related to any of the variables included in our models ("unexplained part").

Tables A1 to A4 in Appendix show the results of the regression analyses of our four subjective well-being measures on our larger set of explanatory variables separately by gender. The tables also highlight any differences in coefficients between the female and male regressions. Overall, we find no consistent differences in coefficients between men and women, which suggests limited gender-specific heterogeneity in the association between individual characteristics and life circumstances on the one hand and subjective well-being of men and women on the other.

Tables 6 and 7 present the Oaxaca-Blinder decompositions of *Life Satisfaction* and the *WHO Quality of Life Index*, respectively. For both measures, we find lower levels of evaluative well-being for women than for men. Gender differences in *Life Satisfaction* are statistically significant in all countries but South Africa and Russia, ranging from 0.08 to 0.18 SDU. The corresponding differences in the *WHOQoL-8* are statistically significant in all countries and range between 0.12 and 0.35 SDU. Focusing on the decomposition, we note that most of the evaluative well-being gap is due to differences in individual characteristics and objective life circumstances (*explained* part), which play in favor of men (difference estimates ranging from 0.13 to 0.25 SDU for *Life Satisfaction* and from 0.17 to 0.40 SDU for *WHOQoL-8*). These results suggest that women's evaluative well-being would increase if they had the endowments of men. Further examining the disaggregation of the decomposition by explanatory

[7] The online appendix is available at: https://static-content.springer.com/esm/art%3A10.1007%2Fs11150-020-09521-y/MediaObjects/11150_2020_9521_MOESM1_ESM.docx

variable, we observe that differences in health status (i.e., older women reporting higher levels of disability and pain) account for most of the explained differences, followed by social cohesion variables (i.e., the fact that women are less involved in community activities, report less trust in others and perceive their neighborhoods as less safe) and income (i.e., the fact women tend to belong to households with lower income). In several countries (Ghana, China and South Africa for *Life Satisfaction*, and China and South Africa for *WHOQoL-8*), differences in marital status (i.e., the fact that women in our sample are less often married than men) also contribute to the explained gender differences in evaluative well-being. Meanwhile, differences due to the *unexplained* part of the decomposition appear to favor women, even if these are much smaller in magnitude than the *explained* differences, (between 0 and -0.09 SDU for *Life Satisfaction*, and between -0.02 and 0.11 SDU for *WHOQoL-8*). In other words, women's evaluative well-being would decrease if they had men's coefficients while keeping their endowments fixed. The *unexplained* part thus partially mitigates the evaluative well-being deficit of women. The disaggregation of the *unexplained part* by explanatory variable does not reveal a consistent role of any specific variable to account the subjective well-being gap. As shown in Tables A1 and A2, the relationship between explanatory variables and subjective well-being is generally similar for men and women. The fact that the unexplained part of the decomposition contributes to reducing the gender gap thus does not appear to be linked to differences in the way men and women react to or evaluate any specific objective circumstances. Differences in the unexplained part can thus be linked to general (as opposed to variable-specific) differences in optimism or resilience of one gender, or to differential reactions to unobserved factors that we are unable to control for in our models.

Table 6: Decomposition analysis of *Life Satisfaction*

	Pooled	Ghana	India	China	South Africa	Russia
Male	0.067***	0.080**	0.081*	0.039*	0.059	0.105
Female	-0.063**	-0.088**	-0.083**	-0.039*	-0.037	-0.072
Difference	0.130***	0.168***	0.164***	0.078**	0.096	0.176
Explained	0.189***	0.254***	0.251***	0.129***	0.180***	0.180***
Unexplained	-0.059**	-0.086**	-0.087***	-0.051**	-0.084	-0.003
Panel A. Explained Differences						
Age 60-69	-0.000	-0.001	-0.000	0.002	0.000	-0.002
Age 70-79	-0.006**	-0.001	-0.000	-0.012***	-0.016	-0.010
Age 80+	-0.004*	0.000	0.000	-0.005*	-0.000	-0.010
Rural	0.004	-0.001	0.002	-0.001	0.001	0.003
Married	-0.002	0.049*	-0.015	0.008*	0.058**	-0.019
Number of adults in household	-0.001	-0.006	0.003	-0.002	-0.000	-0.013
Number of children in household	-0.000	-0.003	-0.000	0.000	0.002	-0.001
Education years	-0.006	-0.001	-0.003	-0.005	-0.004	-0.008
Working	0.004	0.006	-0.013	0.022***	0.020	-0.016
Q2: Permanent Income	-0.004*	-0.006	-0.001	-0.002	-0.021	-0.008
Q3: Permanent Income	0.003	-0.000	0.003	0.006	-0.023	-0.000
Q4: Permanent Income	0.011*	0.040***	0.003	-0.001	0.039*	0.045
WHO disability index	0.097***	0.130***	0.164***	0.044***	0.092**	0.121***
Self-assessed pain	0.036***	0.026***	0.029**	0.031***	0.017	0.049*
Community involvement	0.022***	0.010	0.056***	0.005**	-0.007	0.004
Trust	0.013***	0.008*	0.017*	0.003	0.000	-0.001
Safety	0.023***	0.004	0.007	0.034***	0.016	0.046*
Victim	0.000	0.001	0.000	0.000	0.006	0.001
Panel B. Unexplained Differences						
Age 60-69	0.006	0.021	0.021	0.001	-0.042	-0.001
Age 70-79	0.006	-0.005	0.018	-0.005	-0.007	0.032
Age 80+	0.003	0.006	-0.000	0.010	-0.033*	0.015
Rural	0.000	-0.033	0.035	0.056	0.009	-0.040
Married	-0.095*	0.150*	-0.202*	-0.014	0.020	0.034
Number of adults in household	0.093	-0.001	0.112	0.005	-0.117	0.018
Number of children in household	-0.021	0.012	-0.060	0.000	-0.010	-0.006
Education years	0.058	-0.039	0.020	0.027	0.154	0.204
Working	0.038	0.027	0.004	0.009	-0.025	0.150
Q2: Permanent Income	0.000	-0.021	0.003	-0.015	0.008	0.020
Q3: Permanent Income	0.009	-0.040	0.010	0.026	0.039	-0.044
Q4: Permanent Income	0.004	-0.033	0.025	0.006	0.041	-0.041
WHO disability index	-0.000	0.001	-0.001	-0.000	-0.001	0.001
Self-assessed pain	0.001	0.001	0.001	0.001	-0.001	-0.013
Community involvement	0.002	0.002	0.003	-0.000	-0.000	-0.000
Trust	0.001	0.000	0.003	-0.000	-0.000	-0.000
Safety	0.000	0.001	0.001	0.001	-0.002	-0.000
Victim	-0.003	0.011	-0.005	-0.003	-0.007	-0.003
Constant	-0.107	-0.145	-0.077	-0.157	-0.110	-0.329
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: The estimates presented in column (1) are based on the whole sample and include country fixed effects, while columns (2) to (6) present estimates obtained using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table 7: Decomposition analysis of the *WHO Quality of Life*

	Pooled	Ghana	India	China	South Africa	Russia
Male	0.119***	0.133***	0.143***	0.061***	0.106	0.206**
Female	-0.111***	-0.145***	-0.148***	-0.060***	-0.066	-0.141*
Difference	0.230***	0.279***	0.291***	0.121***	0.172*	0.348***
Explained	0.288***	0.298***	0.396***	0.167***	0.246***	0.298***
Unexplained	-0.058***	-0.020	-0.105***	-0.046*	-0.073	0.050
Panel A. Explained Differences						
Age 60-69	-0.000	-0.000	0.001	0.001	0.000	-0.002
Age 70-79	-0.005**	-0.000	0.000	-0.010***	-0.013	-0.013
Age 80+	-0.004*	-0.000	-0.000	-0.004*	-0.000	-0.015
Rural	0.000	-0.001	0.000	-0.007**	0.002	0.006
Married	0.013	0.018	0.006	0.008**	0.067***	0.035
Number of adults in household	-0.002	-0.006	0.002	-0.002*	0.000	-0.030*
Number of children in household	0.000	-0.004	-0.002	-0.000	0.004	-0.001
Education years	0.009	0.020*	0.013	0.002	0.002	0.000
Working	0.024***	0.012*	0.016	0.031***	0.035**	0.016
Q2: Permanent Income	-0.005*	-0.009*	-0.002	-0.002	-0.024	-0.012
Q3: Permanent Income	0.004	-0.000	0.007	0.006	-0.022	-0.000
Q4: Permanent Income	0.014*	0.051***	0.005	-0.001	0.050*	0.042
WHO disability index	0.120***	0.147***	0.192***	0.059***	0.086**	0.150***
Self-assessed pain	0.051***	0.032***	0.044***	0.041***	0.032*	0.075***
Community involvement	0.024***	0.021***	0.069***	0.006***	0.007	0.003
Trust	0.016***	0.011**	0.031***	0.004	0.000	-0.001
Safety	0.027***	0.007*	0.014***	0.035***	0.017	0.044*
Victim	0.000	0.001	-0.000	0.000	0.002	0.002
Panel B. Unexplained Differences						
Age 60-69	0.008	0.017	0.008	-0.009	-0.016	0.022
Age 70-79	0.004	0.024	-0.001	-0.001	0.009	0.045
Age 80+	0.002	0.005	-0.001	0.003	-0.017	0.036*
Rural	0.030	-0.068	0.046	0.054	0.018	0.024
Married	-0.116**	0.168**	-0.200**	-0.005	-0.083	-0.016
Number of adults in household	0.040	-0.023	0.027	-0.036	-0.124	0.086
Number of children in household	-0.005	-0.006	-0.015	0.005	-0.012	-0.014
Education years	0.081**	0.018	0.047	0.029	0.142	0.153
Working	0.047*	-0.030	0.060*	0.002	-0.004	0.124
Q2: Permanent Income	0.002	-0.000	0.015	-0.005	-0.022	-0.013
Q3: Permanent Income	0.007	-0.030	0.016	0.013	0.021	-0.053
Q4: Permanent Income	0.003	-0.043	0.018	-0.002	0.013	-0.050
WHO disability index	-0.000	0.001	0.000	-0.000	0.004	0.006
Self-assessed pain	0.001	-0.001	0.000	0.001	0.004	-0.009
Community involvement	0.002*	0.001	0.014**	-0.000	-0.002	0.000
Trust	0.001	0.000	0.004	-0.000	-0.000	-0.000
Safety	0.000	0.000	0.001	0.001	-0.002	-0.003
Victim	-0.002	0.008	-0.001	-0.005	0.005	0.001
Constant	-0.125	-0.062	-0.144	-0.092	-0.007	-0.289
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: The estimates presented in column (1) are based on the whole sample and include country fixed effects, while columns (2) to (6) present estimates obtained using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Tables 8 and 9 present the analogous decomposition results for the two measures of emotional well-being: *Emotion Score* and *Experienced Well-Being*, respectively. Again, we observe a statistically significant gender difference in *Emotion Score* in favor of men in all countries (ranging between 0.10 and 0.31 SDU). Similarly, women report lower *Experienced Well-Being* than men everywhere (with difference estimates going from 0.06 to 0.19 SDU), and this difference is statistically significant in all but two countries. Similar to the decomposition of evaluative well-being measures, most of women's well-being deficit appears to be attributable to differences in endowments (i.e., the *explained* part). Indeed, the individual characteristics and life circumstances incorporated in the decomposition framework significantly contribute to the higher emotional well-being of men relative to women in all countries (estimates ranging from 0.09 to 0.23 SDU for *Emotion Score* and from 0.06 to 0.11 SDU for *Experienced Well-Being*). As is the case for evaluative well-being measures, the explained differences are mostly driven by differences in levels of disability and self-assessed pain. However, compared to what we observe for evaluative measures of subjective well-being, income levels do not seem to play an important role for gender differences in emotional well-being. Finally, we observe that all the *unexplained* differences in emotional well-being are either insignificant or positive (ranging between 0.01 and 0.10 SDU for *Emotion Score* and between -0.03 and 0.09 SDU for *Experienced Well-Being*), implying that these *unexplained* differences do not help mitigate the emotional well-being disadvantage of women. In India and in the pooled sample, the gender gap in *Emotion Score* would even significantly increase if women had men's coefficients while keeping their endowments fixed. As in the case of evaluative well-being, the unexplained part does not seem to be triggered by any specific variable.

Table 8: Decomposition analysis of the *Emotion Score*

	Pooled	Ghana	India	China	South Africa	Russia
Male	0.111***	0.077**	0.153***	0.050**	0.111*	0.160**
Female	-0.103***	-0.084*	-0.158***	-0.050**	-0.069	-0.110*
Difference	0.214***	0.161***	0.311***	0.099***	0.180**	0.270***
Explained	0.161***	0.150***	0.225***	0.090***	0.139**	0.176***
Unexplained	0.052**	0.011	0.086**	0.010	0.041	0.094
Panel A. Explained Differences						
Age 60-69	-0.000	-0.001	-0.003	0.002	0.001	-0.005
Age 70-79	-0.010***	-0.001	-0.000	-0.012***	-0.018	-0.028*
Age 80+	-0.006*	0.000	-0.003	-0.004*	-0.001	-0.013
Rural	-0.003	-0.001	-0.001	-0.010***	0.002	0.006
Married	0.012	0.043	-0.000	0.013**	0.062*	0.013
Number of adults in household	0.003	-0.010	0.003	-0.000	0.000	0.010
Number of children in household	-0.000	0.002	-0.000	-0.000	0.003	-0.004
Education years	0.005	-0.006	0.021	-0.003	0.002	-0.004
Working	-0.009	0.022**	-0.043**	-0.004	0.004	0.013
Q2: Permanent Income	-0.001	-0.005	-0.000	-0.000	-0.005	-0.000
Q3: Permanent Income	0.002	-0.000	0.003	0.003	-0.003	0.000
Q4: Permanent Income	0.007	0.027**	0.002	-0.001	0.009	0.018
WHO disability index	0.075***	0.003	0.140***	0.031***	0.027	0.093***
Self-assessed pain	0.054***	0.042***	0.074***	0.038***	0.030	0.052*
Community involvement	0.011**	0.034***	0.024	0.005**	0.022	0.000
Trust	0.004*	-0.016**	0.006	0.001	0.002	-0.000
Safety	0.017***	0.016**	0.003	0.031***	0.000	0.023
Victim	0.000	-0.000	-0.000	0.000	0.001	0.001
Panel B. Unexplained Differences						
Age 60-69	-0.006	-0.012	0.004	-0.008	-0.044	0.002
Age 70-79	-0.013	0.029	0.003	-0.024	-0.030	-0.001
Age 80+	0.001	0.008	0.006	-0.009	-0.002	0.031
Rural	-0.011	-0.146**	-0.010	-0.040	0.036	-0.002
Married	-0.061	-0.034	-0.119	0.007	-0.136	-0.021
Number of adults in household	-0.017	0.050	-0.105	0.048	-0.087	0.123
Number of children in household	0.006	0.083	0.005	0.006	0.097*	-0.009
Education years	-0.018	0.066	-0.050	-0.051	-0.089	0.251
Working	-0.004	0.003	-0.007	0.004	-0.083	-0.019
Q2: Permanent Income	0.009	-0.025	0.019	0.009	0.121*	-0.026
Q3: Permanent Income	0.014	-0.066*	0.036	-0.016	0.032	0.011
Q4: Permanent Income	0.012	-0.082**	0.032	-0.013	0.121*	-0.019
WHO disability index	-0.000	-0.000	-0.002	-0.000	0.008	0.014
Self-assessed pain	-0.001	0.001	-0.001	-0.000	0.001	-0.016
Community involvement	-0.001	-0.001	-0.006	0.000	0.001	-0.000
Trust	0.000	-0.001	-0.001	-0.000	0.000	-0.000
Safety	-0.001	0.001	-0.001	-0.001	-0.003	-0.006
Victim	-0.001	0.002	0.000	-0.005	0.019	-0.002
Constant	0.095	0.135	0.283	0.102	0.077	-0.217
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: The estimates presented in column (1) are based on the whole sample and include country fixed effects, while columns (2) to (6) present estimates obtained using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table 9: Decomposition analysis of *Experienced Well-Being*

	Pooled	Ghana	India	China	South Africa	Russia
Male	0.062**	0.047	0.075*	0.028	0.084	0.112
Female	-0.057***	-0.051	-0.077*	-0.027	-0.053	-0.077
Difference	0.119***	0.098**	0.152***	0.055*	0.137	0.189
Explained	0.077***	0.067*	0.107**	0.058***	0.110*	0.102*
Unexplained	0.042	0.031	0.045	-0.003	0.028	0.087
Panel A. Explained Differences						
Age 60-69	-0.000	-0.003	-0.003	0.002	0.001	0.000
Age 70-79	-0.010***	-0.002	-0.000	-0.010***	-0.012	-0.017
Age 80+	-0.005*	0.000	-0.001	-0.005*	-0.001	-0.008
Rural	-0.006*	-0.001	-0.001	-0.021***	0.001	0.004
Married	0.000	0.014	-0.017	0.009**	0.073*	-0.024
Number of adults in household	-0.001	-0.021**	0.003	-0.003*	0.000	0.013
Number of children in household	0.000	0.001	-0.001	-0.000	-0.009	-0.001
Education years	0.012*	0.004	0.034	0.008	0.004	-0.004
Working	-0.025**	0.005	-0.031	-0.005	-0.009	-0.037*
Q2: Permanent Income	-0.003	-0.003	-0.001	-0.001	-0.004	-0.013
Q3: Permanent Income	0.002	-0.000	-0.000	0.004	-0.008	-0.001
Q4: Permanent Income	0.008	0.019**	0.002	-0.001	0.010	0.048
WHO disability index	0.055***	0.033**	0.113***	0.014***	0.042*	0.079**
Self-assessed pain	0.019***	-0.007	0.018	0.012***	0.020	0.027
Community involvement	-0.008	0.024**	-0.030	0.004*	-0.000	-0.003
Trust	0.000	0.001	0.003	0.001	0.002	0.000
Safety	0.033***	0.006	0.020**	0.050***	-0.003	0.038*
Victim	0.000	-0.000	-0.000	-0.000	0.002	0.000
Panel B. Unexplained Differences						
Age 60-69	0.012	-0.004	0.008	0.015	-0.115**	0.062
Age 70-79	-0.003	0.023	-0.007	-0.009	-0.074*	0.098*
Age 80+	0.001	-0.004	0.006	-0.000	-0.016	0.027
Rural	-0.019	-0.042	-0.129	-0.036	-0.012	0.065
Married	-0.107	-0.032	-0.025	-0.016	-0.072	-0.231*
Number of adults in household	-0.003	-0.064	-0.062	0.068	0.058	0.222
Number of children in household	-0.016	0.053	-0.020	-0.000	0.032	-0.020
Education years	-0.005	-0.001	-0.007	-0.037	-0.063	0.006
Working	-0.016	-0.097	-0.040	-0.007	-0.067	0.030
Q2: Permanent Income	-0.006	0.029	-0.032	0.036*	-0.024	-0.030
Q3: Permanent Income	-0.012	-0.006	-0.034	0.022	-0.073	-0.010
Q4: Permanent Income	-0.009	-0.020	-0.064	0.012	-0.038	0.023
WHO disability index	-0.001	-0.001	-0.001	-0.000	0.005	-0.007
Self-assessed pain	-0.001	0.001	-0.002	0.000	0.002	-0.002
Community involvement	-0.000	-0.001	-0.000	-0.000	0.002	0.001
Trust	0.001	-0.000	0.001	-0.000	-0.002	-0.000
Safety	-0.001	0.000	-0.000	0.001	0.002	-0.005
Victim	-0.001	-0.000	0.000	-0.004	0.008	-0.001
Constant	0.173	0.196	0.452*	-0.047	0.476	-0.141
Observations	21478	3026	4832	8996	1999	2625

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: The estimates presented in column (1) are based on the whole sample and include country fixed effects, while columns (2) 6) present estimates obtained using country-specific subsamples. Reported differences are measured in standard deviation units of n respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: e (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent ome (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self- essed pain, community involvement, trust and perceived safety are standardized at the country level.

In summary, our results consistently indicate that women have significantly lower levels of both evaluative and emotional well-being than men of the same age, across different countries as well as across the four outcome variables. However, when controlling for life circumstances and individual characteristics, our *multivariable-adjusted* analysis shows a decrease in the subjective well-being gender gap in favor of men. Indeed, gender differences in *Emotion Score* largely decrease in absolute value, and the gender gap in *Experienced Well-Being* disappears in all countries altogether. Moreover, gender differences in evaluative well-being even turn to the favor women. While these positive differences are small and not always statistically significant in the case of the *WHOQoL-8*, they are both substantial and consistent across countries in the case of *Life Satisfaction.* These results suggest that the gender gap in subjective well-being in favor of men may result from objective disadvantages of women compared to men rather than being related to gender *per se*. Results from Oaxaca-Blinder decompositions further corroborate that the female disadvantage in subjective well-being is mainly linked to explained factors, notably poorer health and lower permanent income of women compared to men.

1.6 Discussion and conclusion

1.6.1 Evaluative well-being

Results from our *age-adjusted* analysis reveal that women generally have lower levels of evaluative well-being than men of the same age. This finding is in line with the literature on gender and evaluative well-being. For example, Pinquart and Sörensen (2001), in a meta-analysis of 300 international studies focusing on older adults (i.e., for which the mean age was 55 and older), find that older women report slightly, but significantly lower life satisfaction than older men in uncontrolled models. Other studies (e.g., Inglehart 2002, using data from 65 societies and all age groups) also provide descriptive evidence that men tend to be happier than women after middle-age.

Our *multivariable-adjusted* analysis shows that - given similar individual characteristics and life circumstances -older women have equal or even slightly higher evaluative well-being than older men. This pattern suggests that gender *per se* or gender-related reporting differences are unlikely to be the main drivers behind the old-age gender gap in evaluative well-being found in *age-adjusted* models, and that this gap can instead be explained by the generally less favorable individual characteristics and life circumstances of older women compared to older men. In particular, we observe that better health and higher income are among the most important factors associated with higher levels of evaluative well-being, and that women generally report worse health and living in poorer households. Our findings corroborate previous results on the same topic. For example, Pinquart and Sörensen (2001) point out that gender explains less than 1% of the variance of their happiness measure, and argue that the gender happiness-gap may be explained by a disadvantage of older women in terms of socio-

economic status, widowhood, health and every day competence. Similarly, Easterlin (2003) - based on several cohorts of the General Social Survey in the USA focusing on individuals aged between 32 and 88 years - shows that the happiness differential in the older population (aged 50 and older) is reversed when work and marital status are controlled for. He suggests that the unadjusted gender gap in subjective well-being in favor of men may be due to demographic changes in the older population, and in particular to the fact that women are more likely to suffer the adverse effects of widowhood. At the same time, the author argues that men's well-being may be disproportionally improved by the positive effect of retirement, while this is less significant for women due to their lower rate of employment.

1.6.2 Emotional well-being

When adjusting only for age, our results show that women tend to report lower levels of emotional well-being than men. Similarly, descriptive evidence from the World Happiness Report (Fortin et al. 2015) – based on Gallup World Poll data from adult populations in multiple countries across all continents – indicates that men start reporting positive emotions more frequently than women after middle-age. These authors also show that older women experience systematically higher levels of negative emotions than men. Although they do not consolidate positive and negative experiences into an affect balance score comparable to our measure of net affect, the observation that older women tend to experience fewer positive and more negative emotions than men, suggests that such an index would show a disadvantage of women in terms of emotional well-being.

However, in contrast to what we observe for evaluative well-being, our *multivariable-adjusted* analysis shows merely an attenuation of the gender gap in emotional well-being once we control for individual characteristics and life circumstances. Thus, given similar observable conditions, women's emotional well-being remains lower or at best similar to that of men. One hypothesis for the remaining differences in emotional well-being in favor of men stems from the fact that men and women may be socialized to experience and express their affect differently (e.g., Nolen-Hoeksema and Rusting 1999). We are unable to compare our results to others' given the absence of evidence regarding the relationship between emotional well-being and gender among older persons when individual characteristics and life circumstances are controlled for.

1.6.3 Oaxaca-Blinder decompositions

Results from our Oaxaca-Blinder decompositions confirm our above findings that women are disadvantaged in terms of both evaluative and emotional well-being. Furthermore, we show that this disadvantage of women is mostly due to observable factors which are part of the explained part of the decomposition. Poor health, in particular, is strongly linked to the gender gap in both evaluative and emotional well-being. Reducing disability and pain among women could improve their subjective well-being and help close this gender gap. In addition, we observe that unexplained factors mitigate

women's evaluative well-being deficit, but play no part in the emotional well-being gap in most countries. The unexplained part of the decomposition picks up gender differences in the relationship between individual characteristics and life circumstances on the one hand, and subjective well-being on the other (such as intrinsic optimism/pessimism), but may also capture other unobserved factors that we fail to control for in our models. These results imply that, if women had the same regression coefficients as men while keeping their own individual characteristics and life circumstances, their evaluative well-being would decrease, whereas their emotional well-being would not change significantly. While what is sometimes referred to as "female optimism" thus contributes to improving women's cognitive evaluation of their own life, it does not improve their daily emotional experiences.

To the best of our knowledge, no other study has performed a similar decomposition of gender differences in subjective wellbeing on a population of older adults from the developing world. Therefore, we can only compare our results to those of Arrosa and Gandelman (2016) who perform Oaxaca-Blinder decompositions to analyze the gender happiness gap in the general adult population, using data from the Gallup World Poll (average age of 40.1), the World Values Survey (average age of 40.3) and the European Social Survey (average age of 47). Opposite to our findings, they report a positive evaluative well-being gap in favor of women, and that most of the happiness gap cannot be explained by observables. They argue that some unexplained "female optimism" contributes to increasing women's evaluative well-being relative to that of men. However, their results are in agreement with our findings that unexplained factors contribute to improving women's evaluative well-being.

1.6.4 Relationship between subjective well-being and individual characteristics and life circumstances

Beyond gender, our study provides evidence on the relationship between individual characteristics and life circumstances on the one hand, and subjective well-being on the other. This allows us to assess whether evaluative and emotional well-being are driven by the same factors. We find that health status (and especially the disability index) displays by far the strongest association with subjective well-being in older adults. Secondly, household income also appears to play an important role for both evaluative and emotional well-being among older adults in the developing world. These results stand in contrast to previous findings in the literature. For example, Kahneman and Deaton (2010) show that, in the USA, higher income improves evaluative, but not emotional well-being in the general population. One possible explanation for this difference could lie in the fact that our sample is based in relatively poor countries, where only higher income may allow access to certain basic services (e.g. efficient transportation, health services, decent housing), the lack of which may impact daily affective experiences. Interestingly, our results show only one major difference in the association of life circumstances with evaluative and emotional well-being: working is positively associated with

evaluative measures of subjective well-being, but negatively associated with emotional measures. This result is similar to findings by Knabe et al. (2010) - on a sample of working-age individuals in Germany - that employed and unemployed individuals have similar levels of emotional well-being, despite a significant gap in evaluative well-being. One potential explanation for this apparent inconsistency may be that working is often considered a rather unenjoyable activity and common source of stress and other negative emotions, but that work status is also an indicator of social status and personal achievement, thereby increasing evaluative well-being. While the literature often highlights widowhood as an important driver of gender differences in subjective well-being in older adults (e.g. Sobieszky et al. 2003 - based on data from individuals over 60 in Thailand; Easterlin 2003), we do not find consistent associations between marriage and subjective well-being across different countries.

1.6.5 Conclusion and limitations

Our study bears important conclusions which may inform further research as well as policy makers. We demonstrate a negative association between gender and both evaluative and emotional subjective well-being. However, as discussed earlier, this association appears to be mainly linked to individual characteristics and life circumstances, notably to women's disadvantages in terms of health and income, rather than to intrinsic gender differences. These results imply that female-targeted policies should complement more general interventions aiming at improving the well-being of older adults. For example, the revaluation of widow's entitlement or the distribution of non-contributory old-age pensions may improve the financial situation of older women, as well as foster their access to healthcare. In addition, life-long health-promoting policies, such as the provision of universal health insurance or the launch of awareness campaigns promoting a healthy lifestyle and regular medical check-ups for women, may go a long way towards decreasing gender inequities in terms of disability among older adults, and in turn translate into a reduction of the subjective well-being gap.

To our knowledge, we are the first to provide a comprehensive comparison of *age-adjusted* and *multivariable-adjusted* analyses of the relationship between gender and well-being using multiple measures for evaluative and emotional well-being. In particular, the use of SAGE data allows us to explore the differences between these various measures using a large-scale multi-country dataset from the developing world. However, our approach based on cross-sections of observational data does not allow us to interpret any of our estimated associations as causal effects. In addition, it is of note that even our *multivariable-adjusted* models do not control for all the factors which may vary by gender and age and influence subjective well-being. More research is thus needed to address these limitations in order to allow inference of a causal relationship. In spite of these limitations, our study makes a valuable contribution to documenting gender differences in older adults from different developing country settings and proposing ways of reflection and interpretation of these differences.

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1.8 Appendix

Table A1: Regression analysis of *Life Satisfaction* by Gender

	(1) Pooled			(2) Ghana			(3) China			(4) India			(5) South Africa			(6) Russia		
	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference
Age 60-69	0.08**	0.10***	-0.02	0.05	0.12**	-0.08	0.14***	0.14***	-0.00	-0.01	0.06	-0.07	0.24***	0.10	0.14	0.09	0.08	0.00
Age 70-79	0.19***	0.22***	-0.04	0.19***	0.17**	0.02	0.31***	0.29***	0.03	0.04	0.15**	-0.11	0.38***	0.33***	0.05	0.04	0.22	-0.17
Age 80+	0.26***	0.32***	-0.06	0.03	0.10	-0.07	0.32***	0.55***	-0.23**	0.04	0.04	0.00	0.61***	-0.08	0.69***	0.28*	0.48***	-0.19
Rural	0.05	0.05	-0.00	-0.01	-0.07	0.06	-0.05	0.05	-0.10*	0.06	0.10	-0.05	-0.09	-0.06	-0.02	0.13	-0.02	0.14
Married	0.06	-0.06	0.13**	0.09	0.27***	-0.17*	0.09**	0.07	0.02	0.07	-0.19**	0.26**	0.20**	0.20**	0.00	-0.10	-0.04	-0.06
Number of adults in household	-0.02*	0.01	-0.03*	-0.01	-0.01	-0.00	-0.03	-0.02	-0.00	-0.01	0.02	-0.02	0.03	-0.01	0.04	-0.04	-0.03	-0.01
Number of children in household	0.01	-0.01	0.02	-0.02	-0.01	-0.01	-0.02	-0.02	-0.00	0.02	-0.01	0.03	-0.01	-0.02	0.01	-0.07	-0.10	0.04
Education years	-0.00	0.00	-0.01*	0.01*	-0.00	0.01	-0.00	0.00	-0.00	0.00	0.00	0.00	-0.02*	0.01	-0.02**	-0.02*	-0.01	-0.02
Working	0.00	0.08**	-0.07	0.06	0.10	-0.04	0.11**	0.13***	-0.02	0.05	0.00	0.05	0.17*	0.08	0.09	-0.24*	0.09	-0.34*
Q2: Permanent Income	0.17***	0.17***	-0.00	0.15**	0.07	0.08	0.33***	0.27***	0.06	0.06	0.07	-0.01	0.29**	0.32***	-0.02	0.09	0.18	-0.09
Q3: Permanent Income	0.22***	0.25***	-0.03	0.27***	0.11	0.16	0.37***	0.46***	-0.09	0.10	0.15*	-0.04	0.44***	0.63***	-0.19	0.11	-0.07	0.18
Q4: Permanent Income	0.39***	0.40***	-0.02	0.50***	0.37***	0.13	0.49***	0.52***	-0.02	0.27***	0.36***	-0.09	0.55***	0.71***	-0.16	0.40***	0.28**	0.12
WHO disability index	-0.31***	-0.31***	-0.00	-0.39***	-0.43***	0.04	-0.26***	-0.22***	-0.03	-0.36***	-0.41***	0.05	-0.41***	-0.35***	-0.06	-0.35***	-0.35***	0.01
Self-assessed pain	-0.13***	-0.12***	-0.01	-0.12***	-0.09***	-0.03	-0.13***	-0.20***	0.07**	-0.08***	-0.08**	-0.01	-0.07	-0.10*	0.03	-0.20**	-0.03	-0.17
Community involvement	0.08***	0.07***	0.01	0.07*	0.01	0.06	0.05**	0.05**	-0.00	0.08**	0.08***	0.00	-0.03	-0.05	0.02	0.13**	0.11**	0.02
Trust	0.06***	0.10***	-0.03	0.07**	0.06*	0.01	0.11***	0.07***	0.04**	0.01	0.09***	-0.09**	-0.01	0.01	-0.02	0.09	0.11***	-0.02
Safety	0.10***	0.08***	0.02	0.05	0.02	0.03	0.11***	0.10***	0.01	0.06**	0.02	0.04	0.11**	0.07	0.03	0.16***	0.15***	0.01
Victim	0.06	-0.09	0.15	-0.31**	-0.02	-0.29	0.01	-0.17	0.17	0.11	-0.06	0.17	0.26*	0.15	0.11	-0.09	-0.48	0.39
Country Dummies	*Yes*	*Yes*	*Yes*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Constant	-0.45**	-0.61***	0.15	0.20	0.48**	-0.28	-0.98***	-0.92***	-0.06	0.37*	0.30	0.07	0.40	0.25	0.15	0.11	-0.33	0.44
Observations	11,504	9,974		1,452	1,574		4,765	4,231		2,392	2,440		1,211	788		1,684	941	

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in model (1) use the whole sample and include country fixed effects. Models (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table A2 : Regression analysis of WHO Quality of Life by Gender

	(1) Pooled			(2) Ghana			(3) China			(4) India			(5) South Africa			(6) Russia		
	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference
Age 60-69	0.05*	0.08***	-0.03	-0.02	0.04	-0.06	0.12***	0.09***	0.03	-0.01	0.01	-0.03	0.25***	0.20**	0.05	0.05	0.15	-0.10
Age 70-79	0.15***	0.18***	-0.03	-0.01	0.10	-0.10	0.25***	0.25***	0.00	0.04	0.04	0.01	0.26***	0.33***	-0.07	0.04	0.28**	-0.23
Age 80+	0.32***	0.38***	-0.06	-0.07	-0.01	-0.06	0.35***	0.41***	-0.07	0.11	0.10	0.01	0.50**	0.14	0.35	0.38***	0.83***	-0.45**
Rural	-0.02	0.03	-0.05	-0.01	-0.13*	0.12	-0.13**	-0.03	-0.10*	-0.01	0.05	-0.06	-0.12	-0.07	-0.05	0.08	0.16	-0.08
Married	0.13***	-0.02	0.16***	-0.06	0.20**	-0.26***	0.09**	0.08	0.01	0.15**	-0.11**	0.26***	0.28***	0.10	0.17	0.10	0.08	0.01
Number of adults in household	-0.01	-0.00	-0.01	-0.01	-0.02	0.01	-0.03	-0.04**	0.01	0.00	0.01	-0.01	-0.00	-0.04**	0.04	-0.10**	-0.06	-0.04
Number of children in household	0.02	0.01	0.01	-0.02	-0.02*	0.00	-0.00	0.02	-0.02	0.02*	0.02	0.01	-0.01	-0.02	0.01	-0.02	-0.10**	0.08*
Education years	0.00	0.01***	-0.01***	0.01	0.01*	-0.00	0.00	0.01	-0.00	0.01	0.01***	-0.01	-0.01	0.02*	-0.02**	-0.01	0.01	-0.01
Working	0.07*	0.16***	-0.09**	0.20***	0.16**	0.04	0.16***	0.17***	-0.00	0.04	0.13***	-0.09	0.21**	0.19**	0.03	-0.02	0.26**	-0.28*
Q2: Permanent Income	0.21***	0.21***	-0.01	0.19***	0.18***	0.00	0.29***	0.27***	0.02	0.09	0.16**	-0.06	0.38***	0.29***	0.09	0.21**	0.15*	0.06
Q3: Permanent Income	0.29***	0.32***	-0.03	0.27***	0.15**	0.12	0.40***	0.44***	-0.04	0.25***	0.32***	-0.07	0.46***	0.57***	-0.11	0.15	-0.07	0.22*
Q4: Permanent Income	0.49***	0.50***	-0.01	0.64***	0.48***	0.17	0.56***	0.55***	0.01	0.48***	0.54***	-0.06	0.77***	0.83***	-0.05	0.37***	0.23*	0.14
WHO disability index	-0.38***	-0.39***	0.01	-0.45***	-0.49***	0.04	-0.33***	-0.31***	-0.02	-0.44***	-0.46***	0.03	-0.36***	-0.38***	0.01	-0.40***	-0.48***	0.08
Self-assessed pain	-0.17***	-0.19***	0.01	-0.11***	-0.14***	0.03	-0.17***	-0.25***	0.08***	-0.12***	-0.11***	-0.02	-0.12**	-0.24***	0.12*	-0.24***	-0.15**	-0.09
Community involvement	0.09***	0.07***	0.02	0.10***	0.05*	0.05	0.06**	0.05***	0.01	0.15***	0.08***	0.07**	0.07*	0.01	0.06	0.07**	0.11**	-0.04
Trust	0.09***	0.12***	-0.03	0.07***	0.08***	-0.01	0.11***	0.11***	-0.00	0.06**	0.12***	-0.05	-0.02	0.00	-0.03	0.11**	0.11**	-0.00
Safety	0.11***	0.10***	0.01	0.05**	0.03	0.02	0.11***	0.11***	0.00	0.05*	0.10***	-0.04	0.12***	0.08*	0.04	0.19***	0.11*	0.08
Victim	-0.05	-0.14*	0.09	-0.27*	-0.07	-0.20	0.04	-0.25**	0.30*	-0.06	-0.09	0.04	0.05	0.11	-0.06	-0.28**	-0.20	-0.08
Country Dummies	*Yes*	*Yes*	*Yes*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Constant	-0.58***	-0.72***	0.13	0.11	0.44**	-0.33	-0.81***	-0.83***	0.02	0.11	-0.08	0.19	-0.07	0.33	-0.41	0.07	-0.01	0.08
Observations	11,504	9,974		1,452	1,574		4,765	4,231		2,392	2,440		1,211	788		1,684	941	

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in model (1) use the whole sample and include country fixed effects. Models (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table A3: Regression analysis of *Emotion Score* by Gender

	(1) Pooled			(2) Ghana			(3) China			(4) India			(5) South Africa			(6) Russia		
	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference
Age 60-69	0.15***	0.13***	0.02	0.07	0.02	0.04	0.12***	0.10***	0.02	0.13**	0.14***	-0.01	0.36***	0.22**	0.14	0.22	0.23**	-0.01
Age 70-79	0.31***	0.23***	0.08	0.09	0.22***	-0.12	0.36***	0.23***	0.13**	0.18**	0.20***	-0.02	0.44***	0.20	0.24	0.29**	0.27*	0.02
Age 80+	0.40***	0.42***	-0.02	0.10	0.19*	-0.09	0.45***	0.24***	0.21*	0.32**	0.45***	-0.13	0.74***	0.70***	0.04	0.31*	0.70***	-0.39*
Rural	-0.04	-0.05	0.02	0.09	-0.16**	0.25***	-0.10*	-0.17***	0.07	-0.05	-0.06	0.01	-0.20	-0.10	-0.10	0.10	0.09	0.00
Married	0.05	-0.02	0.07	0.06	0.03	0.03	0.13**	0.13**	-0.01	-0.03	-0.15**	0.12*	0.23**	-0.00	0.23	0.01	-0.00	0.02
Number of adults in household	0.01	0.00	0.00	-0.02	-0.01	-0.01	-0.02	0.00	-0.02	0.02*	0.00	0.02	-0.02	-0.05	0.03	0.01	0.06*	-0.05
Number of children in household	-0.01	-0.00	-0.01	-0.01	0.03**	-0.04*	-0.01	0.02	-0.03	0.00	0.01	-0.00	-0.05	0.07**	-0.12**	-0.20**	-0.25***	0.06
Education years	0.00	-0.00	0.00	-0.01	0.00	-0.02*	0.00	-0.01	0.01	0.01	-0.00	0.01	0.01	-0.00	0.01	-0.02	0.01	-0.02
Working	-0.05	-0.05	-0.00	0.33***	0.33***	-0.00	-0.03	-0.02	-0.01	-0.14**	-0.12**	-0.02	0.11	-0.12	0.23	0.09	0.05	0.04
Q2: Permanent Income	0.04	0.08	-0.04	0.14*	0.05	0.10	0.05	0.09	-0.04	-0.00	0.08	-0.08	-0.10	0.35***	-0.45**	0.06	-0.05	0.11
Q3: Permanent Income	0.12**	0.17***	-0.05	0.36***	0.11	0.26*	0.22***	0.16***	0.06	0.07	0.22***	-0.15	-0.02	0.13	-0.15	-0.05	-0.01	-0.05
Q4: Permanent Income	0.24***	0.28***	-0.04	0.46***	0.14	0.32**	0.26***	0.21***	0.05	0.23***	0.34***	-0.11	-0.08	0.41**	-0.48**	0.17	0.11	0.06
WHO disability index	-0.24***	-0.24***	-0.00	0.01	-0.03	0.04	-0.19***	-0.15***	-0.04	-0.34***	-0.30***	-0.04	-0.01	-0.23***	0.21**	-0.21***	-0.38***	0.17
Self-assessed pain	-0.19***	-0.17***	-0.02	-0.21***	-0.14***	-0.07	-0.19***	-0.20***	0.00	-0.19***	-0.20***	0.01	-0.20**	-0.15**	-0.06	-0.20***	-0.03	-0.17*
Community involvement	0.03*	0.03**	-0.00	0.10**	0.13***	-0.03	0.05***	0.04**	0.01	0.02	0.03	-0.01	0.12*	0.15***	-0.03	0.02	0.00	0.02
Trust	0.00	0.05***	-0.05**	-0.14***	-0.10***	-0.04	0.02	0.05**	-0.03	-0.03	0.05	-0.07*	-0.05	-0.05	0.00	0.02	0.10*	-0.08
Safety	0.09***	0.03	0.06**	0.13***	0.09***	0.03	0.11***	0.07***	0.04	0.05	-0.03	0.08*	0.03	-0.04	0.07	0.10**	0.03	0.07
Victim	-0.18**	-0.25***	0.06	0.08	0.13	-0.06	-0.01	-0.35**	0.33	-0.30**	-0.29**	-0.01	-0.14	0.15	-0.29*	-0.12	-0.34	0.23
Country Dummies	*Yes*	*Yes*	*Yes*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Constant	0.02	0.11	-0.08	-0.75***	-0.68***	-0.07	-0.48**	-0.44**	-0.05	0.78***	0.98***	-0.20	-0.32	0.25	-0.57	0.20	0.29	-0.10
Observations	11,504	9,974		1,452	1,574		4,765	4,231		2,392	2,440		1,211	788		1,684	941	

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in model (1) use the whole sample and include country fixed effects. Models (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

Table A4: Regression analysis of *Experienced Well-Being* by Gender

	(1) Pooled			(2) Ghana			(3) China			(4) India			(5) South Africa			(6) Russia		
	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference	Female	Male	Difference
Age 60-69	0.10***	0.14***	-0.04	0.19**	0.18***	0.01	0.09**	0.13***	-0.05	0.11**	0.13*	-0.02	0.51***	0.13	0.38***	-0.08	0.19	-0.28
Age 70-79	0.28***	0.26***	0.02	0.17	0.27***	-0.10	0.29***	0.24***	0.05	0.26***	0.22*	0.05	0.45**	-0.12	0.57*	0.01	0.54***	-0.53***
Age 80+	0.31***	0.33***	-0.02	0.29*	0.24*	0.04	0.40***	0.39***	0.01	0.08	0.22	-0.13	0.63***	0.30**	0.33	0.17	0.51***	-0.34*
Rural	-0.07	-0.11	0.03	-0.02	-0.09	0.07	-0.24***	-0.31***	0.07	0.02	-0.15*	0.17	-0.03	-0.06	0.03	-0.05	0.18	-0.23
Married	0.02	-0.11	0.13	-0.00	-0.02	0.02	0.09*	0.07	0.02	-0.10*	-0.11	0.01	0.23**	0.10	0.12	0.00	-0.36**	0.36**
Number of adults in household	-0.01	-0.01	0.00	-0.03	-0.05***	0.02	-0.05***	-0.03	-0.03	0.02	0.00	0.01	-0.10	-0.08**	-0.02	0.01	0.11**	-0.10
Number of children in household	0.02	0.00	0.02	-0.01	0.01	-0.03	0.00	0.00	0.00	0.02	0.01	0.01	0.03	0.07*	-0.04	-0.00	-0.12	0.12
Education years	0.00	0.00	0.00	0.00	0.00	-0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	-0.01	-0.01	-0.00
Working	-0.08**	-0.11**	0.03	0.14	0.00	0.14	-0.02	-0.03	0.02	-0.03	-0.12	0.09	0.01	-0.16*	0.18	-0.27**	-0.20	-0.07
Q2: Permanent Income	0.14***	0.11*	0.02	0.01	0.13	-0.12	0.06	0.21***	-0.16**	0.14*	0.00	0.14	0.10	0.00	0.09	0.23*	0.09	0.14
Q3: Permanent Income	0.20***	0.15**	0.05	0.19**	0.17*	0.02	0.26***	0.34***	-0.08	0.05	-0.09	0.14	0.29**	-0.07	0.36*	0.19	0.15	0.04
Q4: Permanent Income	0.31***	0.28***	0.03	0.25**	0.17*	0.08	0.28***	0.33***	-0.05	0.31***	0.09	0.23*	0.18	0.04	0.14	0.31***	0.39**	-0.08
WHO disability index	-0.19***	-0.16***	-0.04	-0.06	-0.14***	0.08	-0.11***	-0.04	-0.07**	-0.26***	-0.26***	-0.00	-0.14**	-0.23**	0.09	-0.23***	-0.19*	-0.04
Self-assessed pain	-0.06***	-0.06***	-0.01	-0.03	0.08**	-0.11*	-0.04*	-0.08***	0.04	-0.07**	-0.01	-0.06	-0.10	-0.13*	0.02	-0.06	-0.08	0.02
Community involvement	-0.03	-0.02	-0.01	0.06	0.11***	-0.05	0.02	0.05*	-0.02	-0.04	-0.04	-0.00	-0.02	0.03	-0.04	-0.07*	-0.08	0.01
Trust	-0.02	0.03	-0.05**	-0.00	0.01	-0.01	0.01	0.02	-0.01	-0.03	0.05	-0.08*	-0.10**	0.05	-0.14**	-0.05	-0.02	-0.02
Safety	0.13***	0.11***	0.02	0.06*	0.02	0.03	0.15***	0.16***	-0.01	0.11***	0.09***	0.02	-0.04	0.01	-0.05	0.16***	0.08*	0.08
Victim	-0.01	-0.06	0.06	0.05	0.05	0.00	0.14	-0.13	0.27	-0.09	-0.07	-0.02	-0.00	0.12	-0.12	-0.05	-0.15	0.10
Country Dummies	*Yes*	*Yes*	*Yes*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Constant	-0.05	-0.24	0.19	-0.50*	-0.30	-0.19	-0.72***	-1.14***	0.42	0.35	0.54**	-0.18	0.56**	0.57*	-0.01	0.60*	0.58	0.01
Observations	11,504	9,974		1,452	1,574		4,765	4,231		2,392	2,440		1,211	788		1,684	941	

* (p<0.10). ** (0<0.05). *** (p<0.01)

Note: Regressions ran to obtain the partial associations presented in model (1) use the whole sample and include country fixed effects. Models (2) to (6) present partial associations obtained from regressions using country-specific subsamples. Reported differences are measured in standard deviation units of each respective outcome of interest, whereby the standardization is performed at the country level. Omitted categories are as follows: Male (for female), 50-59 (for all age groups), Urban (for rural), Unmarried (for married), Not working (for working), Q1: Permanent Income (for all permanent income groups), Not victim of a violent crime in the previous 6 months (for victim). WHO disability index, self-assessed pain, community involvement, trust and perceived safety are standardized at the country level.

2 Chapter 2: Deconstructing gender differences in experienced well-being among older adults in the developing world: The roles of time use and activity-specific affective experiences

Gabriela Flores (University of Lausanne)

Clémence Kieny (University of Lausanne)

Jürgen Maurer[8] (University of Lausanne)

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Declarations

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Code availability: available from the corresponding author, Clémence Kieny, upon reasonable request.

[8] Gabriela Flores, PhD, contributed to this work during her employment at the University of Lausanne, Faculty of Business and Economics. She has since then become an employee of the World Health Organization (Health financing department), 20 avenue Appia CH-1211 Geneva 27, Switzerland, (email: floressg@who.int). The arguments made in this paper are entirely those of the authors. They do not necessarily represent the views of the World Health Organization. ORCID Number: 0000-0003-1710-9937

Clémence Kieny, is a PhD candidate at the University of Lausanne, Internef, Dorigny, 1015 Lausanne, Switzerland (phone: +41 76 380 98 82; email: clemence.kieny@unil.ch). ORCID Number: 0000-0003-0976-1466

Corresponding author: Jürgen Maurer, PhD, is a professor of Economics at the University of Lausanne, Faculty of Business and Economics, Internef, Dorigny, 1015 Lausanne, Switzerland (email: jurgen.maurer@unil.ch)

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Abstract

Due to declining fertility rates and increasing longevity, the world is growing older. Improving the quality of life of older adults, and not merely preventing deaths, is thus becoming an important objective of public policies. It is therefore urgent to understand the key dimensions of older adults' subjective well-being as well as their main drivers. Women represent a large proportion of the older population, and existing evidence suggests that they may be particularly vulnerable, especially in the developing world. Analyzing potential gender differences in experienced well-being in older adults is hence crucial. We exploit information on time use and activity-specific emotional experiences from the abbreviated version of the Day Reconstruction Method (DRM) contained in the WHO Study on Global AGEing and Adult Health (SAGE), focusing on five developing countries. We first quantify gender differences in experienced well-being among older adults, which we then deconstruct into corresponding differences in time use and activity-specific net affects. Adjusting for age only, our results indicate a gender gap in experienced well-being in favor of men. Yet, adjusting for individual characteristics and life circumstances weakens this association. Illustrative counterfactual analyses further suggest that gender differences in activity-specific net affects are considerably more important than differences in time use towards explaining the disadvantage of older women. Our results suggest that women's lower affect in most activities is linked to the conditions under which they are performed, and in particular to the higher level of disability in older women compared to men of the same age.

Keywords: Experienced well-being, Day Reconstruction Method (DRM), Gender, Older adults, Low- and middle-income countries

2.1 Introduction

Subjective well-being is increasingly recognized as an indispensable complement to traditional indicators of economic performance and human development, such as Gross Domestic Product or Human Development Indices, to comprehensively assess and track the welfare of societies as a whole as well as the well-being of different population groups (Stiglitz et al. 2009; Dolan et al. 2011). Besides striving to increase performance in terms of health, economic outcomes, and education, governments should therefore also take into consideration the impact of institutions and policies on individuals' subjective well-being. Arguably, policy-makers should at least in part be guided by the priorities of citizens themselves, and optimizing the subjective well-being of the population should thus constitute a meaningful policy objective in itself. Moreover, several studies suggest that subjective well-being may also influence more objectively measurable life circumstances, such as productivity and social behavior, as well as individuals' health and longevity (e.g., De Neve et al. 2013; Diener et al. 2017), which further highlights the importance of subjective well-being as a key goal of health, social, and economic policies. Support for using subjective well-being assessments as policy indicators is based on growing evidence that self-reports of subjective well-being are a valid way to measure individual welfare and happiness. For example, several neuroimaging studies have shown that subjective well-being reports are closely related to multiple cognitive-emotional brain regions (e.g., Luo et al. 2014; Sato et al. 2015; Ren et al. 2019).

The age-structure of the world population is changing due to declining fertility rates and increasing longevity. Worldwide, the share of the population over the age of 65 years old has increased from 6 to 9 percent between 1990 and 2019 and is projected to increase to 16 percent by 2050, reaching a total of 2 billion individuals falling into this age group (United Nations 2019a). Understanding the drivers of subjective well-being in older adults and thus the potential impacts that global aging will have on the overall well-being of the society is thus essential (National Research Council 2013). In line with this new demographic reality, global institutions are increasingly acknowledging well-being in old age as an important issue: Indeed, the 2030 Agenda for Sustainable Development states the promotion of well-being at all ages as one of its goals (United Nations 2019b) and the WHO defines healthy aging as "the process of developing and maintaining the functional ability that enables well-being in older age" (World Health Organization 2015). Yet, much of the academic discussion regarding the subjective well-being of older adults focuses on what is known from experiences in high-income countries, while little is known about the situation in low- and middle- income countries, where 80 percent of the worlds' elderly will be living by 2050 (Shetty 2012).

Further examination of the current demographic situation reveals that the older population is predominantly female and is likely to remain so in the foreseeable future. On average, during the period 2010-2015, women outlived men by about 4.5 years. In 2017, women thus represented 54 percent of those aged 60 years and above and 61 percent of those aged over 80 (United Nations 2019c). However, although women may generally expect to live longer than men, there is evidence that they experience higher morbidity than men of the same age (e.g., Verbrugge 1985; Denton et al. 2004; Case et Paxson 2005). In addition, women's lower participation in the paid workforce throughout their life[9] bears negative consequences in older age, such as lower access to pensions and other economic resources resulting in greater poverty, lower access to healthcare and social care services, and higher risk of abuse (World Health Organization 2015). Finally, compared to men, women of all ages tend to spend more time on non-leisure activities such as unpaid housework (Miranda 2011). As highlighted in the 2012 World Development Report on Gender Equality and Development (World Bank 2012), in most countries, women allocate between one and three more hours per day to housework as compared to men, spend two to 10 times more hours on care-related activities, and spend up to four hours less on market activities. Several studies further analyze how discrepancies in the gender division of labor evolve over the life course. For example, the World Development Report (World Bank 2012) notes that the above patterns are often accentuated after marriage and childbearing but diminish with older age. While there are clear gender differences in time use, there is little evidence to date regarding the impact of these differences in time use on subjective well-being, especially on how men and women feel as they live their daily lives (experienced well-being).

Subjective well-being is a multifaceted concept, which is commonly divided into two constituent components: evaluative and emotional well-being (National Research Council 2013; OECD 2013)[10]. Measures of evaluative well-being on the one hand are more commonly available for analysis and are based on respondents' cognitive evaluations of their own life, often using questions such as "how would you rate your life overall these days". Measures of emotional well-being, on the other hand, aim to capture respondents' affective experiences as they live their lives such as feeling calm, relaxed, worried, stressed or angry. Boarini et al. (2012) — among others — argue that measures of evaluative and emotional well-being are both conceptually and empirically distinct: while life satisfaction seems to be more closely related to cognitive judgements of how individuals evaluate their own life and how they compare it to that of others, affective experiences seem to be strongly influenced by time use. In addition, Kahneman and Krueger (2006) claim that measures of emotional well-being may be less

[9] Women represented 86 percent of individuals out of the labor force and 60 percent of unpaid workers in 2018 (World Bank Group 2018)

[10] Occasionally, researchers further explicitly distinguish a third dimension of subjective well-being, eudaimonic well-being, which, however, shares many characteristics with evaluative well-being and is, therefore, also often subsumed in the broader category of evaluative well-being (OECD 2013).

subject to individual reporting biases compared to measures of evaluative well-being. Similarly, Kahneman and Riis (2005) argue that measures of emotional well-being may be less influenced by cultural disposition, self-conceptualization, memory and introspection. Moreover, they emphasize that emotional well-being may be a more important determinant of future health due – for example – to the cumulative effects of stress. Consistent with this idea that the quality of peoples' daily experiences is linked to health outcomes, several authors show that emotional well-being is a strong predictor of mortality (e.g., Carstensen et al. 2011; Steptoe and Wardle 2012). Specifically, experienced well-being is a duration-weighted measure of emotional experiences as people live their everyday lives. It thus records and aggregates emotional experiences through time to obtain a measure of individual emotional well-being. This approach to measuring well-being also has a long-standing tradition in economics: In 1881, Edgeworth proposed to record utility as the quality of experiences at every instant in order to create what he called a "*hedinometer*" (Edgeworth 1881). As formulated by McFadden (2005), Edgeworth "*envisioned the level of happiness associated with an experience as the integral of the intensity of pleasure over the duration of the event*" (p.3).

Our study investigates gender differences in experienced well-being as a conceptualization of emotional well-being. Most of the literature on gender differences in subjective well-being focuses on evaluative well-being while studies examining gender differences in emotional well-being are scarcer (see for example Batz and Tay (2018) for a review). As a consequence, little is known regarding gender differences in overall experienced well-being — especially in the developing world — and our paper therefore attempts to bring new evidence to this literature. Specifically, we explore the roles of time use and activity-specific affective experiences for these gender differences in experienced well-being using data on older adults from five developing countries. Our analysis exploits detailed data from an abbreviated version of the Day Reconstruction Method (DRM) that was administered in the first – and currently only available – wave (2007-2010) of the World Health Organization's (WHO) Study on Global Aging and Adult Health (SAGE). The inclusion of DRM data in SAGE offers a unique opportunity to deconstruct experienced well-being into the two components already put forward in the context of Edgeworth's hedinometer: time use and utility during each activity. To the best of our knowledge, no other survey provides harmonized DRM data in multiple countries, especially no aging survey in low- or middle-income countries. While we do not aim to conduct detailed cross-country comparisons in this paper, we use the multiple analyses of data from different study sites as an opportunity to validate our findings across different cultural and geographic settings from around the world.

To further deconstruct any gender differences in experienced well-being, we separately analyze potential gender differences in time-use on the one hand, and activity-specific net affects on the other. These analyses allow us to evaluate the relative importance of each of the two constituent parts of

experienced well-being. We then isolate the relative contributions of gender differences in time-use ("*time composition effects"*) and gender differences in activity-specific affective experiences ("*saddening effects"*), by comparing hypothetical levels of experienced well-being based on counterfactual thought experiments which eliminate existing gender differences in activity-specific net affects and gender differences in time use, respectively. These thought experiments are analogous to those reported in Flores et al. (2015) for analyzing differences in experienced well-being between older adults with and without disabilities, and are similar in spirit to analyses by Knabe et al. (2010), who compare the experienced well-being of employed and unemployed individuals in Germany.

Throughout our paper, we conduct two types of analyses in parallel, i.e., analyses adjusting for age only (*age-adjusted* models) as well as adjusting for a larger set of covariates related to respondents' socio-demographic characteristics, health status and community environment (*fully-adjusted* models). The *age-adjusted* models allow us to describe differences in experienced well-being across subpopulations defined by age and sex only and are thus relevant for the identification of disadvantaged groups as potential targets for policies. The *fully-adjusted* models, which control for individual characteristics and life circumstances, allow us to highlight potential channels and mechanisms through which gender may influence experienced well-being in addition to identifying any potential direct relationships of gender with well-being.

Our study contributes to the existing evidence in several ways. Building on previous research on gender differences in various dimensions of subjective well-being among older adults in low- and middle-income countries (Kieny et al. 2021), we provide a detailed analysis of gender differences in experienced well-being that isolates the relative roles of gender differences in time use vs. gender differences in activity-specific affective experiences to account for any differences in experienced well-being between men and women. Discussions on gender differences in subjective well-being in academia and policy often highlight gender differences in time use and "time poverty" (e.g. Wodon and Blackden 2006; Walker 2013; Sweet and Kanaroglou 2016), especially related to the generally female double burden of performing both professional and house work. Furthermore, we use two different statistical models to assess any gender differences in experienced well-being and deconstruct these differences into corresponding gender differences in time use and activity-specific net affects. Specifically, we first perform our analyses adjusting first for age only (*age-adjusted* models) before moving to richer statistical models that also adjust for a larger set of covariates related to respondents' socio-demographic characteristics, health status and community environment beyond age (*fully-adjusted* models). Comparing and contrasting gender differences based on *age-adjusted* and *fully-adjusted* models allows us to first assess age-adjusted sub-population differences in experienced well-being between men and women along with their sources in terms of corresponding gender differences

in time use and activity-specific net affects, which may be most relevant for an overall assessment of gender inequalities in experienced well-being. Moving to the *fully-adjusted* models, in turn, allows us to be more specific about the potential roles of gender *per se* vs. gender differences in general life circumstances for resulting gender differences in experienced well-being, time use and activity-specific net affects. These analyses may provide important insights on the mechanisms underlying these gender inequalities and suggest avenues for potential policy levers and interventions aimed at closing the subjective well-being gap. Our approach is thereby inspired by mediation-type analyses commonly used to explore different mechanisms linking a specific outcome of interest (here: experienced well-being) with an independent variable of special interest (here: gender) and allows us to side-step the long-standing debate regarding the use of control variables in research on subjective well-being by performing our analyses in both ways, i.e., without and with a comprehensive set of control variables (Blanchflower and Oswald 2008; Glenn 2009; Blanchflower and Oswald 2009).

2.2 Data and measures

2.2.1 Data

We use data from the first wave of the World Health Organization's Study on Global AGEing and Adult Health (SAGE), collected between 2007 and 2010. SAGE is an internationally harmonized survey on aging in low- and middle-income settings, whose data collection activities are mostly focused on adults aged 50 and older. As SAGE only collected data from relatively small comparison samples of younger adults aged 18 to 49 years old, we focus our analysis on the relationship between gender and experienced well-being among adults aged 50 and older, which represented the main target population of SAGE. While SAGE data is collected in six low-and middle-income countries — China, Ghana, India, Mexico, the Russian Federation and South Africa — we exclude Mexico (2070 observations) from our analysis because close to 50 percent of the Mexican sample has missing information on our outcomes of interest from the well-being module due to incomplete interviews. Using SAGE data enables us to perform parallel analyses for countries in different regions of the world and across different cultural contexts based on fully harmonized data. Such parallel analyses allow us to determine whether our results are robust across multiple settings and, therefore, whether they represent a general pattern rather than some country-specific idiosyncratic associations due to specific cultural contexts or location.

SAGE contains individual- and household-level data, including information about respondents' socio-demographic characteristics, their social environment, health and healthcare use, and well-being. A key asset of SAGE consists in the inclusion of comprehensive assessments of emotional well-being. Notably, the administration of an abbreviated DRM instrument to measure experienced well-being

generates a combination of time-use data with corresponding reports of individuals' affective experiences during the reported activities. In the abbreviated DRM instrument of SAGE, individuals are randomly allocated into one of four groups, which are in turn asked to report on their time use and affective experiences over the course of the previous morning, afternoon, evening or entire day, respectively. We drop from our sample the 7649 individuals that were randomly assigned to the full-day group, as those respondents do not report the detailed time diary data and corresponding activity-specific affects needed to construct our measure of experienced well-being. Finally, we eliminate 1660 additional observations with missing information on any of the covariates used in the analysis. Following the above sample selection procedures, our final sample consists of 21,488 respondents, including 9106 observations from China, 3031 from Ghana, 4833 from India, 2513 from Russia, and 2005 from South Africa.

2.2.2 Experienced well-being

We use experienced well-being as a measure of emotional well-being. In order to construct this measure, we combine the data on time use and activity-specific affects provided by SAGE's abbreviated DRM instrument[11]. Individuals from each of the three randomly assigned DRM groups — the "morning", "afternoon", and "evening" groups — are asked to report their time use during their respective parts of the previous day, i.e., starting after waking up for the morning group, at noon for the afternoon group or at 6 pm for the evening group. Respondents report what they have been doing based on a list of 22 different activities. They then report how much time they spent on each specific activity and with whom they interacted during the activity. The abbreviated DRM module thereby elicits information for up to ten successive activities or until the interview time reaches 15 minutes for the DRM section. For each activity, respondents provide further information on the prevalence and intensity of two positive emotions (feeling calm or relaxed, and feeling enjoyment), and five negative emotions (feeling worried, rushed, irritated or angry, depressed, tense or stressed). The intensity of each positive and negative affect during an activity is measured on a three-point scale. We aggregate these reported intensities of positive and negative affective experiences into a single measure of "net affect". We simultaneously use the data from all three DRM groups in our estimations in order to ensure that our estimates of time-use and corresponding affective experiences represent those of the entire day in the target population of individuals aged 50 years and older (Miret et al. 2012).

The large number of activities included in the activity list implies that some of the 22 activities are reported with rather low frequencies. To address the issue of infrequent activities and to facilitate statistical estimation, we follow previous research (Flores et al. 2015; Kieny et al. 2020; Kieny et al.

[11] Miret et al. (2012) show that the data obtained using this tool are largely comparable to those obtained using a full DRM instrument.

2021) and aggregate the 22 activities into five broader activity groups[12]: work, housework, travel, leisure, and self-care. This reclassification of activities aims at striking a balance between grouping activities into relatively intuitive and easily interpretable categories while avoiding small prevalence rates for very specific and infrequent activity groups that would be challenging to integrate into our econometric framework. Note that we refer to "work" exclusively as paid work and subsistence farming, excluding any (unpaid) household-related tasks, which are part of the separate category "housework".

We define experienced well-being based on Kahneman's definition as the "integral of the stream of pleasures and pains associated with events over time" (Kahneman et al. 2004). Formally, experienced well-being can be represented as the duration-weighted sum of net affects for all activities performed during the day, that is:

$$U_i = \sum_{\mathrm{a}} \tau_{\mathrm{ia}} u_{ia} \qquad \textbf{(1)}$$

where $u_{i,a}$ represents individual i's net affect during activity a, and $\tau_{\mathrm{ia}} = \frac{T_{ia}}{T_i}$ represents the share of non-sleeping time that individual i spends on activity a, that is, T_{ia}, the duration of activity a, over T_i, the total time covered by the up to 10 successive activities that the respondent reported during her assigned time window.

Following Kahneman and Krueger's definition of net affect (Kahneman and Krueger 2006), individual i's net affect during activity a, is defined as:

$$u_{i,a} = \sum_{\mathrm{s}} \left(\sum_{\mathrm{l}} h_{is} PA_{is}^{l} - \sum_{\mathrm{k}} h_{is} NA_{is}^{k} \right) \forall\ a = 1, \ldots, 5 \qquad \textbf{(2)}$$

where PA_{is}^{l} is the l'th positive affect and NA_{is}^{k} is the k'th negative affect that person i reports for each spell s of possibly multiple reports of activity a. We control for multiple occurrences of the same activity by taking the time-weighted average of positive and negative affect scores. The weight h_{is} is defined as:

$$h_{is} = \frac{t_{is}}{T_{ia}} \qquad \textbf{(3)}$$

where t_{is} is the duration of one specific occurrence of activity a and T_{ia} is the total time spent on activity a during the assigned period of time. In other words, the net affect of activity a is the weighted sum of positive and negative affects experienced during different occurrences of activity a over the assigned time period, whereby the weights correspond to the relative time share of each specific

[12] **Work:** working, subsistence farming. **Housework:** preparing food, doing housework, watching children, shopping, providing care to someone. **Travel**: walking somewhere, traveling by bicycle, traveling by car/bus/train. **Leisure**: rest (including tea/coffee break), chatting with someone, playing (including cards/ games), reading, listening to radio, watching TV, exercising or leisure walk, other leisurely activity. **Self-care**: grooming or bathing (self), eating, religious activity, intimate relations/sex.

occurrence of activity a relative to the total time spent on activity a during the assigned reporting period.

To be able to more clearly highlight activities that generally result in above or below average affective experiences and to facilitate the comparative interpretation of our estimated coefficients across countries as multiples of the standard deviations of the country-specific distribution of unstandardized experienced well-being, we standardize our measure of activity-specific net affect as follows:

$$\tilde{u}_{ia} = \frac{u_{ia} - \mu_U}{\sigma_U} \; \forall \; a = 1, \dots, 5 \qquad \textbf{(4)}$$

where μ_U represents mean and σ_U the standard deviation of the country-specific distributions of $u_{i,a}$. $\tilde{u}_{ia}$ therefore represents the utility that individual i derives from activity a over the randomly assigned time period, relative to the overall experienced well-being of all individuals across all activities in that country. This standardization allows a more straightforward interpretation, as the sign of $\tilde{u}_{ia}$ indicates whether the net affect associated with activity a is above or below the mean net affect across all activities in each the respective country under consideration. In addition, it ensures that our estimates of the gender (and other) coefficients can be interpreted as relative to the country-specific distribution of unstandardized experienced well-being, which may enhance the comparability of our estimates across countries, especially if we suspect the unstandardized distributions of experienced well-being across countries to be different for reasons that are unrelated to actual experienced well-being such as issues of survey design or country-specific response scales.

Finally, we construct a standardized version of the overall experienced well-being as follows:

$$\widetilde{U}_i = \frac{\sum_a \tau_{ia} u_{ia} - \mu_U}{\sigma_U} \qquad \textbf{(5)}$$

which measures the average experienced well-being of individual i over her assigned time period, standardized based on the overall distribution of experienced well-being of for all individuals from the same country. This standardized measure represents the main outcome of interest for our overall analyses of gender differences in experienced well-being. This final standardization ensures that our estimates of the gender (and other) coefficients can be interpreted in standard deviation units, i.e., as relative to the country-specific distribution of unstandardized experienced well-being, which may enhance the comparability of our estimates across countries, especially if we suspect the unstandardized distributions of experienced well-being across countries to be different for reasons that are unrelated to actual experienced well-being, such as issues of survey design or country-specific response scales.

2.2.3 Explanatory variables

The *age-adjusted* analysis controls only for age in addition to gender, while the *fully-adjusted* analysis also includes control variables related to respondents' sociodemographic and economic status, as well as health status and social cohesion, which could be correlated with both gender and experienced well-being. The inclusion of control variables allows us to identify and quantify potential channels underlying any potential subpopulation differences in experienced well-being between men and women. The sociodemographic and economic control variables include age, marital status, household composition (number of adults and children living in the household), whether respondents live in an urban or rural area, years of education and employment status. These variables are significantly correlated with gender in at least a subset of study countries (Table 1), and we hypothesize that they may also influence experienced well-being and thus represent potential mechanisms or confounders in the relationship between gender and experienced well-being. Although we cannot control directly for individual resources, we use household income quartiles based on SAGE's permanent income variable as a proxy for living standards of individual household members. Moreover, in order to account for potential differences in the within-household income distribution, we also include an individual-level explanatory variable indicating whether respondents report having enough money to meet their own needs. The health variables include a WHO disability index and a measure of self-assessed pain. Specifically, we use the 12-item version of the WHO Disability Assessment Schedule (WHODAS 2.0), an index which captures different aspects of disability, following the definition of the International Classification of Functioning, Disability and Health (World Health Organization 2001). The WHODAS 2.0[13] concentrates on six life domains: cognition, mobility, self-care, getting along, life activities, and participation. Self-assessed pain measures the degree of bodily aches or pain, or bodily discomfort that the respondent reported experiencing on a 1 to 5 scale during the previous month, and whether this pain induced difficulties in everyday life. Finally, we use community involvement, trust in others, perceived safety in the neighborhood and having been a victim of a violent crime in the last 12 months as measures of social cohesion. Community involvement measures the level of participation to social activities, while trust in others measures how much the individual has confidence in different groups of people, such as co-workers, neighbors or strangers.

[13] It measures the level of difficulty (from 0 to 4) encountered over the previous 30 days regarding 12 items: (1) Standing for long periods such as 30 minutes (2) Taking care of household responsibilities (3) Learning a new task (4) Joining in community activities (5) Dealing with emotions regarding health problems (6) Concentrating on doing something for ten minutes (7) Walking a long distance such as a km (8) Washing whole body (9) Getting dressed (10) Dealing with unknown people (11) Maintaining a friendship?(12) Day-to-day work.

2.3 Econometric models and counterfactual analysis

2.3.1 Experienced well-being

To assess whether there is an age-adjusted gender gap in experienced well-being, we first regress our standardized measure of experienced well-being $\widetilde{U}_i$ on a dummy for gender, only including age as an additional control variable. We, thus, estimate the *age-adjusted* overall experienced well-being gap as follows:

$$\widetilde{U}_i = \alpha + \beta^A \, Female_i + \vartheta^A Age_i + \, \varepsilon_i \qquad (\mathbf{6})$$

In a second step, we explore how the partial association between gender and overall experienced well-being changes once we control for additional measures of individuals' life circumstances. We, therefore, perform the same regression, but this time including an expanded set of control variables into the model X_i, estimating the *fully-adjusted* gender gap in experienced well-being as follows:

$$\widetilde{U}_i = \alpha + \beta^F Female_i + X_i \gamma^F + \, \varepsilon_i \qquad (\mathbf{7})$$

We estimate these two regressions using OLS, adding sample weights, to ensure the correct estimation of the corresponding conditional means of experienced well-being across population groups (Solon et al. 2013).

In order to further deconstruct any gender differences in experienced well-being, we also analyze the two components of experienced well-being — time use and activity-specific net affect — separately.

2.3.2 Time use

We estimate the partial association between gender and time use using weighted multivariate fractional logit models, which impose that the estimated time shares have to be in the 0 to 1 interval ($\tau_{ia} \in [0,1]$), as well as sum up to 1 ($\sum_{a=1}^{5} \tau_{ia} = 1$). We start by evaluating whether there are any differences in the way men and women spend their time adjusting for age alone (*age-adjusted* models). Following Mullahy (2010), we use a multinomial logit functional form such that:

$$\xi[\tau_a|X_i] = \frac{\exp\left(\alpha_a^{\tau,A} + \beta_a^{\tau,A} Female_i + \theta_a^{\tau,A} \, Age_i\right)}{1 + \sum_{m=1}^{4} \exp\left(\alpha_m^{\tau,A} + \beta_m^{\tau,A} Female_i + \theta_m^{\tau,A} \, Age_i\right)} \forall a = 1, \ldots, \, 4 \quad (\mathbf{8})$$

$$\xi[\tau_5|X_i] = \frac{1}{1 + \sum_{m=1}^{4} \exp\left(\alpha_m^{\tau,A} + \beta_m^{\tau,A} Female_i + \theta_m^{\tau,A} \, Age_i\right)} \qquad (\mathbf{9})$$

where we impose α_5^{τ}= β_5^{τ}= $\theta_5^{\tau} = 0$ as a normalization for identification (Cameron and Trivedi 2005).

We then repeat this analysis, this time including the whole set of control variables into the model to assess how men and women's time use would differ if they had otherwise comparable life circumstances.

$$\xi[\tau_a|X_i] = \frac{\exp\left(\alpha_a^{\tau,F} + \beta_a^{\tau,F} Female_i + X_i \gamma_a^{\tau,F}\right)}{1 + \sum_{m=1}^{4} \exp\left(\alpha_m^{\tau,F} + \beta_m^{\tau,F} Female_i + X_i \gamma_m^{\tau,F}\right)} \forall a = 1, \ldots, 4 \qquad (\mathbf{10})$$

$$\xi[\tau_5|X_i] = \frac{1}{1 + \sum_{m=1}^{4} \exp\left(\alpha_m^{\tau,F} + \beta_m^{\tau,F} Female_i + X_i \gamma_m^{\tau,F}\right)} \qquad (\mathbf{11})$$

We estimate the above equations using quasi-maximum likelihood. However, the empirical distribution of a vector of shares conditional on a set of control variables may suffer from underdispersion (Mullahy 2010). Consequently, the quasi-maximum likelihood procedure may not yield consistent estimates of the covariance matrix. To address these issues, we use a bootstrapping procedure with 250 repetitions to estimate our standard errors.

2.3.3 Activity-specific net affect

In order to assess whether men and women experience activities differently, we first estimate the *age-adjusted* partial associations between gender and activity-specific net affect. We use a weighted linear regression of the form:

$$\tilde{u}_{ia} = \alpha_a^A + \beta_a^A Female_i + \vartheta_a^A Age_i + \epsilon_{ia}^A \; \forall \; a = 1, \ldots, 5 \qquad (\mathbf{12})$$

based on the sample that reported activity a, using sample weights as described earlier.

We then evaluate gender differences in activity-specific affective experiences, conditional on life circumstances in a similar fashion within the context of *fully-adjusted* model that incorporates our expanded set of covariates X, that is:

$$\tilde{u}_{ia} = \alpha_a^F + \beta_a^F Female_i + X_i \gamma_a^F + \epsilon_{ia}^F \; \forall \; a = 1, \ldots, 5 \qquad (\mathbf{13})$$

It is worth emphasizing that we do not account for potential selection into activities, which does not allow for causal interpretation.

2.3.4 Time use vs. activity-specific affective experiences

Finally, we combine the results from the two separate analyses of gender differences in time use and gender differences in affective experiences in order to assess the relative importance of these differences in time use vs. activity-specific affective experiences to account for the overall gender differences in experienced well-being. Our thought experiments for deconstructing the gender differences in experienced well-being are similar to that of Flores et al. (2015) who assessed the role

of disability for experienced well-being. Like in the case of the above regression analyses, we perform these counterfactual thought experiments twice, once controlling only for age, and a second time using our full set of control variables. These analyses help in deconstructing the raw gender differences in experienced well-being (adjusting for age only) as well as to assess the relative contributions of gender differences in time use vs. activity-specific net affects for gender differences in experienced well-being once other differences in life circumstances are also accounted for.

To isolate the contribution of differences in time use, we estimate a so-called *time composition effect* as:

$$\Delta_U^{Time} = \sum_a \overline{\tilde{u}}_a \times \delta_a^{\tau} \qquad (\mathbf{14})$$

where $\overline{\tilde{u}}_a$represents the average net affect during activity a and $\delta_a^{\tau} = \frac{\partial \tau_a}{\partial Female}$ are the partial effects of *female* on the proportion of time spent in activity a, as calculated in equations (8) and (9) (for the *age-adjusted* model) or (10) and (11) (for the *fully-adjusted* model). The *time composition effect* describes how men and women's experienced well-being would differ if both genders had the same activity-specific affective experiences (activity-specific net affect being set at the overall country-average, irrespective of gender), but their time use would continue to differ by gender. In other words, would men or women have higher experienced well-being, if everyone would experience all activities in the same way, but gender differences in time use would remain as observed in the data?

To isolate the contribution of gender differences in affective experiences, we estimate the so-called *saddening effect* as:

$$\Delta_U^{Affect} = \sum_a \overline{\tau}_a \times \delta_a^{\tilde{u}} \qquad (\mathbf{15})$$

where $\delta_a^{\tilde{u}} = \frac{\partial \tilde{u}_a}{\partial Female}$ represent the partial effects of female on activity-specific net affect of activity a, as calculated in equations (12) and (13), for the *age-adjusted* and *fully-adjusted* regressions, respectively. The *saddening effect* describes how men and women's experienced well-being would differ if both genders were not to differ in their activity patterns (time use being set at the overall country-average, irrespective of gender), but their activity-specific net affect were to remain gender-specific. In other words, would men or women have higher experienced well-being, should both genders spend their day in exactly the same way, while still having gender-specific affective experiences associated with these activities?

Although our analysis is broadly comparable to the decomposition analysis performed by Knabe et al. (2010) to study well-being differences between employed and unemployed individuals in Germany,

our approach differs in two important ways. Firstly, their estimations of the *saddening* and *time composition effects* are based on unconditional group differences, while we control either for age alone or for a large set of control variables. Secondly, Knabe et al. (2010) define the *time composition effect* as a residual effect obtained by subtracting the *saddening effect* for the overall differences in experienced well-being between the two groups under consideration, while we define the two effects symmetrically, even if this implies that the two effects do not add up to the overall group differences in experienced well-being due to an omitted interaction term.

Finally, while our deconstruction of the gender differences in experienced well-being bears some similarities with other econometric decompositions techniques, such as the Oaxaca-Blinder decomposition, our aim is fundamentally different. Oaxaca-Blinder decompositions generally examine how unconditional mean differences in an outcome across groups may be attributed to group differences in explanatory variables on the one hand and their group-specific associations with the outcome of interest on the other. By contrast, our analyses aim to isolate and quantify the respective contributions of each constituent part of experienced well-being — time use and activity-specific net affect — for differences in the overall experienced well-being of older men and women. We, therefore, need to apply alternative techniques to construct meaningful counterfactuals for obtaining our *saddening* and *time composition effects*, as outlined in Flores et al. (2015).

2.4 Results

2.4.1 Descriptive statistics

Table 1 presents key characteristics of our analytical sample, i.e., the country- and gender-specific averages of all explanatory variables used in our analyses.

As highlighted in the table, men and women in our sample have substantially different characteristics and life circumstances. In all countries, women are less likely to be married than men, a likely reflection of gender differences in life expectancy and a correspondingly higher prevalence of widowhood among women than men. Women tend to live in smaller households in all but one country (South Africa). In addition, women work less often than men, with a 6 to 43 percentage points difference across the five countries.

Table 1: Life circumstances of men and women

	Ghana		India		China		South Africa		Russia	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Demographics										
Age	64.16	64.27	61.45	61.40	62.04	**62.90**	60.88	61.76	61.75	**64.87**
Age 50-59	0.42	0.39	0.50	0.47	0.47	**0.44**	0.53	0.49	0.56	**0.42**
Age 60-69	0.27	0.28	0.30	0.32	0.32	0.31	0.31	0.31	0.22	0.24
Age 70-79	0.23	0.24	0.16	0.16	0.17	**0.21**	0.11	**0.16**	0.15	**0.25**
Age 80+	0.09	0.09	0.04	0.05	0.04	**0.05**	0.05	0.05	0.07	**0.10**
Married	0.85	**0.23**	0.91	**0.61**	0.91	**0.80**	0.72	**0.32**	0.71	**0.41**
Rural	0.60	0.58	0.75	0.73	0.57	**0.50**	0.37	0.39	0.31	0.26
Number of adults in household	3.86	**3.31**	4.98	4.69	2.50	**2.44**	3.00	3.01	2.42	**2.06**
Number of children in household	2.01	**1.79**	1.88	1.97	0.21	0.22	0.78	**0.98**	0.17	0.15
Socioeconomic Status										
Working	0.73	**0.67**	0.64	**0.21**	0.53	**0.35**	0.45	**0.25**	0.50	**0.35**
Less than Primary	0.53	**0.76**	0.42	**0.82**	0.31	**0.54**	0.45	**0.51**	0.01	**0.03**
Primary completed	0.13	**0.10**	0.19	**0.10**	0.25	**0.17**	0.24	0.21	0.05	0.05
Secondary	0.06	**0.02**	0.15	**0.04**	0.23	**0.16**	0.12	0.15	0.16	0.23
Highschool	0.24	**0.10**	0.15	**0.03**	0.15	**0.10**	0.12	0.09	0.59	0.52
College or higher	0.05	**0.02**	0.09	**0.02**	0.06	**0.03**	0.07	**0.03**	0.19	0.18
Income										
Q1: Permanent Income	0.21	**0.25**	0.23	0.24	0.21	0.21	0.29	0.25	0.18	**0.23**
Q2: Permanent Income	0.23	**0.28**	0.23	0.24	0.23	0.24	0.24	**0.31**	0.21	**0.27**
Q3: Permanent Income	0.26	0.26	0.25	0.23	0.30	0.28	0.19	0.23	0.24	0.24
Q4: Permanent Income	0.30	**0.21**	0.29	0.28	0.27	0.27	0.28	**0.22**	0.38	0.25
Enough money to meet one's needs	0.33	**0.26**	0.68	**0.63**	0.80	0.79	0.38	**0.33**	0.75	0.74
Health										
WHO disability score	2.33	**2.65**	2.50	**2.93**	2.89	**3.07**	2.18	**2.42**	2.38	**2.73**
Self-assessed pain	1.36	**1.61**	1.10	**1.47**	0.78	**0.97**	1.01	**1.19**	0.83	**1.18**
Social Environment										
Trust	3.21	**3.07**	3.40	**3.01**	5.84	5.81	2.76	2.80	3.02	3.02
Safety	4.94	**4.79**	3.72	**3.52**	5.57	**5.24**	2.39	**2.23**	3.13	2.84
Community involvement	3.60	**3.32**	3.81	**3.08**	4.34	**4.23**	3.99	**3.82**	3.87	3.84
Victim of a violent crime (last 12m)	0.04	0.04	0.03	0.03	0.01	0.02	0.08	**0.05**	0.01	0.02
Number of Observations	1577	1454	2441	2392	4288	4818	793	1212	950	1690

Note: The entries in each column are country-specific averages using population weights. The average under Women is bold whenever there is a significant difference between genders in a pairwise comparison (p<0.10). Permanent income quartiles are country-specific and derived from an asset index. Trust is a score based on questions about perceived trust in neighbors, colleagues and strangers. Safety is a score based on information about perceived safety in the neighborhood and whether the respondent has been a victim of a violent crime. Community involvement measures the degree of participation in social activities such as attending clubs or public meetings, or socializing with co-workers.

Except for Russia, where a majority of individuals have relatively high levels of education, irrespective of gender, women generally report a substantially lower education level than men. In particular, a much larger share of women than men have not completed primary school education. This gap is as high as a 40 and 23 percentage points for India and Ghana/China, respectively. Women also tend to live in poorer households than men. Furthermore, in Ghana, India and South Africa, women are significantly less likely than men to report having enough money to meet their personal needs. In all countries, women report a higher level of self-assessed pain and suffer from higher levels of disability, which highlights poorer health status among older women than men. Finally, women generally report feeling less safe and tend to be less often involved in community activities.

Table 2 shows country- and gender-specific descriptive statistics of standardized experienced well-being, time use and activity-specific net affect.

Table 2: Descriptive statistics of men and women

	Ghana		India		China		South Africa		Russia	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Experienced well-being	0.048	**-0.052**	0.075	**-0.078**	0.022	**-0.022**	0.083	**-0.052**	0.110	**-0.076**
Time Use										
Working	0.212	**0.178**	0.191	**0.057**	0.218	**0.127**	0.175	**0.085**	0.298	**0.189**
Housework	0.072	**0.181**	0.099	**0.297**	0.115	**0.279**	0.109	**0.234**	0.116	**0.328**
Travel	0.075	**0.049**	0.084	**0.043**	0.033	**0.025**	0.061	**0.041**	0.108	0.050
Leisure	0.472	**0.428**	0.439	0.427	0.514	**0.456**	0.465	0.427	0.364	0.331
Self-care	0.164	0.159	0.187	0.177	0.12	**0.113**	0.179	0.197	0.114	0.103
Activity-Specific Net Affect										
Working	-0.220	-0.324	-0.295	-0.324	-0.352	-0.315	-0.126	-0.303	-0.397	-0.419
Housework	-0.054	-0.064	0.004	**-0.331**	-0.107	**-0.165**	0.117	**-0.047**	0.116	**-0.128**
Travel	-0.132	-0.232	0.004	**-0.299**	0.014	-0.01	0.043	-0.130	0.202	**-0.335**
Leisure	0.241	**0.131**	0.208	**0.048**	0.198	0.189	0.235	**0.011**	0.376	0.265
Self-care	0.211	0.238	0.264	0.138	0.152	0.134	0.152	0.111	0.582	**0.318**
Number of Observations	1577	1454	2441	2392	4288	4818	793	1212	950	1690

Note: The entries in each column are country-specific averages using population weights. The average under Women is bold whenever there is a significant difference between genders in a pairwise comparison ($p<0.10$). Time Composition averages represent the share of time spent in activity *a* over the reported period, while Activity-Specific Net Affects are calculated as in Eq. (4).

Panel A presents weighted averages of standardized experienced well-being for men and women in each country. While the overall weighted average of standardized experienced well-being across both genders is zero by construction, experienced well-being is significantly lower for women than for men in all countries. Since experienced well-being is standardized at country level using population weighted means and standard deviations of country-specific distribution, the absolute magnitude of differences cannot be compared between countries. Panel B presents the unadjusted country- and gender-specific average time shares spent on each activity group. We observe the usual patterns of traditional gender roles. In addition, even when adding up the time spent working and traveling, the overall amount of time spent on work and housework combined is larger among women than men. Panel C shows country- and gender-specific estimates of activity-specific net affects for all activity groups. We do not observe any gender-specific pattern in net affects for the various activities. For both genders, the three activities associated with the worst affective experiences in all countries are always work, travel and housework. In addition, work is nearly always rated as the activity leading to the lowest levels of net affect. While housework, work and travel yield strictly negative (i.e., below average) affective experiences for women in all countries, the situation is more nuanced for men. Indeed, men tend to have below average affective experiences when working, but this is not always the case for housework or travel. Self-care and leisure are always associated with positive (i.e., above average) net affect. If we consider work, travel and housework as part of a wider category of work-related activities, and self-care and leisure as part of more leisurely activities, the ranking of activities in all countries is consistent with a neoclassical utility function that assumes that individuals prefer leisure over work. Finally, the pairwise comparisons of net affect by gender show that, while there are no significant differences in terms of how much men and women "dislike" work, women have significantly worse affective experiences doing housework than men in all but one country. Compared

to men, women also report significantly lower levels of net affect associated with leisure in three out of five countries.

2.4.2 Analysis

Table 3 presents country-specific population-weighted estimates of the partial associations of gender and experienced well-being in both the *age-adjusted* and *fully-adjusted* models.

Table 3: Partial association of gender with experienced well-being *U* for individuals aged 50+

	Ghana	India	China	South Africa	Russia
Age-adjusted Difference	-0.102**	-0.154***	-0.049**	-0.142*	-0.195**
Fully-adjusted Difference	-0.054	-0.082	0.007	-0.033	-0.106

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on experienced well-being. Average partial effects are based on a linear regression (Eq. (6) for the age-adjusted difference and Eq. (7) for the fully-adjusted). The age-adjusted difference controls only for age, while the fully-adjusted difference controls for a large set of control variables included in Table 1.

When controlling for age only, women are at a significant disadvantage compared to men in all countries, with corresponding gender gaps in experienced well-being ranging from 0.05 standard deviations in China to 0.2 standard deviations in Russia. However, when incorporating the larger set of individual characteristics and life circumstances into our model, any remaining gender differences in experienced well-being become statistically insignificant in spite of remaining negative in all countries but China.

Looking at the coefficients of our control variables (Appendix 1), we observe that the most important factors associated with experienced well-being are disability and access to income (especially being part of the top quartile of the household income distribution). We therefore hypothesize that the experienced well-being gap observed between men and women is mostly due to women's individual characteristics and life circumstances, and in particular to the fact that their health status is often worse than that of men (higher WHO disability score) and that they generally live in poorer households.

Table 4 presents population-weighted estimates of the partial associations between gender and time use, based on country-specific multivariate fractional logit models. By construction, all country-specific partial associations must sum up to zero as the activities considered are both exhaustive and mutually exclusive.

Panel A shows the results from models that control for age only while Panel B refers to models that control for a wide range of individual characteristics and life circumstances (see Appendix 2 for the detailed coefficients of the covariates). The results show a pattern that is roughly comparable to the descriptive statistics presented above: women spend significantly less time than men on work and travel, and more time on housework. This finding is consistent across all countries, and changes relatively little when we add additional controls for individual characteristics and life circumstances. In

addition, similar to findings reported in the 2012 World Development Report (World Bank 2012), our analysis reveals a much smaller gender gap in time spent working than in time spent doing housework, which indicates that women tend to spend more time on work and housework combined and less time on leisure activities compared to men.

Table 4: Partial Association of Gender with time shares τ_a for individuals aged 50+

	Ghana	India	China	South Africa	Russia
Panel A. Age-adjusted Differences in Time Use					
Work	-0.032***	-0.135***	-0.0835***	-0.080***	-0.072**
Housework	0.111***	0.197***	0.1673***	0.1345***	0.213***
Travel	-0.025***	-0.039***	-0.0081***	-0.0188***	-0.048
Leisure	-0.047***	-0.013	-0.0671***	-0.0515**	-0.076***
Self-care	-0.006	-0.009	-0.0086***	0.0158	-0.016
Panel B. Fully-adjusted Differences in Time Use					
Work	-0.032**	-0.055***	-0.051***	-0.056***	-0.043
Housework	0.116***	0.219***	0.159***	0.120***	0.217***
Travel	-0.020***	-0.027***	-0.009***	-0.014**	-0.039*
Leisure	-0.070***	-0.113***	-0.089***	-0.062***	-0.107***
Self-care	0.006	-0.024***	-0.010***	0.011	-0.028

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on time shares. Average partial effects are based on a multivariate fractional logit model (Panel A. Eq. (8) and (9) and Panel B. Eq. (10) and (11)). Panel A. controls only for age, while Panel B. controls for a large set of control variables included in Table 1.

Table 5 presents country-specific population-weighted estimates of the partial associations between gender and activity-specific net affects, controlling first for age only (Panel A) and then for our entire set of individual control variables (Panel B).

Table 5: Partial association of gender with activity-specific net affects u_a

	Ghana	India	China	South Africa	Russia
Panel A. Age-adjusted differences in activity-specific net affects					
Work	-0.104	-0.041	0.027	-0.157	-0.023
Housework	-0.014	-0.321***	-0.059*	-0.155**	-0.235**
Travel	-0.098	-0.305***	-0.045	-0.17	-0.414
Leisure	-0.112**	-0.159***	-0.009	-0.232***	-0.114
Self-care	0.027	-0.126***	-0.0212	-0.046	-0.212**
Panel B. Fully-adjusted differences in activity-specific net affects					
Work	-0.076	0.099	0.109**	0.187	0.0187
Housework	0.046	-0.113	0.011	-0.070	-0.152
Travel	-0.029	-0.240**	0.004	0.031	-0.240
Leisure	-0.078	-0.062	0.048**	-0.128**	0.043
Self-care	0.034	-0.019	0.047**	0.053	-0.125

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on Activity-Specific Net Affects. Average partial effects are based on a linear regression (Panel A. Eq. (12) and Panel B. Eq. (13)). Panel A. controls only for age, while Panel B. controls for a large set of control variables included in Table 1.

All but two of the estimated coefficients in Panel A are negative, although many are not statistically different from zero at conventional levels of significance. In all countries but Ghana, women report significantly worse net affects associated with housework than men, with corresponding differences ranging from about 0.06 standard deviations in China to about 0.32 in India. In addition, in three out of five countries, women also report significantly worse levels of net affect during leisure activities than men. In general, when controlling for age only, it appears that women report worse net affects

for all activities, even if the difference is not always statistically significant. Controlling for additional individual characteristics and life circumstances (Panel B) reduces the statistical significance of any gender differences in activity-specific net affect even further. More importantly though, many of the estimated coefficients change their sign in the *fully-adjusted* models. In China, all the estimated partial associations between being a woman and the activity-specific net affects are positive in the *fully-adjusted* models, and these associations are also statistically significant in the cases of work, leisure and self-care. By contrast, no clear pattern for gender differences in activity-specific net affects emerges across the other countries once additional control variables are incorporated into the models. The fact that incorporating further controls for individual characteristics and life circumstances into our model substantially attenuates the association between gender and activity-specific net affect suggests that other factors like health status and economic position may be able to largely explain the worse activity-specific affective experiences of women compared to men (Appendix 3)

We now combine the results from the above analyses within the framework of a hypothetical thought experiment aimed at assessing the relative importance of gender differences in time use (*time composition effect*) and activity-specific net affects (*saddening effect*) for gender differences in experienced well-being. Like in our earlier analyses, we first incorporate only age as a control variable before including a full set of controls for individual characteristics and life circumstances into our estimations. Table 6 first presents the overall gender differences in experienced well-being and deconstructs these into two components: *time composition* and *saddening effects*, while Tables 7 and 8 provide the results of further disaggregated analyses at the level of individual activities. The *time composition effect* isolates gender differences in experienced well-being attributable to gender differences in time use by fixing activity-specific net affect at the country-specific averages (irrespective of gender) and computing hypothetical gender differences in experienced well-being if men and women would only differ in terms of their activity patterns. The *saddening effect*, on the other hand, highlights gender differences in experienced well-being attributable to gender differences in activity-specific net affects by fixing time use at the overall country-specific averages (irrespective of gender) and computing hypothetical gender differences in experienced well-being if men and women would only differ in terms of their activity-specific affective experiences.

Table 6: Counterfactual partial association of gender with experienced well-being and its time composition and saddening effects for individuals aged 50+

	Ghana	India	China	South Africa	Russia
Panel A. Age-adjusted					
Difference	-0.102**	-0.154***	-0.049**	-0.142*	-0.195**
Time Composition Effect	-0.004	-0.002	-0.010**	0.014	-0.015
Saddening Effect	-0.075*	-0.179***	-0.015	-0.167***	-0.155**
Panel B. Fully-adjusted					
Difference	-0.054	-0.082	0.007	-0.033	-0.106
Time Composition Effect	-0.007	-0.049***	-0.025***	0.008	-0.042*
Saddening Effect	-0.041	-0.055	0.050**	-0.036	-0.049

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific differences in standardized experienced well-being between men and women. The time composition effect is computed as in Eq. (14) and the saddening effect is computed as in Eq. (15). Panel A. controls only for age, while Panel B. controls for a large set of variables included in Table 1.

Panel A of Table 6 shows that, when controlling only for age, gender differences in experienced well-being are mainly driven by the *saddening effects*, that is, by the fact that women have worse affective experiences when performing most activities than men. Indeed, in all countries but China, if both genders had the same (country-specific average) time use patterns, but differed in their activity-specific net affects, women would have statistically significantly lower levels of experienced well-being than men. The corresponding *time composition effects* on the other hand seem relatively small. Panel B shows that when considering additional individual characteristics and life circumstances, gender differences in experienced well-being lose statistical significance. The generally negative — although small — *time composition effects*, on the other hand, become statistically significantly different from zero in three of our study countries. That is, if women and men had exactly the same activity-specific affective experiences (set at the overall country-specific average), the remaining gender differences in time use alone would generally result in lower levels of experienced well-being among women than men. Hence, holding other characteristics and life circumstances fixed, women tend to engage in more unpleasant activities overall than men. Meanwhile, the *saddening effects* — which were negative and statistically significant everywhere but in China in the *age-adjusted* models — become insignificant in four countries when we include the whole set of control variables, and even turn significantly positive in China.

Tables 7 and 8 present additional details for this hypothetical thought experiment by showing how each activity group contributes to the estimated *time composition* and *saddening effects*, respectively.

Table 7 shows that in both the *age-* and *fully-adjusted* models, the (lower) amount of time spent working contributes to a relatively higher level of experienced well-being among women compared to men, while the (higher) amount of time spent doing housework contributes to a female disadvantage in terms of experienced well-being. In addition, the lower amount of time spent in "more pleasant" activities such as leisure and self-care further contributes to the lower level of experienced well-being among women relative to men, especially when life circumstances are taken into account.

Table 7: Counterfactual partial association of gender and its time composition effect (decomposed across activity groups) for individuals aged 50+

	Ghana	India	China	South Africa	Russia
Panel A. Age-adjusted					
Time Composition Effect	**-0.004**	**-0.002**	**-0.010****	**0.014**	**-0.015**
Work	0.009***	0.041***	0.028***	0.017*	0.030**
Housework	-0.007*	-0.043***	-0.024***	-0.000	-0.016
Travel	0.004***	0.004*	0.000	0.001	0.002
Leisure	-0.009***	-0.002	-0.01***	-0.005	-0.024**
Self-care	-0.001	-0.002	-0.001***	0.002	-0.007
Panel B. Fully-adjusted					
Time Composition Effect	**-0.007**	**-0.049*****	**-0.025*****	**0.008**	**-0.042***
Work	0.009**	0.017***	0.017***	0.012	0.018
Housework	-0.007*	-0.049***	-0.023***	-0.000	-0.016
Travel	0.004***	0.003*	0.000	0.001	0.002
Leisure	-0.013***	-0.015***	-0.017***	-0.006*	-0.033***
Self-care	0.001	-0.005***	-0.002***	0.002	-0.012

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific differences in standardized experienced well-being between men and women. Each component of the time composition effect is computed as in Eq. (14). Panel A. controls only for age, while Panel B. controls for a large set of variables included in Table 1.

Table 8 shows the decomposition of the *saddening effect* by activity. In Panel A, we see that — when only age is controlled for — the negative *saddening effect* observed everywhere but in China is mainly driven by the fact that women have lower affective experiences during leisure or when performing housework than men.

Table 8: Counterfactual partial association of gender and its saddening effect (decomposed across activity groups) for individuals aged 50+

	Ghana	India	China	South Africa	Russia
Panel A. Age-adjusted					
Saddening Effect	**-0.075***	**-0.179*****	**-0.015**	**-0.167*****	**-0.155****
Work	-0.020	-0.005	0.005	-0.019	-0.005
Housework	-0.002	-0.063***	-0.012*	-0.029**	-0.057**
Travel	-0.006	-0.020***	-0.001	-0.008	-0.031
Leisure	-0.051**	-0.069***	-0.004	-0.102***	-0.039
Self-care	0.004	-0.023***	-0.003	-0.009	-0.023**
Panel B. Fully-adjusted					
Saddening Effect	**-0.041**	**-0.055**	**0.050****	**-0.036**	**-0.049**
Work	-0.015	0.012	0.019**	0.022	0.004
Housework	0.006	-0.022	0.002	-0.013	-0.037
Travel	-0.002	-0.015**	0.000	0.002	-0.018
Leisure	-0.035	-0.027	0.023**	-0.057**	0.015
Self-care	0.006	-0.004	0.006**	0.010	-0.013

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific differences in standardized experienced well-being between men and women. Each component of the saddening effect is computed as in Eq. (15). Panel A. controls only for age, while Panel B. controls for a large set of variables included in Table 1.

We see no consistent pattern across countries when controlling for the whole set of covariates (Panel B). Meanwhile, the positive *saddening effect* observed in China is driven by the fact that — compared to men — women have higher affective experiences during leisure and self-care activities as well as when working once individual characteristics and life circumstances are incorporated into the models. These findings suggest that specific characteristics and life circumstances of women – more than

intrinsic gender differences in activity-specific affective experiences – may be at the heart of the estimated *saddening effects*.

2.5 Discussion

2.5.1 Conclusion

Our study highlights an *age-adjusted* gender gap in experienced well-being in favor of men, but also shows that these gender differences weaken considerably once further individual characteristics and life circumstances are incorporated into our models. These findings suggest that at least part of the experienced well-being gap between men and women might stem from broader disadvantages of women compared to men rather than from any intrinsic "gender effect". In particular, we find that the gender gap is largely driven by poorer average health (higher disability and self-assessed pain) and lower average economic status (permanent income quartiles) among older women when compared to older men.

We then deconstruct potential gender differences in experienced well-being into contributions of the two components of experienced well-being: time use and activity-specific net affect. Our results show that women spend more time performing housework than men, while men spend more time working and traveling. Moreover, gender differences observed for housework are generally larger than those observed for work, implying that women spend more time on work and housework combined than men. These partial associations between gender and time use are strongly statistically significant in both the *age-adjusted* and the *fully-adjusted* models. Consistent with traditional gender roles, this finding suggests that gender *per se* – rather than differences in individual characteristics or life circumstances between men and women – plays an important role for the large observed gender differences in time use.

Women also tend to have lower affective experiences than men across most activities when adjusting for age only. However, the inclusion of a larger set of covariates controlling for individual characteristics and life circumstances decreases this association. This attenuation in the association between gender and activity-specific net affects supports the hypothesis that other factors than gender *per se* are likely to be responsible for the higher activity-specific net affects of men compared to women. In particular, we find that two factors are consistently associated with net affective experiences for all activities: disability (which is negatively associated with net affect) and belonging to the highest income quartile group (which is positively associated with net affect). Our descriptive statistics show that women suffer more disability than men and belong less often to the top income quartile. These two factors thus appear to be the main drivers of the gender gap in net affective experience in favor of men.

Finally, we perform a thought experiment to disentangle the respective roles of potential *time composition* and *saddening effects* for the observed gender differences in experienced well-being. These results show that the lower experienced well-being of women compared to men of the same age is linked to their lower activity-specific net affect for all activities, and in particular for housework and leisure, irrespective of the time spent performing each activity. Perhaps somewhat surprisingly, *time composition effects* contribute only marginally to the overall age-adjusted gender gap in experienced well-being, due to a compensation between the two activities considered most unpleasant, work – performed mostly by men – and housework – performed mostly by women. However, *ceteris paribus*, fully-adjusted gender differences in time use contribute to lower levels of experienced well-being of women compared to men, as the time spent in unpleasant activities by women (both work and housework) exceeds that of men with similar characteristics (in terms of disability and income in particular). Moreover, at equal levels of disability and income (among other factors), women do not appear to systematically dislike certain activities more than men. Women's lower activity-specific net affect for all activities may thus be linked – as described above – to the conditions under which they are performed, and in particular to the higher levels of disability in women compared to men, rather than any intrinsic gender differences in net affects.

2.5.2 Empirical contributions

Our study provides new insights into gender differences in experienced well-being among older adults from different geographic and cultural settings in the developing world. Experienced well-being is an important but still relatively rarely explored dimension of emotional well-being as well as of subjective well-being more generally (National Research Council 2013). While most of the literature on subjective well-being focuses on evaluative well-being, the scarcer literature looking at emotional well-being typically considers positive and negative affective experiences separately without assessing the overall welfare implications of these different emotional experiences in terms of net affect. Moreover, given the importance of experienced well-being for the evaluation of welfare (Kahneman and Krueger 2006; Krueger and Schkade 2008), there is a surprising paucity of applied empirical work employing this measure of well-being, possibly due to the relatively low availability of DRM data, which are expensive and time-consuming to collect. In fact, to the best of our knowledge, our paper is the first study to fully explore the relationship between gender and experienced well-being in developing countries and deconstruct this relationship into its two component parts based on detailed data on both time use and activity-specific affective experiences. Due to the absence of evidence on this topic, we cannot compare our results to other studies using the same measure of subjective well-being. One notable exception is the study by Miret et al. (2012), who analyze the impact of socio-demographic characteristics on net affect using the original Day Reconstruction Method (DRM) as well as SAGE's

abbreviated version of the DRM on a sample of 1560 adults from Jodhpur (India), but without any particular focus on gender differences. These authors find that being male, living in an urban area and having a high income, are factors associated with a higher net affect, which is consistent with our own results.

We can, however, put our findings into context by comparing our results to evidence from the 2015 World Happiness Report (Fortin et al. 2015), which is one of the few studies researching the gender-specific evolution of several positive and negative emotions through the life course. Although the authors do not combine emotions into an overall net affect score, their results show generally lower levels of positive as well as higher levels of negative emotions in older women as compared to men of the same age. These data thus suggest that assessing gender differences in net affect in their context would likely yield results similar to our *age-adjusted* regressions, i.e. a disadvantage of older women in terms of emotional well-being. However, the 2015 World Happiness Report does not provide any analyses comparable to our *fully-adjusted* models, and it is thus not possible for us to assess whether the advantage for men in their assessment would disappear when individual characteristics and life circumstances are controlled for.

Our results for time use are broadly in line with the literature in the field. The evidence that women tend to perform more housework while men tend to spend more time working is remarkably similar across geographical settings and levels of wealth, and highlights the remaining importance of traditional gender roles worldwide, at least among older adults. Indeed, such gender differences in time use were found for example in Guinea by Wodon and Blackden (2006), in Ethiopia by Arbache et al. (2010), and in France, Italy, Sweden, and the USA by Anxo et al. (2011). Yet, to our knowledge, we are the first to assess the relationship between gender and activity-specific net affect, and to disentangle the respective roles of potential *time composition* and *saddening effects* for the observed gender differences in experienced well-being.

Finally, our study contributes to the methodological debate regarding the use of control variables in well-being research. On one side of the debate, Glenn (2009) claims that scholars should not control for other factors when studying the association between age and well-being. He argues that excluding control variables allows to identify the "total effects" of age on well-being, i.e., the sum of direct and any indirect effects through other variables. These total effects are, he believes, of greater importance than any potential direct effect of age holding individual characteristics and life circumstances that may change with age fixed. On the other side, some researchers argue that focusing solely on bivariate relationships is not sufficient to the understanding of the complex relationship between age and well-being, which may be mediated or confounded by other age-related differences in individual characteristics or life circumstances that may affect well-being (Blanchflower and Oswald 2008;

Blanchflower and Oswald 2009). In this context, we perform both *age-adjusted* comparisons of subjective well-being between men and women as well as *fully-adjusted* regressions of subjective well-being on gender that also account for gender differences in health status, socio-demographic characteristics and community participation in the same dataset. Our *age-adjusted* models, on the one hand, can provide evidence regarding potential advantages or disadvantages of women in terms of their experienced well-being compared to their male counterparts. These analyses are especially important for a descriptive assessment of overall gender inequalities in experienced well-being as well as for the targeting of potential policies and interventions aimed at mitigating them. The *fully-adjusted* analyses, on the other hand, account for potential gender differences in other individual characteristics and life circumstances. These may at least in part mediate the *age-adjusted* relationship between gender and experienced well-being and thus isolate the partial association of gender with experienced well-being *ceteris paribus*. In addition, these analyses highlight potential policy levers related to gender differences in individual characteristics and life circumstances that may be helpful in alleviating gender differences in experienced well-being. Our analyses confirm our working hypothesis that the results obtained through the two approaches provide different but equally important views on the association between gender and experienced well-being and should therefore be seen as complementary.

2.5.3 Practical implications

We are facing a situation without precedent: by 2050, it is estimated that there will be more than twice as many persons over the age of 65 than under the age of 5 (United Nations 2019a). This rapid demographic transition is raising important issues not just in industrialized countries but worldwide as an increasingly large proportion of the older population is living in low- and middle-income countries. In order to meet the post-2015 sustainable development agenda goal of ensuring healthy lives and promoting well-being for everyone at all ages (United Nations 2019b) as well as to enable healthy aging for everybody (World Health Organization 2015), social and health systems worldwide must find effective ways to respond to the needs of older adults. In the near future, increasing the health span (i.e., the time that an individual is able to live in good health) as well as quality of life of older adults, and not merely preventing deaths, will be a key objective of health and social interventions. The scarcity of knowledge regarding the drivers of older persons' experienced well-being – especially in low- and middle-income countries – must therefore urgently be addressed in order to construct effective responses to global population aging using evidence-based policies. Due to women's higher longevity, a majority of older adults is female, especially at very advanced ages. Moreover, while women generally constitute a vulnerable group, they may be especially at risk in older age. For example, older women tend to suffer from more chronic health conditions than men of the same age, be poorer, and have lower access to health care services (World Health Organization 2015). However,

compared to men, women may benefit from stronger family support from adult children, and may suffer in lower numbers from the negative impacts of role disruption at retirement (Knodel and Ofstedal 2003). It is thus crucial to understand whether and how these objective circumstances translate into subjective well-being differences in old age in order to design policies to address them.

Our paper yields information that is potentially useful to policy makers. First, we document that the gender gap in emotional well-being is pervasive. In particular, we show that much of the gender gap in experienced well-being which disadvantages women relative to men can be linked to gender differences in activity-specific affective experiences. This finding suggests that just moving toward a more equitable time repartition within households may not be sufficient to close the existing gender gaps in experienced well-being. Moreover, we show that gender differences in individual characteristics and life circumstances, notably disability and income, are key factors underlying the experienced well-being gap in favor of men. These findings suggest that policies, such as female-targeted campaigns for the early prevention of disability, and increasing entitlement programs for older women, may prove useful in improving women's experienced well-being at older ages. In addition, the empowerment of older women can be encouraged by life-long interventions, such as the promotion of equitable workforce participation, the implementation of compulsory social contributions, and the distribution of non-contributory social pensions at all ages. Finally, health promotion and disease prevention interventions targeted not only towards older populations but also towards younger individuals have the potential of keeping older adults in good health for much longer in the future. These policies should complement more general efforts to improve well-being in older age by improving health and social support systems as well as addressing the social determinants of health.

2.5.4 Limitations and future research directions

To the best of our knowledge, we are the first to assess and deconstruct gender differences in experienced well-being using DRM data from a large-scale multi-country survey effort in the developing world. Performing our analyses on harmonized data from different countries allows us to document robust associations across different cultural contexts and geographic regions. In addition, our study shows the added value of using DRM-based data to explore the respective roles of time use and activity-specific affective experiences for explaining gender differences in experienced well-being. Nevertheless, our estimated partial associations cannot be interpreted as causal due to potential issues of confounding, reverse causation and selection into activities. Estimating average activity-specific net affects only using data from individuals who actually perform these activities may be particularly problematic in this regard. More research is thus needed to address these limitations, in order to allow inference of a causal relationship, perhaps in the context of a structural model for time

use. Finally, while our study focuses exclusively on older adults, it would be worthwhile to evaluate how the relationship between gender and experienced well-being evolves over the life course. In spite of these limitations, our study makes a valuable contribution by documenting and deconstructing gender differences in experienced well-being among older adults from different developing country setting and highlighting key individual characteristics and life circumstances beyond gender itself that may help explain gender differences in experienced well-being.

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2.7 Appendix

Appendix 1: Partial Association of Gender with Experienced Well-being *U* for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Female	**-0.0536**	**-0.0822**	**0.0070**	**-0.0328**	**-0.1063**
Age 60-69	0.1798***	0.1257***	0.0880***	0.3629***	-0.0140
Age 70-79	0.2251***	0.2445***	0.2131***	0.2616**	0.1667
Age 80+	0.2645***	0.1411	0.3380***	0.4952***	0.2362*
Rural	-0.0705	-0.0510	-0.2173***	-0.059	0.0662
Married	-0.0055	-0.0789	0.0490	0.1766**	-0.1148
Number of adults in the household	-0.0387***	0.0084	-0.0327***	-0.0884**	0.0468
Number of children in the household	-0.0008	0.0086	0.0039	0.0422	-0.0284
Enough money to meet one's needs	-0.1744***	0.0565	0.2385***	-0.0666	0.1979**
Education (nb of years)	0.0023	0.0047	0.0026	0.0072	-0.0085
Working	0.0904***	-0.0928***	-0.0212***	-0.0446***	-0.2615***
Q2: Permanent Income	0.0766	0.0697	0.0870**	0.0607	0.2823***
Q3: Permanent Income	0.2054***	0.0321	0.2259***	0.1911*	0.2160**
Q4: Permanent Income	0.2491***	0.2144***	0.2459***	0.1593	0.3887***
Victim of a violent crime (last 12m)	0.0413	-0.0735	0.0473	0.0733	-0.0123
Community involvement	0.0830***	-0.0473**	0.0381***	-0.0006	-0.0933**
Trust	0.0070	0.0046	0.0076	-0.0391	-0.0408
Safety	0.0432*	0.0948***	0.1327***	-0.0155	0.1092***
WHO disability score	-0.1038***	-0.2578***	-0.0523***	-0.1722***	-0.2169***
Self-assessed pain	0.0253	-0.0466*	-0.0582***	-0.1145**	-0.0652
Constant	-0.3721**	0.4718**	-0.9978***	0.5838**	0.5656
Number of observations	3031	4833	9106	2005	2513

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on experienced well-being. Average partial effects are based on a linear regression (Eq. (7)).

Appendix 2 (1/3): Partial Association of Gender with Time Shares τ_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Work					
Female	**-0.0321****	**-0.0553*****	**-0.0505*****	**-0.0560*****	**-0.0431**
Age 60-69	-0.0352**	-0.0132	-0.0199**	-0.0323*	0.0168
Age 70-79	-0.0428***	-0.0650***	-0.0686***	-0.0556**	-0.0082
Age 80+	-0.0910***	-0.0519**	-0.1212***	-0.0126	-0.0931
Rural	-0.0057	-0.0067	0.0507***	0.0044	0.0252
Married	-0.0217	-0.0087	-0.0061	-0.0141	0.0768**
Number of adults in the household	-0.0001	0.0033	0.0202***	0.0057	-0.0291***
Number of children in the household	-0.0009	-0.0019	-0.0128*	0.0045	0.0329**
Enough money to meet one's needs	0.0320**	-0.0059	0.0117	-0.0051	0.0021
Education (years)	-0.0007	-0.0008	-0.0030**	-0.0045**	-0.0005
Working	0.2929***	0.1567***	0.1722***	0.1493***	0.2389***
Q2: Permanent Income	-0.0041	0.0143	-0.0003	0.0201	0.0329
Q3: Permanent Income	-0.0284*	0.0028	-0.0209*	0.0284	0.0070
Q4: Permanent Income	-0.0066	-0.0343**	0.0044	0.0503**	-0.0043
Victim of a violent crime (last 12m)	-0.0262	0.0250	-0.0150	-0.0430	0.0221
Community involvement	0.0153**	0.0089*	-0.0033	0.0145*	0.0421***
Trust	-0.0064	0.0006	-0.0103***	-0.0016	-0.0188*
Safety	0.0012	-0.0092**	0.0001	-0.0130*	-0.0200*
WHO disability score	0.0214***	-0.0194***	-0.0210***	-0.0096	-0.0236
Self-assessed pain	-0.0126*	-0.0052	-0.0001	-0.0101	-0.0265*
Housework					
Female	**0.1162*****	**0.2194*****	**0.1590*****	**0.1204*****	**0.2168*****
Age 60-69	0.0098	-0.0139***	-0.0020	0.0173**	0.0267
Age 70-79	0.0019	-0.0432***	-0.0245***	0.0036	0.0068
Age 80+	-0.0117	-0.0792***	-0.0352***	-0.0033	0.0959
Rural	-0.0001	0.0311***	0.0255***	0.0164**	-0.0023
Married	0.0147**	0.0394***	0.0141***	-0.0134*	0.0299
Number of adults in the household	-0.0005	-0.0037***	-0.0110***	0.0000	0.0039
Number of children in the household	-0.0006	0.0003	0.0500***	0.0059**	-0.0117
Enough money to meet one's needs	-0.0135**	0.0099*	-0.0135***	-0.031***	0.0071
Education (years)	-0.0030***	0.0013*	-0.0007**	0.0045***	-0.0042**
Working	-0.0146*	-0.0071	-0.0321***	-0.0869***	-0.1096***
Q2: Permanent Income	0.0164**	-0.0247***	-0.0171***	-0.0338***	0.0107
Q3: Permanent Income	0.0155**	-0.0052	-0.0306***	-0.0619***	0.0308
Q4: Permanent Income	0.0038	-0.0246***	-0.0373***	-0.0177*	0.0000
Victim of a violent crime (last 12m)	0.0188	0.0061	0.0118	-0.0092	-0.0848
Community involvement	-0.0081**	0.0127***	0.0032**	-0.0018	-0.0029
Trust	0.0016	-0.0009	-0.0040***	-0.0114***	-0.0078
Safety	-0.0078***	-0.0100***	-0.0146***	-0.0017	0.0070
WHO disability score	-0.0415***	-0.0083**	-0.0219***	-0.0241***	-0.0310*
Self-assessed pain	0.0103***	-0.0007	0.0033*	0.0009	0.0162*

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Appendix 2 (2/3): Partial Association of Gender with Time Shares τ_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Travel					
Female	**-0.0200*** **	**-0.0269*** **	**-0.0093*** **	**-0.0143** **	**-0.0385***
Age 60-69	-0.0126**	0.0005	-0.0047	-0.0151*	-0.0331
Age 70-79	-0.0063	0.0031	-0.0019	0.0032	-0.0314
Age 80+	0.0020	0.0014	-0.0108	-0.0006	-0.1399
Rural	-0.0010	0.0146*	-0.0154***	-0.0038	0.0477**
Married	-0.0056	-0.0041	-0.0091**	-0.0016	-0.0405
Number of adults in the household	-0.0025*	-0.0020*	0.0007	0.0033*	0.0086
Number of children in the household	0.0008	0.0027**	0.0032	-0.0122***	-0.0149
Enough money to meet one's needs	0.0009	0.0113**	-0.0019	-0.0089	-0.0009
Education (years)	0.0011*	0.0017**	0.0002	-0.0017**	-0.0010
Working	0.0191**	-0.0056	-0.0031	-0.0023	-0.0173
Q2: Permanent Income	-0.0065	0.0015	-0.0022	0.0118	-0.0377*
Q3: Permanent Income	0.0011	-0.0053	-0.0066*	0.0079	-0.0446**
Q4: Permanent Income	-0.0023	-0.0100	-0.0089**	0.0188*	0.0068
Victim of a violent crime (last 12m)	0.0105	0.0093	0.0108	-0.0093	0.0947
Community involvement	0.0080**	0.0043*	0.0028**	0.0111***	-0.0140
Trust	-0.0018	0.0024	-0.0041***	0.0039	-0.0048
Safety	0.0000	0.0081***	0.0021	-0.0028	0.0070
WHO disability score	-0.0104***	-0.0048	0.0006	-0.0189***	-0.0446***
Self-assessed pain	0.0033	-0.0011	-0.0019	0.0082	0.0150*
Leisure					
Female	**-0.0703*** **	**-0.1129*** **	**-0.0891*** **	**-0.0617*** **	**-0.1074*** **
Age 60-69	0.0384**	0.0150	0.0236**	0.0322	0.0073
Age 70-79	0.0460**	0.0807***	0.0857***	0.0699**	0.0354
Age 80+	0.0911***	0.0982***	0.1451***	0.0161	0.1464**
Rural	0.0155	-0.0214	-0.0402***	-0.0091	-0.0674**
Married	-0.0102	-0.0265*	-0.0026	0.0403*	-0.0352
Number of adults in the household	0.0016	0.0018	-0.0079*	-0.0084	0.0095
Number of children in the household	-0.0011	-0.0042	-0.0411***	0.0029	0.0009
Enough money to meet one's needs	-0.0314**	-0.0289**	0.0055	0.0342	-0.0144
Education (years)	0.0043***	-0.0019	0.0035***	0.0029	0.0058*
Working	-0.2406***	-0.1328***	-0.1380***	-0.0686***	-0.1479***
Q2: Permanent Income	-0.0007	0.0180	0.0231*	0.0077	0.0151
Q3: Permanent Income	-0.0088	0.0036	0.0513***	0.0493	-0.0036
Q4: Permanent Income	0.0123	0.0730***	0.0375***	-0.0425	-0.0237
Victim of a violent crime (last 12m)	0.0221	-0.0555*	0.0167	0.0303	-0.0173
Community involvement	-0.0188**	-0.0205***	-0.0034	-0.0285***	-0.0157
Trust	-0.0137*	-0.0070	0.0189***	0.0137	0.0338***
Safety	0.0184***	0.0071	0.0112***	0.0220*	0.0082
WHO disability score	0.0355***	0.0101	0.0346***	0.0346***	0.0595***
Self-assessed pain	0.0007	0.0105	0.0003	0.0081	-0.0005

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Appendix 2 (3/3): Partial Association of Gender with Time Shares τ_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Selfcare					
Female	**0.0062**	**-0.0244*** **	**-0.0101*** **	**0.0116**	**-0.0277**
Age 60-69	-0.0004	0.0116	0.0031	-0.0021	-0.0177
Age 70-79	0.0013	0.0243**	0.0093*	-0.0211	-0.0026
Age 80+	0.0097	0.0314*	0.0222**	0.0004	-0.0093
Rural	-0.0088	-0.0175	-0.0206***	-0.0078	-0.0031
Married	0.0228*	-0.0002	0.0037	-0.0111	-0.0310
Number of adults in the household	0.0015	0.0005	-0.0021	-0.0006	0.0070*
Number of children in the household	0.0018	0.0032*	0.0007	-0.0011	-0.0073
Enough money to meet one's needs	0.0119	0.0136*	-0.0018	0.0107	0.0060
Education (years)	-0.0017**	-0.0003	0.0000	-0.0012	-0.0002
Working	-0.0569***	-0.0113	0.0009	0.0085	0.0358**
Q2: Permanent Income	-0.0051	-0.0090	-0.0036	-0.0058	-0.0210
Q3: Permanent Income	0.0206	0.0041	0.0068	-0.0237	0.0104
Q4: Permanent Income	-0.0072	-0.0041	0.0044	-0.0089	0.0212
Victim of a violent crime (last 12m)	-0.0251	0.0151	-0.0244**	0.0311	-0.0147
Community involvement	0.0036	-0.0054	0.0007	0.0046	-0.0095
Trust	0.0204***	0.0048	-0.0005	-0.0046	-0.0024
Safety	-0.0119***	0.0040	0.0012	-0.0044	-0.0022
WHO disability score	-0.0049	0.0224***	0.0077***	0.0181**	0.0397***
Self-assessed pain	-0.0017	-0.0035	-0.0016	-0.0071	-0.0042

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on experienced well-being. Average partial effects are based on a multivariate fractional logit model (Eq. (10) and (11)).

Appendix 3 (1/3): Partial Association of Gender with Activity-specific Net Affects u_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Work					
Female	**-0.0763**	**0.0992**	**0.1088****	**0.1865**	**0.0187**
Age 60-69	0.1248	0.2284**	0.1265**	0.7241***	-0.0061
Age 70-79	0.2193**	-0.0573	0.4486***	0.4403	-0.0475
Age 80+	-0.1200	0.1372	0.5598***	1.0891***	0.2811
Rural	-0.0273	-0.0349	-0.6747***	0.1112	0.3087**
Married	0.0155	-0.3465***	0.0095	0.3492**	-0.1487
Number of adults in the household	-0.0660***	0.0532**	-0.0499	-0.1741**	0.0089
Number of children in the household	-0.0019	-0.0426	0.0920*	0.2322***	-0.0277
Enough money to meet one's needs	-0.1142	0.1984**	0.1916***	-0.1350	0.0000
Education (years)	-0.0046	0.0198*	-0.0049	-0.0148	-0.0121
Working	0.5211**	-0.0710	0.1476**	0.2891	-0.2929***
Q2: Permanent Income	0.0898	0.0063	0.3135***	0.0924	0.4374**
Q3: Permanent Income	0.1756	0.0068	0.4739***	0.2120	0.4521***
Q4: Permanent Income	0.3426**	0.0339	0.4059***	0.5226**	0.5586***
Victim of a violent crime (last 12m)	-0.0515	0.0131	0.1251	-0.4420	-0.8119*
Community involvement	0.1250***	-0.0947*	0.0229	0.0951	-0.0328
Trust	0.0122	0.0514	0.0937***	-0.0886	-0.1522**
Safety	-0.0114	0.1192**	0.1761***	-0.0994	0.0422
WHO disability score	-0.1324**	-0.2942***	-0.0069	-0.5538***	-0.4574***
Self-assessed pain	0.0350	-0.0822	-0.0776***	-0.1691	0.0973
Housework					
Female	**0.0457**	**-0.1128**	**0.0113**	**-0.0703**	**-0.1521**
Age 60-69	0.2003***	0.1662**	0.0801**	0.3028***	-0.2722*
Age 70-79	0.1382	0.2549**	0.2922***	0.4140***	0.0435
Age 80+	-0.0083	-0.3714	0.3009***	0.4865**	0.0792
Rural	-0.0100	-0.0562	-0.2642***	-0.0989	0.0181
Married	0.0095	-0.0860	0.0899**	-0.0002	-0.1215
Number of adults in the household	0.0124	0.0153	-0.0544***	-0.0527	0.0423
Number of children in the household	-0.0196	0.0194	0.0021	-0.0080	-0.0648
Enough money to meet one's needs	-0.1539**	0.1263*	0.2286***	0.0268	0.2782**
Education (years)	-0.0038	0.0027	0.0030	-0.0002	-0.0046
Working	-0.0417	-0.0487	0.1269***	-0.0752	-0.2243*
Q2: Permanent Income	0.1084	0.0993	0.0486	0.0017	0.3702**
Q3: Permanent Income	0.0451	0.0537	0.1936***	0.1372	0.3077*
Q4: Permanent Income	0.1818*	0.3003***	0.2176***	0.2107	0.3825**
Victim of a violent crime (last 12m)	-0.1974	-0.3811*	0.0572	0.0381	-0.0484
Community involvement	0.0291	-0.0197	0.0586***	0.0572	0.0091
Trust	-0.0123	0.0354	0.0052	-0.0709*	-0.0497
Safety	0.1239***	0.0982***	0.1425***	-0.0307	0.0830
WHO disability score	-0.1271**	-0.3438***	-0.0721***	-0.2435***	-0.3618***
Self-assessed pain	-0.0213	-0.0704*	-0.0636***	0.0013	-0.0801

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Appendix 3 (2/3): Partial Association of Gender with Activity-specific Net Affects u_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Travel					
Female	**-0.0288**	**-0.2401****	**0.0038**	**0.0305**	**-0.2403**
Age 60-69	0.0369	0.1425	0.1043	0.3550***	0.4752**
Age 70-79	0.1075	0.2042	0.2782***	0.3753**	0.0113
Age 80+	0.1839	-0.0283	0.3811**	0.7522***	-0.5925
Rural	-0.1616**	0.1512	-0.3987***	-0.3342**	0.5754***
Married	-0.0182	-0.0604	-0.0151	0.3378***	-0.4792**
Number of adults in the household	-0.0288*	0.0073	-0.0455	0.0022	0.0716
Number of children in the household	0.0153	0.0092	0.0569	-0.1037	-0.1573
Enough money to meet one's needs	0.0506	0.1955*	0.0511	0.1620	-0.0587
Education (years)	-0.0036	0.0026	-0.0050	-0.0210*	-0.0323
Working	-0.0295	-0.2241**	0.0459	-0.0944	0.1305
Q2: Permanent Income	0.0748	0.1172	0.0065	-0.3132**	0.2347
Q3: Permanent Income	0.0733	0.1843	0.0677	-0.3442**	-0.0297
Q4: Permanent Income	0.3007***	0.4160***	-0.0189	-0.3107	0.2487
Victim of a violent crime (last 12m)	0.0341	0.0293	-0.0946	0.1019	0.9509
Community involvement	0.1326***	0.0150	0.0106	0.1400*	-0.1392
Trust	0.0365	-0.0407	-0.0040	0.0174	0.0277
Safety	0.0692**	0.1322***	0.2005***	0.0667	0.1229
WHO disability score	-0.1224**	-0.2163**	-0.0280	-0.1153	-0.5335***
Self-assessed pain	0.0204	-0.1488***	-0.1388***	-0.1900**	-0.0845
Leisure					
Female	**-0.0777**	**-0.0618**	**0.0477****	**-0.1283****	**0.0429**
Age 60-69	0.1378**	0.0619	0.0822***	0.3221***	0.0754
Age 70-79	0.1883**	0.1716***	0.1419***	0.2765**	0.3112***
Age 80+	0.3221***	0.1012	0.2685***	0.3948***	0.4449***
Rural	-0.0933**	0.0189	-0.1234***	-0.0561	-0.0527
Married	-0.0185	-0.0571	0.0564	0.1642**	0.1708**
Number of adults in the household	-0.0406**	0.0017	-0.0135	-0.0781	0.0069
Number of children in the household	0.0104	0.0168	0.0108	0.0273	0.0933*
Enough money to meet one's needs	-0.1235**	-0.0155	0.0896**	-0.0301	0.2165***
Education (years)	-0.0036	0.0050	0.0013	0.0073	-0.0094
Working	0.2312***	0.0065	0.0378	0.0421	-0.0006
Q2: Permanent Income	0.0836	0.0883	0.0702**	0.0761	0.2031**
Q3: Permanent Income	0.2803***	0.0348	0.1696***	0.1842	0.0978
Q4: Permanent Income	0.2168***	0.1819***	0.1888***	0.1122	0.2511**
Victim of a violent crime (last 12m)	0.1182	0.0402	0.0187	0.0647	0.1389
Community involvement	0.0795***	-0.0422*	0.0387***	-0.0008	0.0041
Trust	-0.0145	-0.0093	-0.0128	-0.0225	-0.0701**
Safety	0.0361	0.0742***	0.1104***	-0.0522	0.0595
WHO disability score	-0.1173***	-0.2386***	-0.0910***	-0.0978**	-0.1559***
Self-assessed pain	0.0500*	-0.0396	-0.0339**	-0.1121***	-0.0722

Continued on the following page…

Appendix 3 (3/3): Partial Association of Gender with Activity-specific Net Affects u_a for Individuals Aged 50+

	Ghana	India	China	South Africa	Russia
Selfcare					
Female	**0.0343**	**-0.0193**	**0.0472****	**0.0528**	**-0.1246**
Age 60-69	0.0651	0.0761*	0.0729**	0.2424***	-0.0902
Age 70-79	0.0344	0.1749***	0.2380***	0.1107	0.1164
Age 80+	0.0962	0.1656	0.3366***	0.2683	0.1382
Rural	-0.0514	-0.0856*	-0.1685***	-0.0588	-0.1389
Married	-0.0184	-0.0243	0.1689***	0.1265*	-0.1013
Number of adults in the household	-0.0296**	0.0006	-0.0427***	-0.0702***	0.0659**
Number of children in the household	0.0068	0.0129	0.0657**	0.0336	0.0743
Enough money to meet one's needs	-0.1843***	-0.0126	0.0930**	-0.0575	0.2023**
Education (years)	-0.0019	0.0095	0.0017	0.0144**	-0.0053
Working	0.1689***	-0.0446	0.0297	-0.0800	-0.1164
Q2: Permanent Income	0.1021*	0.0121	0.0208	0.0157	0.2056*
Q3: Permanent Income	0.2301***	-0.0257	0.1232***	0.1546*	0.2641**
Q4: Permanent Income	0.2536***	0.1385*	0.1800***	0.2298**	0.3831***
Victim of a violent crime (last 12m)	0.0497	0.1649	0.1886**	-0.0554	0.3403***
Community involvement	0.0548**	0.0000	0.0197	-0.0024	-0.0420
Trust	-0.0367*	-0.0145	0.0062	0.0060	-0.0691*
Safety	0.0278	0.0812***	0.1258***	0.0162	0.0041
WHO disability score	-0.0718***	-0.2435***	-0.0964***	-0.1600***	-0.2556***
Self-assessed pain	0.0463*	0.0172	-0.0290*	-0.0327	-0.0776

* (p<0.10). ** (0<0.05). *** (p<0.01)

Notes: Standard errors are computed using 250 bootstrap replications. Sample weights are applied. The entries in each column are country-specific average partial effects of gender on Activity-Specific Net Affects. Average partial effects are based on a linear regression (Eq. (13)).

3 Chapter 3: Is retirement bliss? Assessing the impact of work cessation on subjective well-being in Russia

Clémence Kieny (University of Lausanne)[14]

[14] Clémence Kieny is a PhD candidate at the University of Lausanne, Internef, Dorigny, 1015 Lausanne, Switzerland (phone: +41 76 380 98 82; email: clemence.kieny@unil.ch).

Abstract

Retirement is a major life event with profound effects on individuals' time use, economic position and social networks. Using data from the World Health Organization's Study on Global Ageing and Adult Health (SAGE) (2007-2010), we investigate how work cessation at statutory pensionable age impacts individuals' subjective well-being in Russia. We use a Fuzzy Regression Discontinuity Design approach to circumvent the issue of the endogeneity of retirement decisions, exploiting the strict age-based eligibility rules for old-age pension in Russia to construct an instrument variable for work cessation. We compare and contrast the effects of work cessation on several subjective well-being measures covering both evaluative and emotional aspects of well-being, including the rarely investigated concept of experienced well-being. Moreover, we assess potential differences in the effects of work cessation on the subjective well-being of women and men. Our results show that evaluative well-being is mostly unaffected by work cessation for both women and men, while emotional well-being improves in our overall study population, especially for men. We hypothesize that this discrepancy may be linked to the determinants underlining evaluative and emotional well-being, respectively. The absence of change in evaluative well-being might be linked to the fact that retirement is socially perceived as a normal life transition, and may, therefore, not affect individuals' cognitive evaluation of their own life. The increase in emotional well-being, on the contrary, is likely due to a change in time use due to work cessation, resulting in a substitution of unpleasant work-related activities by more pleasurable leisure activities. Our research yields useful insights for policymakers intending to raise the pensionable age in order to mitigate the impact of demographic changes on the financial sustainability of welfare.

Keywords: Subjective Well-being; Evaluative Well-being; Emotional Well-being; Experienced Well-Being; DRM; Retirement; Work Cessation; SAGE; Gender; Russia

3.1 Introduction

Global population aging is one of the major challenges facing humanity in the 21st century. Indeed, due to decreasing birthrates and increasing life expectancy, the world population is growing older at an unprecedented speed. Projections show that by 2050, one sixth of the world population will be above the age of 65 (United Nations 2020). While life expectancy is rising, retirement ages have remained roughly stable in many countries, implying that the duration of retirement has increased. As a consequence, the old-age dependency ratio – i.e., the ratio between the number of individuals above 65 (as a proxy for retirement age) and the working age population (15-64 years old), is rising steadily, often implying increasing financial pressure on social security. In Russia, the old-age dependency ratio is expected to increase from 24% in 2020 (1 dependent for every 4.3 workers) to 42% in 2060 (1 dependent for 2.3 workers)[15] (United Nations 2019). These changes will put a strain on the Russian welfare system, which may end up fiscally unsustainable (Eich et al. 2012). Increasing the retirement age may thus appear as an attractive policy, allowing governments to increase their tax-base while also decreasing the overall cost of pensions.

Alongside welfare system sustainability and costs concerns, the well-being of individuals close to and above the retirement age should be considered when crafting retirement policies. Policymakers contemplating raising the retirement age must, therefore, ponder the implications on taxpayers as well as on retirees. The fierce popular opposition to governments raising retirement ages in many countries (e.g. Russia (Reuters 2018), France (Breeden 2019)) suggests that citizens anticipate that their lives will improve in retirement. In this context, it is imperative to generate evidence regarding the welfare implications of retirement. If indeed work cessation substantially improves the well-being of retirees, policymakers who intend to raise the retirement age should consider mitigating or compensating measures. However, if on the contrary retirement were to be detrimental to individuals' well-being, the advantages of raising the retirement age may prove easier to advocate for.

This study investigates how work cessation at statutory pensionable age impacts individuals' subjective well-being in Russia. Subjective well-being (thereafter SWB) encompasses several dimensions, among which we focus on the most firmly established: evaluative and emotional well-being[16]. These two components of subjective well-being are both conceptually and statistically distinct (Diener et al.

[15] By means of comparison, this ratio is expected to increase from 29.5% to 52.6% in Europe, and from 25.6% to 40.4% in the USA (United Nations 2019).

[16] Some definitions of SWB also include a "eudaimonic" dimension, which we do not use in this article due to the absence of information in our database. This concept focuses on individuals' functioning and realization of their potential, transcending an exclusively hedonistic vision of what constitutes a "good life". Eudaimonic well-being thus includes both capabilities and outcomes, such as autonomy, competence, interest in learning, goal orientation, sense of purpose, resilience, social engagement, caring and altruism (Kapteyn et al. 2015).

1999), and the convergent and discriminant validity[17] of different measures for both types of concepts has been established in the literature (Lucas, et al. 1996). On the one hand, evaluative well-being captures the long-term appraisal that individuals make of their own life and is usually measured by asking respondents to rate their happiness or satisfaction with their life as a whole or with different life domains on a set scale. Emotional well-being, on the other hand, measures the flow of short-term feelings and emotions, and is usually assessed by asking respondents to report the experience and intensity of certain feelings over a certain time period. One issue with measures of evaluative well-being is that reports of happiness and life satisfaction are retrospective judgments which may only be constructed when asked and, therefore, substantially influenced by respondents' current context and mood, as well as by their recall abilities. On the contrary, measures of emotional well-being may be less affected by certain systematic biases *(*Kahneman and Krueger 2006*;* Kahneman and Riis 2005). However, one may argue that there is more to life than the sum of momentary feelings, providing ample justification for considering evaluative alongside emotional well-being measures. A comprehensive analysis of subjective well-being, therefore, requires the use and comparison of several well-being measures that will grasp the complementary facets of this multidimensional concept. Conducting such comprehensive assessments is especially important since the two above dimensions of subjective well-being have been shown to behave differently over time and to have different relations with certain individual characteristics, life circumstances and other variables (Diener, 1994; Kahneman and Deaton 2010; Kahneman and Riis 2005; Knabe et al. 2010). The use of the World Health Organizations's Study on Global AGEing and Adult Health's data for the Russian Federation (thereafter SAGE-Russia) data allows us to examine, compare, and disaggregate several measures of SWB within the same population.

As retirement is not compulsory in Russia, individuals who decide to quit working may be statistically different from those who remain active, and SWB and some of its (potentially unobservable) determinants may influence individuals to keep on working or not. If retiring is not exogenous in a model for SWB, Ordinary Least Squares (OLS) regression will yield biased estimates. Our paper thus uses a Fuzzy Regression Discontinuity Design (FRDD) approach to circumvent this issue, exploiting the strict age-based eligibility rules for old-age pension in Russia to construct an instrument for exiting the labor force. This identification strategy has been effectively implemented by many others across different contexts in the past (e.g. Bonsang and Klein 2012; Charles 2004; Chen et al. 2020; Horner 2014; Kämpfen and Maurer 2016; Kesavayuth et al. 2016; Latif 2011). It must be noted that FRDD estimates shall be interpreted as Local Average Treatment Effects (LATE), representing the average

[17] Convergent validity is demonstrated by showing the degree to which the measurement instrument exhibits high correlation with conceptually similar instruments, while discriminant validity is demonstrated by showing that measures of constructs that are conceptually unrelated do not correlate in the data. (VandenBos and APA 2015)

change in SWB at the age threshold for the "compliers" - i.e., those who choose to stop working at the normal pensionable age. These short-term effects may be different from the longer-run effects, which we cannot study using the FRDD approach adopted in this paper.

Our study aims to contribute to the current evidence on the effect of retirement on SWB in the following ways. To start with, we are the first to quantitatively assess the impact of work cessation at pensionable age on SWB in the Russian context while addressing the endogeneity of retirement decisions. Second, unlike other studies, we contrast several measures of both evaluative and emotional well-being, including the highly relevant and rarely investigated experienced well-being concept. Finally, recognizing that retirement experiences may be different for men and women, we analyze the impact of work cessation on SWB separately by gender, comparing and contrasting any gender-specific effects of retirement on SWB.

This paper is structured as follows. Part 2 offers a brief review of the theoretical and empirical literature. Part 3 presents the institutional context of the Russian pension system. Parts 4 and 5 describe the data and measures, and econometric approach of our study, respectively. Part 6 shows some descriptive statistics. Parts 7 and 8 present our main results and the insights on the potential role of gender regarding the effects of retirement on SWB. Part 9 investigates the robustness of our results using multiple model specifications and sample selection strategies. Part 10 discusses the relevance, main contributions and limitations of our study. Part 11 gives our final conclusions.

3.2 Hypotheses and empirical evidence on the relationship between work cessation and SWB

Previous research on the relationship between retirement and SWB often considers retirement as the simultaneous occurrence of work cessation and a potentially corresponding drop in income (e.g., Bonsang and Klein 2012; Horner 2014). This paper, on the contrary, aims to assess the impact of work cessation at pensionable age independently of the income effect. In this section we offer a brief overview of the existing hypotheses and empirical evidence on the relationship between retirement and SWB, while noting that the concept of retirement addressed in this literature is related to but not always exactly the same as that used in this paper, which focuses on work cessation alone.

3.2.1 Predictions of economic theory

A direct implication of standard economic rational choice models of individual decision-making is that voluntary retirement (or work cessation at pensionable age) must increase utility as people would otherwise not choose to retire. However, some of the assumptions of rational choice theory may not be satisfied in the case of retirement. Indeed, the retirement decision is made under uncertainty (i.e.,

individual have no past experience of retirement). In addition, retirement is usually an "all or nothing" decision, as it is generally not an option to gradually decrease one's working hours, and the decision to retire is difficult to reverse. As argued by Horner 2014, economic theory thus suggests that individuals may have lower utility in retirement as a result of a suboptimal response to a non-convex problem under condition of irreversibility. Furthermore, the standard neoclassical theory of labor supply is based on the consumption-leisure trade-off, considering work as a necessary evil in order to create income for consumption. Since time spent working involves a reduction in leisure time, a negative relationship between work and utility is presumed when income is accounted for.

3.2.2 Predictions of psychological theory

When conceptualizing retirement as an adjustment process, researchers in psychology most frequently refer to three theories (Wang and Shi 2014), which offer mixed predictions regarding the impact of retirement on SWB. First, the *life course theory* predicts an improvement in SWB, thanks to decreased psychological and physical demands (Pinquart & Schindler 2007, Wang 2007). Second, the *continuity theory* claims that individuals are highly adaptable to new circumstances, and are thus generally able to maintain stable SWB when retiring (Wang et al. 2011). Finally, the *role theory* highlights that retirement triggers a transition from work roles to family and community member roles (Anson et al. 1989; Barnes-Farrell 2003), which may entail either positive or negative well-being consequences (e.g., Adams et al. 2002; Wang 2007).

3.2.3 Descriptive evidence

Descriptive evidence regarding the association between retirement and SWB is mostly inconsistent. While several studies show a negative association, such as retirees experiencing increased depression (e.g. Li et al. 2021 in 25 longitudinal studies across several countries), others show a positive association between SWB and retirement, such as increased life satisfaction (e.g., Hershey & Henkens 2014 in the Netherlands). Finally, still others observe that the association between SWB and retirement is tenuous (e.g., Pinquart & Schindler (2007) for life satisfaction in Germany, or Warr et al. (2004) for life satisfaction and affective well-being in the United Kingdom (UK)). To our knowledge, only one study exploits the Day Reconstruction Method (DRM, see Data and Measures) to explore the relationship between work status and emotional well-being among older adults (Tadic et al. 2013). The authors show that working and non-working older individuals in the Netherlands report the same overall level of "happiness" – defined as a "pleasurable and mildly activated emotional state" – over the course of the day, but derive "happiness" from different activities.

3.2.4 Causal evidence

In spite of the strong attention given by scholars to the consequences of retirement on SWB, the empirical literature addressing the endogeneity of retirement decisions also provides ambiguous results. Reconciling the existing mixed evidence is challenging as conclusions diverge depending on the setting, data, methodology and model specifications, as well as on the definition and measurement of SWB.

Publications assessing the causal impact of retirement on evaluative well-being usually focus on either life satisfaction, domain of life satisfaction or happiness with life. Several studies – whether controlling for income (e.g., Latif 2011 in Canada) or not (e.g., Gorry et al. 2018 in the USA; Horner 2014 for men only in Western Europe and the USA) – report a positive effect of retirement on evaluative well-being, albeit sometimes only temporary. Others point towards a negligible retirement effect, either when income is kept constant (e.g., Albolhassani and Alessie 2013 in Germany; Kesavayuth et al. 2016 in the UK; Sohier et al. 2020 in nine European countries) or not controlled for (e.g., Bonsang and Klein 2012 for men only in Germany). Moreover, Bonsang and Klein (2012) show that the lack of impact of voluntary retirement on life satisfaction may be due to compensating effects between increased leisure satisfaction and decreased satisfaction with household income.

Studies on the emotional impact of retirement generally concentrate on negative experiences such as depression and stress (see literature review by Henning et al. 2016), but yield similarly inconclusive results. For example, focusing on UK males, Johnston and Lee (2009) describe an improvement in mental health scores caused by retirement, both with and without income controls. Charles (2004) reports a similar improvement among men in the United States of America, focusing on reports of loneliness or depression (without income control). On the contrary, Jaeger and Holm (2004) find that – not controlling for income – Danish men experience a decrease in emotional well-being as a consequence of retirement, while women are unaffected.

3.3 The Russian pension system over the study period (2007-2010)

The statutory age to retrieve labor pension in Russia over our study period was 55 for women and 60 for men. Coverage was virtually universal as eligibility required only five years of contribution. The 2002 pension reform transformed the Soviet Union era social security scheme into a three-pillar system (OECD 2013) comprising a basic pension, an earnings-related component and a mandatory self-funded contribution scheme. The latter component was, however, only available to individuals born after 1967 and therefore not relevant for our study population whose youngest cohort was born in 1960. The basic pension, in turn, was provided to all individuals reaching pensionable age as a fix amount. Higher amounts were granted to pensioners belonging to certain categories, for example

persons with work-limiting disabilities, caregivers for dependent family members, as well as individuals above 80 years old (Eich et al. 2012). The earnings-related component was a pay-as-you-go plan recorded in an individual account by the Pension Fund of the Russian Federation (Eich et al. 2012, OECD 2013). When individuals reached their pensionable age, the amount standing on their account was annuitized using the same factor for both women and men in spite of significantly different life expectancies (OECD 2013). Finally, a benefit top-up was added to increase pensions to the "subsistence minimum level" whenever needed (about 20% of the average wage, varying by region) (Mansoora et al. 2002).

Unemployed individuals as well as those working in specific settings (e.g., Far North, hazardous occupations) or professions (e.g., teachers, ballet dancers and musicians) had lower eligibility age thresholds (Turner and Guenther 2005). During the collection time period of the data used in this study (2007 – 2010), the percentage of pensioners under the age of 60 (for men) or 55 (for women) is estimated to be close to 30% (Eich et al. 2012).

Although an overwhelming majority (over 95%) of Russian pensioners were beneficiaries of the old-age labor pension, permanent residents not entitled to labor pension benefited from the state old-age social pension - which consisted of a percentage of the basic flat-rate component of the labor pension and aimed at maintaining the minimum subsistence level – once reaching the age of 60 for women and 65 for men (ISSA, 2013).

An unusual feature of the Russian system is that pension retrieval is not conditional on employment withdrawal (Kolev and Pascal 2002) and until 2019, there was no financial penalty for working pensioners (Ashwin et al. 2021). In addition, claiming pension before reaching the eligibility age specific to one's situation was impossible and delayed retirement did not increase the pension amount (Eich et al. 2012), implying that most individuals claimed their pensions at their eligibility threshold age, independently of whether they continued working or not.

Working past pensionable age was and remains widespread. In 2006, 53% of women and 60% of men in the Russia Longitudinal Monitoring Survey (RLMS) data still worked in the 5 years following their pension eligibility age (Sinyavskaya 2005), while in 2010 one-third of the Russian Federation's old-age pensioners were working (OECD 2011). Sinyavskaya (2005) shows that in 2003 three quarters of working pensioners remained in their previous job. Nevertheless, reaching the age of retirement represented an important milestone in the careers of many Russians. Specifically, Gerber and Rabl (2014) show that the overall labor market participation rate fell abruptly at the age threshold for both genders, reflecting a strong cultural norm in favor of work cessation in spite of the possibility to combine pension and work incomes.

The overall level of pensions in Russia is very low, with almost 30% of Russians over age 65 years being considered as poor (OECD 2011). Pension replacement rates fell from 75% prior to 1990 (Mansoora et al. 2002) to below 30%, but increased to 40% in 2010 as a result of a 2009 revalorization of benefit payments (OECD 2011). The average labor pension increased gradually from RUB 3713 (ca. USD 150) in 2007 to RUB 7811 (ca. USD 260) in 2010. By means of comparison, the average state social pension was substantially lower, increasing from RUB 2758 (USD 110) to RUB 4731 (ca. USD 160) over the same period (ISSA 2013). A 2011 OECD Report argues that that those who had just reached pensionable age were often relatively well-off due to the combination of pension and labor income for working pensioners (OECD 2011). Likewise, Grogan and Summerfield (2019) show that average income was not significantly different between pensioners and slightly younger individuals.

3.4 Data and measures

We use Russian data from the first – and to date only publicly available – wave of the World Health Organization's Study on Global AGEing and Adult Health (SAGE). Wave 1 (2007-2010) of WHO's SAGE-Russia is a cross-sectional nationally representative[18] household survey focusing on non-institutionalized adults aged 50 and older (with a small comparison sample of individuals aged 18-49). While SAGE collects samples from six low- and middle-income countries[19], we focus exclusively on the Russian Federation in this study because of its universal and well-defined pension system over the study period (2007-2010). The pension schemes in the five other countries were either benefiting only a minority of the population, or had disparate retirement policies for different subpopulations that we could not clearly identify in our data.

The SAGE survey contains a broad SWB section, providing detailed information on both evaluative and emotional well-being. Indeed, SAGE contains general and domain-specific life satisfaction questions, as well as remarkably comprehensive data on emotional well-being. In particular, it includes an abbreviated version of the Day Reconstruction Method (DRM) intended to increase the accuracy of emotional recall (Kahneman et al. 2004).

3.4.1 Outcome variable

As discussed in the previous section, pension eligibility in Russia over the study period was based exclusively on age, independently of work status. Moreover, pension levels were relatively low (30-40% replacement rate), enticing many to continue working past the theoretical retirement age. Exiting the labor force and retrieving one's pension were thus in principle two separate events. In this study, we choose to explore the impact of work cessation at pensionable age independently of the pension

[18] Wave 1 of SAGE-Russia obtained 71.8% response rate.
[19] China, Ghana, India, Mexico, Russia and South Africa

income effect. We thus use the indicator variable "not currently working" as a proxy for retirement. This approach may incorrectly classify as retired individuals who have never worked, are unemployed, or are not working because they are incapacitated. However, we consider that the issue of homemakers is not problematic in the case of Russia, as working was close to universal in men and women alike for the generation surveyed in wave 1 of SAGE-Russia. Moreover, we probed whether any of the respondents reported having never worked and only less than 1% of respondents fell into this category. Finally, as a robustness check, we also consider as retired only individuals who report that they do not work because they are too old to do so.

3.4.2 Measures of SWB

We assess the impact of work cessation at pensionable age on SWB, contrasting several measures of evaluative and emotional well-being.

With regards to evaluative well-being, we analyze *life satisfaction* - respondents' report of their quality of life as a whole on a five-point scale - and the *WHO Quality of Life 8 item index* (which we refer thereafter to the as *WHOQoL-8,* also called by others *EUROHIS-QOL 8* index (Power 2003)). *WHOQoL-8* is constructed by summing the scores of individuals' satisfaction in eight different life domains, each measured on a five-point scale. *WHOQoL-8* has well established psychometric properties, and has been shown to have good cross-cultural performance (da Rocha 2012; Power 2005; Schmidt 2006). Moreover, we disaggregate these results by assessing the impact of work cessation on satisfaction with each of the eight components of the *WHOQoL-8*: quality of life, health, energy for everyday life, ability to perform activities of daily living (ADL), oneself, personal relationships, financial situation, and living conditions.

We further examine three measures of emotional well-being:

First, the *emotion score* is constructed based on respondents' self-reports of the occurrence of three positive (calm, relaxed, and smiling or laughing) and eleven negative (worried, rushed, irritated/angry, depressed, tense/stressed, lonely, bored, physical pain, sleepiness, stomach ache, headache) emotions. The score is calculated as the number of self-reported positive emotions minus negative emotions.

Second, we construct an alternative version of this *emotion score* excluding physical discomforts (physical pain, sleepiness, stomach ache, headache) from the list of negative feelings in order to keep only pure emotions. This other measure is referred to as *emotion score (no phys.)* in tables and graphs.

Moreover, we disaggregate the impact of work cessation on the score of positive and negative feelings separately (with and without including physical discomforts), as well as on each of the fourteen reported feelings individually.

Third, we construct an *experienced well-being measure* based on Kahneman's DRM methodology (Kahneman et al. 2004) which combines time use and experiential assessments. SAGE's abbreviated DRM survey requires respondents to reconstruct part of the previous day (starting upon a randomly assigned time), disaggregating it into ten successive time intervals and then describing each interval in terms of the activity performed (from a list of 22) and the associated occurrence and intensity (on a three-point scale) of five negative and two positive emotions[20]. Miret et al. (2012) show that SAGE's abbreviated version of the DRM yields similar results to those of the full DRM.

Based on Juster et al. (1985) and Kahneman and Krueger (2006), and following previous studies (Flores et al. 2015; Flores et al. 2020; Kieny et al. 2020; 2021), we construct the variable experienced well-being, U_i as follows:

$$U_i = \sum_a \tau_{ia} u_{ia}$$

Where u_{ia} represents respondent i's net affect during each activity group[21] a, and τ_{ia} represents the share of time that this activity represents relative to the total non-sleeping time reported by individual i. Activity-specific net affect $u_{i,a}$ is the time-weighted average of positive and negative affect scores associated with each activity slot s: $u_{i,a} = \sum_s \left(\sum_l h_{is} PA_{is}^l - \sum_k h_{is} NA_{is}^k\right) \forall a = 1, \dots, 5$ where $PA_{is}^l$is the l'th positive affect and NA_{is}^k is the k'th negative affect reported by individual i, and h_{is} denotes the weight that one specific slot s of activity a represents relative the overall time spent on activity a during the assigned portion of the day. This allows taking into consideration the fact that respondents may report performing the same activity group several times over the total period. The total net affect of an activity group a is therefore the sum of net affects over all slots of this activity a, weighted by the share of time that each slot s represents relative to the total time spent on activity a. For example, if a respondent reports cleaning dishes for 15 minutes and later vacuuming for 30 minutes over the time period assigned, the net affect associated with homework should be 1/3 of the net affect reported during cleaning dishes and 2/3 of the net affect reported during vacuuming.[22]

[20] Negative: Feeling worried, rushed, irritated or angry, depressed, tense or stressed; Positive: Feeling calm or relaxed, and feeling enjoyment.

[21] Following previous analyses, the 22 activities are grouped into five activity groups: work, housework, travel, self-care and leisure (Flores et al. 2015; Flores et al. 2020; Kieny et al. 2020; 2021)

[22] In order to aggregate positive and negative affects, we must assume the cardinality of net affects and time-separability and inter-temporal additivity of the utility function.

All five measures of SWB are standardized. Estimated differences must therefore be interpreted in standard deviation units of the respective outcome. Thereafter, the five measures of SWB will be referred to as *life satisfaction*, *WHOQoL-8*, *emotion score*, *emotion score (no phys.)* and *experienced well-being*.

3.4.3 *Sample selection*

The original sample contains 4947 observations, among which 4219 individuals have completed the interview and are not missing from any part of the survey. As we are interested in older adults, we focus on respondents aged 50 years and older and discard 412 individuals from the small comparison sample of younger adults. SAGE's abbreviated DRM section randomly allocates individuals to four sets: morning, afternoon, evening or entire day yesterday. The randomly selected full day sample does not report a detailed time diary along with activity-specific affective experiences and does not allow us to construct our experienced well-being outcome variable. We therefore drop the 965 individuals allocated to the full-day category, bringing our sample size to 2842 observations. We further drop observations with missing values in at least one of the variables used in the analysis - in particular from the health-related and income variables - which leads to an additional loss of 145 observations. Our final sample consists of N=2697 observations.

3.5 Econometric approach

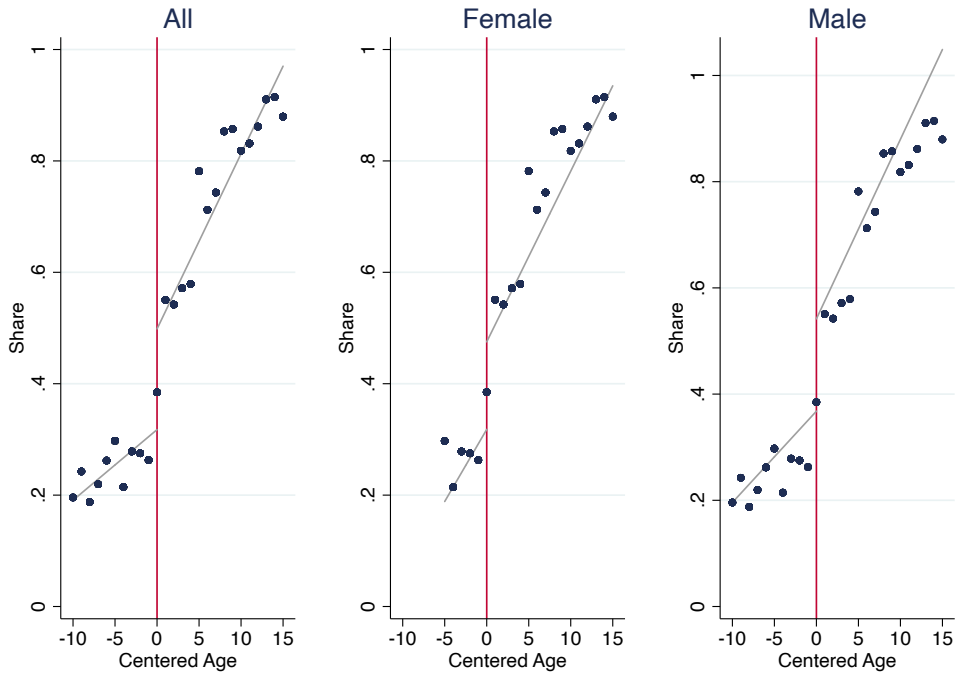
Due to the endogeneity of retirement decisions, using OLS to assess the causal impact of labor force exit on SWB would yield biased estimates. First, OLS estimation would invariably suffer from omitted variable bias. Even adding a large number of control variables cannot make up for the fact that individuals who choose to retire are statistically different from those who choose to continue working. Indeed, while the decision to retire depends in part on observable factors, it is also affected by unobservable characteristics, such as how much one likes one's job, or how one enjoys the company of co-workers. Second, OLS estimates may suffer from reverse causality, forbidding us to interpret them as causal. Indeed, individuals with higher SWB may be less (or more) prone to stop working at pensionable age, compared to individuals with lower well-being.

3.5.1 Identification

In order to evaluate the causal impact of work cessation on SWB, we use a Fuzzy Regression Discontinuity (FRD) design, exploiting the strict pension eligibility threshold in Russia to construct our instrument, a binary variable indicating whether the individual has reached the statutory gender-specific eligibility age for claiming their pension. This approach is akin to an Instrumental Variable (IV) strategy, requiring that the models satisfy the assumptions discussed by Imbens and Angrist (1995) –

monotonicity, independence, relevance, and exclusion restriction – to interpret our estimates as a local average treatment effect (LATE). The monotonicity assumption implies that crossing the pension age threshold should not increase the probability to work. The independence assumption entails that age should not be influenced or caused by the treatment and that individuals near the threshold should have limited influence on the treatment assignment. This assumption is easily satisfied in this context as individuals cannot change their age nor have the ability to amend the pension eligibility thresholds. Moreover, our tests of the continuity of the age around the pension eligibility threshold (see Figure A3 and Table Ae0 in Appendix) do not show any sign of manipulation. In addition, the instrument must be relevant, i.e., the pension eligibility status must be strongly correlated with work cessation, the endogenous explanatory variable. Previous studies using a similar empirical strategy have shown that pension eligibility ages are generally strong predictors of retirement behavior (e.g. Bonsang et al. 2012; Kesavayuth et al. 2016; Latif 2011; Mazzonna and Peracchi 2012).

Figure 1: Share not working by distance to pensionable age threshold.



Note: SAGE-Russia (2007-2010). Figure 1 shows the association between labor force status and age, centered at the pensionable age threshold (55 for women and 60 for men) for the whole population, as well as disaggregated by gender. Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold.

What is more, IV relevance can also be assessed empirically. Figure 1 shows the relationship between labor force status and age in Russia for our entire study population as well as disaggregated by gender. Although a sizeable share of the population stops working before the standard pensionable age, we see a clear jump in the share of individuals not working at the exact pensionable age both for women

and for men[23]. It is of note that about 30% of both women and men above the pensionable age retrospectively report that they stopped working exactly at the age threshold. Although a second discontinuity in the propensity to stop working may be distinguishable five years after the pensionable age threshold, this phenomenon is not observed by other researchers (e.g., Gerber and Rabl 2014; Grogan and Summerfield 2019). Moreover, while this jump is concurrent with the age threshold for retrieving the state social pension (65 for men and 60 for women), the low share (under 5%) of those eligible, and the fact that the state social pension targets only individuals who are not eligible to receive the labor pension (having worked less than 5 years in total) hints to the fact that this observation cannot be attributed to individuals choosing to stop working at the age eligibility threshold for state social pension. We are not aware of any other policy - such as an age threshold for gaining access to health insurance as is the case in other countries (e.g., Medicare in the USA) - which may explain this apparent discontinuity in our sample. We thus hypothesize that these ages may represent benchmarks for those who initially choose to continue working at the pensionable age threshold.

More formally, Table A1 in Appendix presents first-stage estimates for a variety of age specifications (c.f. Section 3.5.2. below). Across all specifications, the first-stage coefficient estimates are positive and highly significant, suggesting that reaching the pensionable age threshold is a strong predictor of work cessation. Moreover, the first-stage Kleibergen-Paap rk Wald F statistics presented allow us to formally reject the hypothesis of weak identification.

Finally, the instrument must satisfy the conditional exclusion restriction criterion, i.e. once age and income effects have been controlled for, the instrument must not be correlated to the error term. In other words, the eligibility status must affect our outcome variables only through the work cessation channel. Controlling for smooth age trends and income, the binary instrument indicating whether individuals reach a certain specific age is unlikely to have any direct effect on SWB except through the channel of work cessation, unless there is another concurrent event. To our knowledge, no other policy in Russia uses the same age threshold for implementation. Under these conditions the causal impact of work cessation can be estimated using FRDD estimation techniques.

Our results must be interpreted as Local Average Treatment Effects (LATE). The coefficients estimated represent the average change in SWB for the "compliers", those who choose to stop working at the normal gender-specific pensionable age, but it cannot be used to estimate the effect that work

[23] Work cessation appears to occur in two steps, increasing at the pensionable age threshold and further the following year. We verified whether the partial increase at the threshold might not be due to rounding up of reported ages in the survey but found a similar pattern when calculating the exact age on the interview date. This stepwise increase in the propensity to stop working may be due to administrative delays between claiming and retrieving pension or between announcing one's decision to stop working and the implementation of this decision.

cessation would have on the "non compliers", i.e., those who do not stop working at the normal pensionable age in spite of the financial incentive and social norm.

Finally, as discussed by Grogan and Summerfield (2019), using the eligibility threshold for regular workers as an instrument entails that the exogenous variation in work status stems only from individuals who receive their pensions exactly at the gender-specific statutory age. Since those who are entitled to early pensions do not change receipt status at this age, their data do not contribute to our measurement of causal effects.

3.5.2 Specifications

We estimate the following 2SLS model:

$$Not\ Working_i = \delta_0 + \delta_1 Z_i + X_i\omega + F(Age_i,\ Z_i) + v_i \qquad (1)$$

$$SWB_i = \beta_0 + \beta_1 \widehat{Not\ Working_i} + X_i\gamma + F(Age_i,\ Z_i) + u_i \qquad (2)$$

Where $Not\ Working_i$ indicates whether individual i reports that she was working at the time of interview, $Z_i = 1(age_i \geq c)$ is a binary variable taking the value 1 if the individual is above the pensionable age threshold c, X_i, is a vector of control variables, including a rich set of income measures, and $F(.)$ is a smooth function of centered age. Following Ferrer-i-Carbonell and Frijters (2004) who show that ordinal and cardinal use of life satisfaction measures tend to give similar results, we treat all outcome variables as continuous.

Our baseline specification restricts the sample to individuals 10 years below (5 for women)[24] to 15 years above the age threshold and controls for age using the function $F(age_i, Z_i) = \eta_1(age_i - c) + \eta_2(age_i - c) * Z_i$, allowing for different age trends on each side of the threshold. This reduces our sample size to 1955 individuals from a total of 2697 in the full sample[25].

We estimate a variety of alternative specifications as robustness checks, of which the results are presented in Appendix Tables A5 to A14. In particular, we change the sample size, first to individuals between -10 (-5 for women[26]) and +10 years around the age threshold (1587 individuals), and second to individuals between -10 (-5 for women) and +20 years (2299 individuals) around the threshold. Moreover, we check for the robustness of results while controlling for a linear function of age $F(age_i, Z_i) = \eta_1 age_i$ as well as for a quadradic function of age $F(age_i, Z_i) = \eta_1 age_i + \eta_2 age_i^2$.

[24] We cannot increase the lower bound of the age bandwidth to 15 because women's statutory pensionable age is 60 and the youngest respondents in our sample are 50.
[25] The full sample consists of 2697 individuals for whom the SWB sections are complete, out of a total of 3807 respondents who completed the survey.
[26] Since the pensionable age threshold is 55 for women and our sample contains only individuals above 50.

3.5.3 Income controls

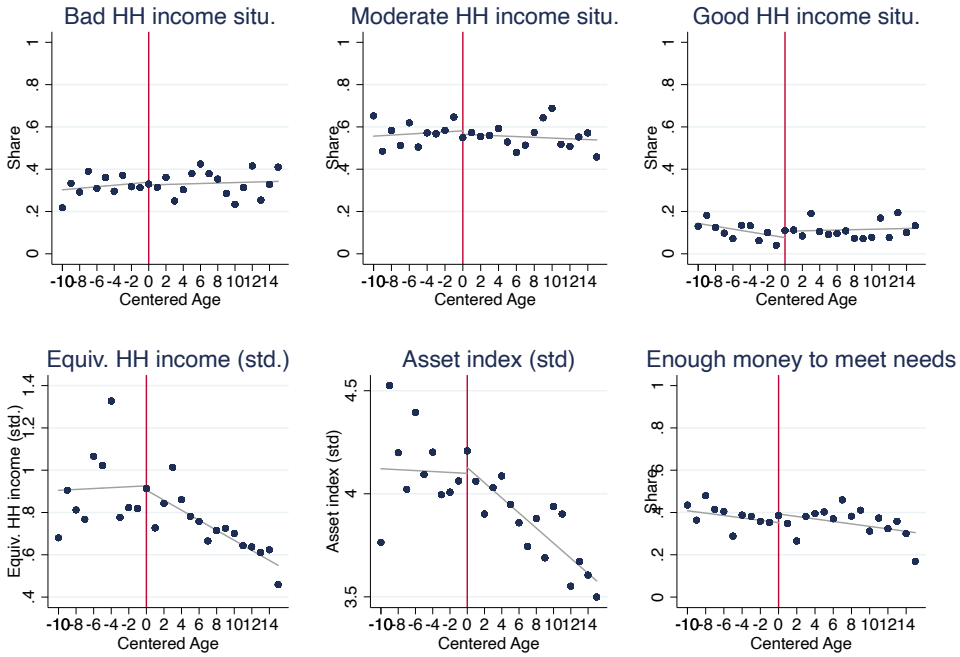
As we intend to estimate the effect of work cessation at pensionable age independently of the income effect associated with retirement, and in order for our instrument to fulfill the conditional exclusion restriction criterion, we control for income as well as possible given our data. We include a third degree polynomial of standardized household equivalent income[27], binary variables for different categories of self-assessed household income situation (bad, moderate, good), and a standardized asset index[28], which is commonly interpreted as a proxy for wealth or (permanent) income (Filmer and Pritchett 2001). Figures 2a and 2b show the evolution of our income control variables as well as the individual-level variable "having enough money to meet one's needs"[29] for the whole population and separately by work status, respectively. In the general population, we observe no discontinuity in terms of any income variable at the threshold. However, separating individuals above the threshold by work status, we observe that the absence of an income effect at the pensionable age threshold in the whole sample is actually due to a compensation between an increase in income for individuals who keep on working and a decrease in income for individuals who quit working. The size of this discontinuity varies depending on the income variable under consideration. In addition, Figure A1 in Appendix shows the evolution of weekly working hours among working respondents before and after the pensionable age threshold. While we observe a decrease in working hours with age, there is no discontinuity at the threshold. There is therefore no evidence to support the hypothesis that individuals adapt their working hours in order to maintain stable income after retrieving their pension.

[27] Total household income was constructed by aggregating the reported amounts for wage income, earnings from sales, income from rental of property, old-age pension or social security benefits, interests or dividends, other. Household incomes were then equivalized using the modified OECD scale (Haagenars et al. 2004), which assigns a value of 1 to the household head, 0.5 to each additional adult member and 0.3 to each child under 15 years old.

[28] The asset index was constructed based on the reported ownership of 21 assets (e.g., cars, washing machine, computer, mobile phone).

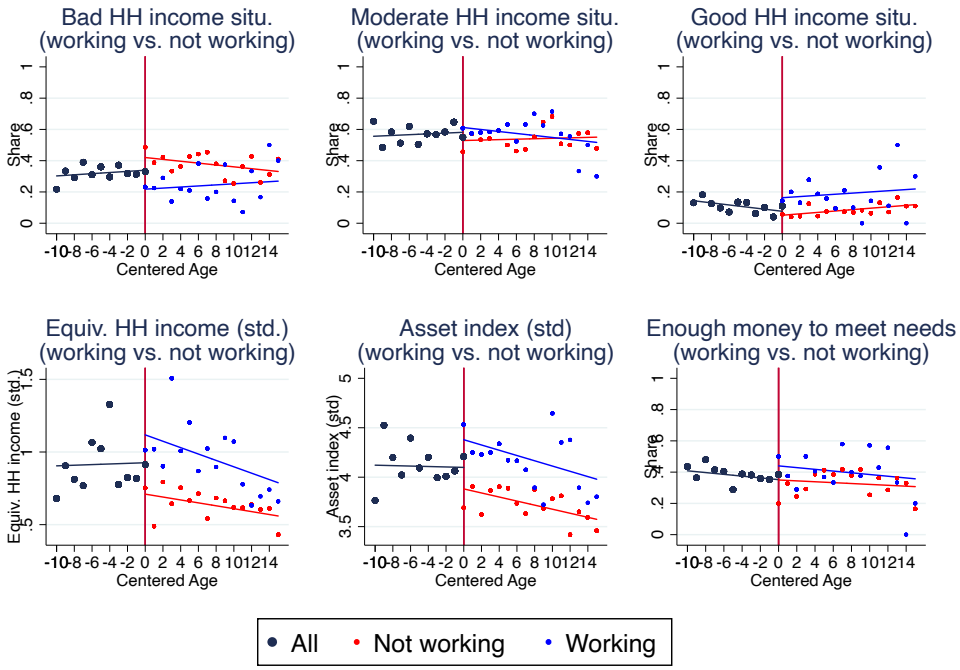
[29] We cannot use "Having enough money to meet one's needs" as a control variable as it is one of the components of the WHOQoL-8 index.

Figure 2a: Evolution of income around the pensionable age threshold, irrespective of work status.



Note: SAGE-Russia (2007-2010). Figure 2a shows the association between income variables and age, centered at the pensionable age threshold (55 for women and 60 for men). Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold.

Figure 2b: Evolution of income around the pensionable age threshold, by of work status.



Note: SAGE-Russia (2007-2010). Figure 2b shows the association between income variables and age, centered at the pensionable age threshold (55 for women and 60 for men). Observations represent yearly averages. The dark navy dots and corresponding linear regression lines correspond to individuals between -10 (-5 for women) and the pensionable age threshold, irrespective of their work status. Red observations and the associated regression lines correspond to working individuals, and blue observations and the associated regression lines correspond to non-working individuals, between the threshold and +15 years.

3.5.4 Other covariates

While the inclusion of covariates is not necessary in a regression discontinuity setting, it allows to increase the precision of estimates if they are correlated to the outcome variable (Lee and Lemieux 2010). Moreover, although the addition of covariates would not be needed to correct any bias when age is very close to the threshold, in practice, we include observations with values of age further away from the threshold. In this case, including additional covariates may eliminate some bias resulting from the inclusion of these additional observations (Imbens and Lemieux 2008). Following previous research (e.g., Bonsang and Klein (2011)), we use the following control variables which may be correlated to SWB: gender, rurality, education level, marital status, household composition (number of adults and children in the household), as well as two health status variables (WHO Disability Index and Self-Assessed Pain). Finally, we control for the year of interview. As an additional robustness check (see Table A17 in Appendix), we use two alternative health measures: the number of outpatient visits over the previous 12 months, and a dichotomous variable indicating an inpatient care event over the same period. While some of these variables (e.g., marital status, health variables, and household composition variables) may be considered as so-called "bad controls" (Angrist and Pischke 2009), i.e., variables on the causal pathway between work cessation and SWB, this paper aims to assess the pure work cessation effect, independently of other factors which may accompany this transition. However, in order to assess whether not including these control variables would alter our conclusions, we performed additional regressions (not shown) including only age variables as covariates and obtain similar results.

3.6 Descriptive statistics

Table 1 presents summary statistics for our main sample, comprising individuals between -10 (-5 for women) and +15 years around the pensionable age threshold, reported by labor market status. Our sample's mean age is close to 60, with individuals who do not work on average seven years older than those who keep on working. It is composed of a small majority of women. In addition, respondents live mostly in urban areas, and 80% have at least reached high school. 63% of the sample report being married, and an average household is composed of 2.4 adults and 0.2 children. The disability and self-assessed pain scores are standardized, and thus cannot be interpreted in absolute sense. However, we can see that individuals who do not work tend to have higher disability and self-assessed pain scores. One third of the sample reports having a bad household income situation. Moreover, those who do not work tend to belong more often to this category, and report lower equivalent household income and asset index. Finally, we observe that 22% of the interviews were held in 2007, 48% in 2008, and 30% in 2010.

Table 1: Descriptive statistics of control variables (-10 (-5 for women) to +15 years around the pensionable age threshold)

	(1) Working	(2) Not Working	(3) All
Age	56.21	62.99	59.93
	(5.11)	(6.32)	(6.71)
Female	0.56	0.60	0.58
	(0.50)	(0.49)	(0.49)
Rural	0.25	0.28	0.27
	(0.43)	(0.45)	(0.44)
Education: < Secondary	0.01	0.07	0.04
	(0.11)	(0.25)	(0.20)
Education: Secondary	0.06	0.22	0.15
	(0.24)	(0.41)	(0.36)
Education: High school	0.63	0.54	0.58
	(0.48)	(0.50)	(0.49)
Education: College or higher	0.29	0.17	0.23
	(0.46)	(0.38)	(0.42)
Married	0.67	0.59	0.63
	(0.47)	(0.49)	(0.48)
Number of adults in household	2.58	2.24	2.39
	(1.26)	(1.14)	(1.21)
Number of children in household	0.23	0.20	0.21
	(0.63)	(0.60)	(0.61)
WHO disability score	2.13	2.73	2.46
	(0.54)	(0.88)	(0.81)
Self-assessed pain	0.73	1.27	1.03
	(0.91)	(1.05)	(1.02)
Bad HH income situation	0.26	0.39	0.33
	(0.44)	(0.49)	(0.47)
Moderate HH income situation	0.59	0.54	0.56
	(0.49)	(0.50)	(0.50)
Good HH income situation	0.15	0.08	0.11
	(0.36)	(0.26)	(0.31)
Equivalent household income	1.01	0.63	0.80
	(1.93)	(0.64)	(1.39)
Asset Index	4.21	3.73	3.95
	(1.00)	(0.97)	(1.01)
Year= 2007	0.24	0.20	0.22
	(0.43)	(0.40)	(0.41)
Year= 2008	0.47	0.50	0.48
	(0.50)	(0.50)	(0.50)
Year= 2010	0.29	0.30	0.30
	(0.45)	(0.46)	(0.46)
Observations	881	1074	1955

Note: Sample averages (standard deviations in parentheses) for individuals between -10 and +15 years around the pensionable age threshold.

Table 2: Descriptive OLS estimation. Evaluative and emotional well-being.

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**0.081***	**-0.001**	**0.177*****	**0.165*****	**0.296*****
	(0.048)	**(0.039)**	**(0.058)**	**(0.057)**	**(0.056)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951

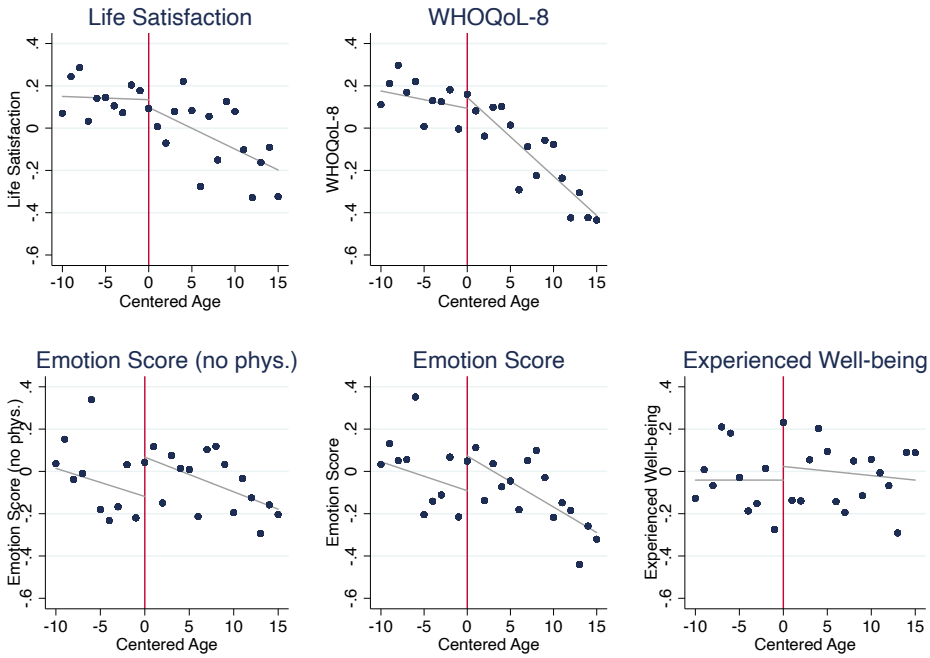
Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. OLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses.

Table 2 reports OLS estimates, which describe the associations between not working and each of the five SWB measures[30]. Non-working individuals report slightly higher levels of life satisfaction as well as well as significantly higher levels of emotional well-being, using all three variables. Those estimates have no causal interpretation. The positive associations between not working and SWB could – for example – be due to the fact that happier individuals may be more likely to quit working.

3.7 Main results

3.7.1 Graphical analysis

Figure 3: Subjective Well-being Measures.



Note: SAGE-Russia (2007-2010). Figure 3 shows the association between each of our five main measures of SWB and age, centered at the pensionable age threshold (55 for women and 60 for men). Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold.

Figure 3 presents the associations between age and each of our five main measures of SWB under and above the pensionable age threshold. Graphical analysis can be useful in order to provide evidence of a discontinuity at the threshold, as discussed by Imbens and Lemieux (2008). Observations are collapsed to yearly averages and plotted against age with a separate linear regression line under and above the threshold. Although there appears to be little discontinuity around the age threshold for evaluative measures of SWB, we observe a clear positive jump in *emotion score* - even more

[30] Table A2 presents the complete results (coefficients of interest plus coefficients of control variables).

pronounced with physical discomforts are excluded (i.e., *emotion score (no phys.)*) - as well as a small positive discontinuity in *experienced well-being*.

3.7.2 Reduced form analysis

Table 3 presents reduced form estimates.[31] These estimates would be equivalent to a sharp RD design if there was 100% compliance. We observe that reaching the pensionable age threshold has a significantly positive effect on emotional measures of SWB while it has no significant impact on evaluative measures.

Table 3: Reduced form estimation. Evaluative and emotional well-being.

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Above threshold	**-0.115**	**-0.002**	**0.210****	**0.173****	**0.152***
	(0.074)	**(0.065)**	**(0.090)**	**(0.088)**	**(0.092)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. OLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3.7.3 2SLS estimation

This subsection presents estimates of the impact of work cessation on all our outcomes of interest, using the basic specification described in the previous section on the sample of individuals between -10 (-5 for women) and +15 years around the pensionable threshold. Coefficients are obtained using the 2SLS equations (1) and (2). Tables A5 to A14 in the Appendix present the results of our robustness checks.

Table 4 describes the causal impact of work cessation on each of the five main SWB measures. We report the Kleibergen-Paap rk Wald F statistics for weak identification from the first stage regressions, which are above the rule-of-thump threshold of 10 (Staiger and Stock, 1997), as well as above 10% bias critical values[32] (Stock and Yogo 2005), allowing us to reject the null hypothesis of weak identification. We observe that work cessation does not have any significant impact on evaluative well-being despite a small negative coefficient on *life satisfaction* (Column 1) that does not reach conventional significance levels. However, we observe a significant positive impact of work cessation on emotional well-being, using both the *emotion score* (Column 4) and *experienced well-being* (Column 5) variables. This impact is even stronger when we consider the alternative version of the *emotion*

[31] Table A3 presents the complete results (coefficients of interest plus coefficients of control variables).
[32] Critical values are 37.42, 23.11, and 15.06 for a maximum of 5%, 10% and 20% bias, respectively.

score (Column 3, *emotion score (no phys.)*) that does not include any of the physical discomfort indicators present in the standard *emotion score* variable.

Appendix A4 presents the complete results (coefficients of interest plus coefficients of control variables). We observe that our health measures (*WHO disability index* and *self-assessed pain*) are strongly negatively associated with all five measures of SWB. Individuals reporting moderate and good household income situations appear to have significantly higher SWB than those reporting a bad income situation. In addition, household income appears to be more strongly associated to measures of evaluative than emotional well-being. Finally, the interview taking in place in 2008 appears to be significantly negatively correlated with three out of five SWB measures (*WHOQoL-8*, *emotion score*, *emotion score (no phys.)*), hinting to a potential impact of the 2008 financial crisis. These results allow us to put in perspective the magnitude of our coefficients of interest. The causal impact of work cessation on emotional well-being measures varies between 0.7 and 1 standard deviation units (SDU), while coefficients for the control variables most strongly associated with SWB, *WHO disability score* and the binary variable *"good household income situation"*, are between 0.3 and 0.5 SDU, and between 0.2 and 0.8 SDU, respectively.

Table 4: Evaluative and emotional well-being. Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion Score (no phys.)	(4) Emotion score	(5) Experienced Well-being
Currently not working	**-0.559**	**-0.011**	**1.025****	**0.845***	**0.727***
	(0.373)	**(0.314)**	**(0.455)**	**(0.437)**	**(0.439)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	31.06	31.06	30.75	30.75	31.89

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5 shows the results of our estimation of the impact of work cessation on each of the eight components of the *WHOQoL-8* score. We observe that none of the coefficients are significant, hinting to the fact that the absence of impact of work cessation on evaluative well-being is not due to a compensation between different life domains. We observe a negative, but insignificant effect on satisfaction with quality of life as a whole and with oneself, and a positive but insignificant effect on satisfaction with activities of daily living (ADL) as well as with living conditions. Notice that in column (7), we assess the impact of work cessation on the extent to which respondents declare that they have enough money to meet their needs, while keeping household income fix – a somewhat unrealistic

counterfactual. The absence of effect should thus be interpreted as an absence of change in the way individuals are able to adapt their lifestyle and expenses to their economic situation rather than to an absence of change in their actual financial situation.

Table 5: Domain satisfaction (WHOQoL-8 components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	(1) Quality of life	(2) Satis. with health	(3) Energy for everyday life	(4) Satis. with ADL ability	(5) Satis. with yourself	(6) Satis. with pers. Relation-ships	(7) Enough money to meet needs	(8) Satis. with conditions of living
Currently not working	**-0.536**	**0.015**	**0.086**	**0.117**	**-0.162**	**0.021**	**-0.067**	**0.239**
	(0.341)	**(0.325)**	**(0.337)**	**(0.331)**	**(0.387)**	**(0.399)**	**(0.371)**	**(0.409)**
Control Variables	X	X	X	X	X	X	X	X
Observations	1,936	1,953	1,951	1,953	1,952	1,950	1,947	1,951
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	33.71	31.03	30.53	30.81	31.03	31.53	30.24	31.17

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A5 presents the complete results (coefficients of interest plus coefficients of control variables). Again, poorer health status is negatively associated with evaluative well-being for all life domains considered. Income variables generally show a positive association with all domains, but especially with having enough money to meet one's needs.

Table 6 presents estimation results for positive and negative emotions separately. The overall positive impact of work cessation on the *emotion score* that we observed in Table 4 appears to be driven both by an (insignificant) increase in the positive emotions index and a significant decrease in the negative emotions index. Again, this effect is stronger when we consider only purely negative emotions (column 2) rather than including also negative physical experiences such as headaches, etc. (column 3).

Table A6 presents complete results, including associations of control variables. The WHO disability score is negatively associated to the *positive emotion score* and positively associated with the *negative emotion score*, whether or not physical discomforts are included. The magnitude of these coefficients ranges from 0.4 to 0.5 SDU in absolute values. Finally, higher income measures are generally positively associated with *positive emotion score* and negatively associated to *negative emotion scores*. The magnitude of coefficients on the indicator variable "*good household income situation"* varies between 0.1 and 0.4 SDU in absolute values. By contrast, the absolute value of the magnitude of coefficients estimating the causal effect of work cessation is much higher, ranging from 0.6 to 0.9 SDU.

Table 6: Positive and negative emotions (Emotion Score components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	(1) Positive emotion score	(2) Negative emotion score (no phys.)	(3) Negative emotion score
Currently not working	**0.730**	**-0.929****	**-0.670***
	(0.445)	**(0.431)**	**(0.394)**
Control Variables	X	X	X
Observations	1,939	1,939	1,939
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	32.02	32.02	32.02

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7 further disaggregates the impact of work cessation on each individual emotion and physical discomfort contributing to the overall *emotion score*. Work cessation appears to have a positive and significant impact on feelings of calmness or relaxation, and on enjoyment, while it appears to have decreased (albeit insignificantly) reports of smiling or laughing over the previous day. In addition, all but two coefficients on negative emotions are negative, although only the impact on feeling rushed, and tense or stressed are statistically significant. Finally, the coefficients on physical discomforts are small and statistically insignificant, with a minor decrease in sleepiness and a small increase in headaches.

Table 7: Individual emotions and physical discomforts (Emotion Score components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	Positive Emotions			Negative Emotions (No Phys.)							Physical Discomforts			
	(1) Calm/ Relaxed	(2) Enjoy-ment	(3) Smile/ Laugh	(4) Worried	(5) Rushed	(6) Irritated/ Angry	(7) Depressed	(8) Tense/ Stressed	(9) Lonely	(10) Bored	(11) Physical pain	(12) Sleepiness	(13) Stomach ache	(14) Headache
Currently not working	**0.501****	**0.359***	**-0.185**	**-0.197**	**-0.472*****	**-0.016**	**-0.060**	**-0.539*****	**0.054**	**0.001**	**0.001**	**-0.141**	**0.063**	**0.135**
	(0.202)	**(0.184)**	**(0.203)**	**(0.139)**	**(0.182)**	**(0.098)**	**(0.106)**	**(0.189)**	**(0.108)**	**(0.110)**	**(0.118)**	**(0.180)**	**(0.062)**	**(0.164)**
Control Variables	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Observations	1,937	1,936	1,938	1,933	1,933	1,939	1,938	1,937	1,939	1,939	1,935	1,938	1,939	1,937
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	32.37	31.99	32.06	32.51	32.51	32.02	31.95	32.04	32.02	32.02	31.90	32.28	32.02	33.15

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A7 provides the details of coefficients on control variables. As earlier, we observe that disability tends to be associated with less positive and more negative emotions and physical discomforts. Self-assessed pain is strongly correlated with the different reports of physical discomforts, although with

small coefficients. Finally, individuals with a good household financial situation tend to have a higher prevalence of all positive emotions but report similar levels of negative emotions (with the exception of a lower prevalence of feeling stressed/tense). While small, the coefficient estimates of the impact of work cessation, are generally larger in absolute value (between 0.1 and 0.5 SDU for positive emotions, 0 to 0.5 SDU for negative emotions, and 0 to 0.1 SDU for physical discomforts) than the non-causal associations of SWB with the control variables with the highest coefficients (*WHO disability score* – ranging from 0 to 0.1 SDU – and *"good household income situation"* – between 0 and 0.2 SDU)

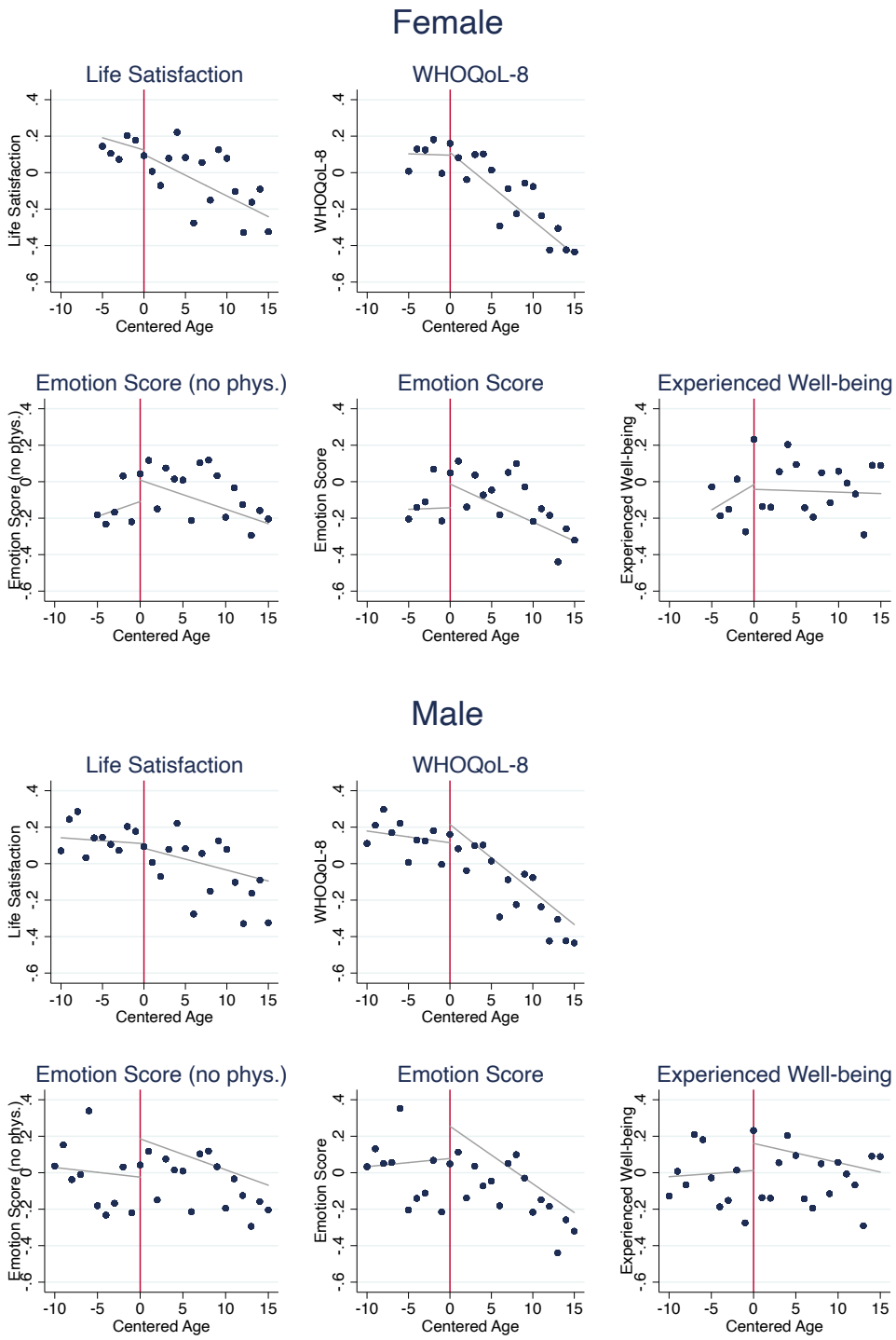
3.8 Gender differences

Recognizing that retirement experiences may differ for men and women, we explore potential gender differences in the impact of work cessation on SWB. Except for the graphical analysis, and due to the small sample sizes remaining when analyzing women and men separately, we include in this section all individuals from the original sample, independently of the distance to the pensionable age threshold. The sample is thus composed of 2697 individuals, 1736 women and 961 men.

3.8.1 Graphical analysis

In Figure 4, we observe no discontinuity in *life satisfaction* at the pensionable age threshold for men and women alike. However, we note a very small positive increase of the *WHOQoL-8* among men. In addition, the positive discontinuity in emotional well-being observed for the whole sample at the pensionable threshold (see Figure 3) is largely driven by men. Indeed, while there is also a clear jump in *emotion score* (with or without physical discomforts) for women, the improvement in *experienced well-being* is exclusively seen among men.

Figure 4: Subjective Well-being Measures, by gender



Note: SAGE-Russia (2007-2010). Figure 4 shows the association between each of our five main measures of SWB and age, centered at the pensionable age threshold separately by gender. Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold.

3.8.2 2SLS results

We estimate models using the same specification as our main 2SLS model (equations 1 and 2) separately for men and women, to allow for the maximal amount of flexibility according to gender. The Kleibergen-Paap rk Wald F statistics from the first stage regressions allow us to reject the null hypothesis of weak identification[33]. See Table A8 in Appendix for first stage results.

Table 8: Analysis of gender differences. Evaluative and emotional well-being. Controlling for different trends on each side of the pensionable age threshold.

	Female					Male				
	(1) Life satisf.	(2) WHO quality of life	(3) Emotion Score (no phys.)	(4) Emotion score	(5) Experien-ced well-being	(1) Life satisf.	(2) WHO quality of life	(3) Emotion Score (no phys.)	(4) Emotion score	(5) Experien-ced well-being
Currently not working	**-0.501**	**-0.092**	**0.341**	**0.425**	**0.239**	**-0.168**	**-0.013**	**0.800***	**0.557**	**0.793***
	(0.450)	**(0.402)**	**(0.541)**	**(0.526)**	**(0.567)**	**(0.390)**	**(0.346)**	**(0.476)**	**(0.452)**	**(0.469)**
Control Variables	X	X	X	X	X	X	X	X	X	X
Observations	1,735	1,735	1,736	1,736	1,732	961	961	961	961	960
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	21.30	21.30	21.13	21.13	21.67	26.46	26.46	26.46	26.46	26.81

Note: SAGE-Russia (2007-2010). Full sample. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8 shows the impact of work cessation on our five main SWB measures for females and males, separately. We observe that all coefficients have the same sign for women and men. For both genders, the impact of work cessation on *life satisfaction* has a negative coefficient that does not reach conventional significance levels. Nevertheless, the negative coefficient estimate for women is three times higher in absolute value than it is for men. In addition, there is no impact of work cessation on *WHOQoL*-8 for either gender. Turning to emotional well-being, we note that the positive impact of work cessation on the two *emotion scores* and *experienced well-being* is largely driven by men. Indeed, the positive coefficient estimates on *emotion score (no phys.)* and *experienced well-being* are more than twice as high for men than for women, reaching significance levels for the former in spite of a much smaller sample size.

[33] Critical Values: 5%: 37.42; 10%: 23.11; 20%: 15.06.

Table 9: Analysis of gender differences. Domain satisfaction (WHOQoL-8 components). Controlling for different trends on each side of the pensionable age threshold.

	Female								Male							
	(1) Quality of life	(2) Satis. with health	(3) Energy for every-day life	(4) Satis. with ADL ability	(5) Satis. with your-self	(6) Satis. with pers. rela-tions.	(7) Enough money to meet needs	(8) Satis. with conditions of living	(1) Quality of life	(2) Satis. with health	(3) Energy for every-day life	(4) Satis. with ADL ability	(5) Satis. with yours-elf	(6) Satis. with pers. rela-tions.	(7) Enough money to meet needs	(8) Satis. with conditions of living
Currently not working	**-0.441**	**0.501**	**0.256**	**0.507**	**-0.754**	**-0.169**	**-0.675**	**0.354**	**-0.137**	**0.070**	**-0.179**	**0.257**	**0.025**	**0.110**	**-0.001**	**-0.132**
	(0.405)	**(0.400)**	**(0.410)**	**(0.433)**	**(0.488)**	**(0.537)**	**(0.505)**	**(0.531)**	**(0.378)**	**(0.377)**	**(0.383)**	**(0.377)**	**(0.422)**	**(0.403)**	**(0.417)**	**(0.420)**
Control Variables	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Observations	1,720	1,733	1,734	1,733	1,730	1,728	1,729	1,730	950	960	958	961	961	960	958	961
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	24.18	21.30	21.29	21.08	21.29	21.43	20.89	22.02	26.25	26.46	25.83	26.46	26.46	27.01	25.83	26.46

Note: SAGE-Russia (2007-2010). Full sample. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9 presents the coefficient estimates of the impact of work cessation on each item of the *WHOQoL-8*, separately by gender. As in the analysis for the whole population (see Table 5), there is no significant impact on any of the components of the *WHOQoL-8* and no apparent trend can be identified.

Table 10: Analysis of gender differences. Positive and negative emotions (Emotion Score components). Controlling for different trends on each side of the pensionable age threshold.

	Female			Male		
	(1) Positive emotion score	(2) Negative emotion score (no phys.)	(3) Negative emotion score	(1) Positive emotion score	(2) Negative emotion score (no phys.)	(3) Negative emotion score
Currently not working	**0.455**	**-0.213**	**-0.356**	**0.796**	**-0.518**	**-0.189**
	(0.542)	**(0.510)**	**(0.472)**	**(0.517)**	**(0.459)**	**(0.422)**
Control Variables	X	X	X	X	X	X
Observations	1,719	1,719	1,719	957	957	957
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	22.22	22.22	22.22	24.97	24.97	24.97

Note: SAGE-Russia (2007-2010). Full sample. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10 shows the impact of work cessation on *positive* and *negative emotion scores* by gender. As in the main analysis (see Table 6), we observe an increase in *positive* and a decrease in *negative emotion scores* for both genders. However, none of the coefficients reach statistical significance in the gender-specific analyses, due to both lower coefficients and much smaller sample sizes, in spite of not restricting the analysis to individuals between -10 (-5 for women) and +15 years around the pensionable threshold.

Table 11: Analysis of gender differences. Individual emotions and physical discomforts. Controlling for different trends on each side of the pensionable age threshold.

	Female							Male						
Panel A : Heterogeneity Analysis of Positive Emotions														
	(1)		(2)		(3)			(1)		(2)		(3)		
	Calm/Relaxed		Enjoyment		Smile/Laugh			Calm/Relaxed		Enjoyment		Smile/Laugh		
Currently not working	0.288		0.392*		-0.251			0.493**		0.217		0.015		
	(0.240)		(0.224)		(0.256)			(0.236)		(0.205)		(0.230)		
Panel B : Heterogeneity Analysis of Negative Emotions														
	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Worried	Rushed	Irritated Angry	Depressed	Tense/ Stressed	Lonely	Bored	Worried	Rushed	Irritated Angry	Depressed	Tense/ Stressed	Lonely	Bored
Currently not working	-0.189	-0.174	0.120	0.075	-0.229	0.120	-0.045	-0.045	-0.552***	0.057	0.078	-0.290	0.022	0.078
	(0.187)	(0.218)	(0.120)	(0.145)	(0.226)	(0.130)	(0.142)	(0.142)	(0.209)	(0.105)	(0.113)	(0.199)	(0.114)	(0.116)
Panel C: Heterogeneity Analysis of Physical Discomforts														
	(11)		(12)		(13)		(14)	(11)		(12)		(13)		(14)	
	Physical pain		Sleepiness		Stomach ache		Headache	Physical pain		Sleepiness		Stomach ache		Headache	
Currently not working	-0.006		-0.232		0.060		-0.137	0.024		0.034		0.065		0.222	
	(0.155)		(0.229)		(0.070)		(0.214)	(0.129)		(0.200)		(0.067)		(0.160)	

Note: SAGE-Russia (2007-2010). Full sample. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. Kleibergen-Paap rk Wald F statistics are not presented so as not to affect readability of Table 11, they are however the same as those reported in Tables 6 to 8. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 11 presents the results of our heterogeneity analysis of the impact of work cessation on the components of the *emotion score*. Panel A shows the impact on positive emotions: the general improvement in calmness and relaxation observed in the general analysis (see Table 7) is driven by men, while the increase in enjoyment is driven by women. Panel B shows the impact on negative emotions. We note that all but one pair of coefficients (feeling bored) have the same signs for both genders. Work cessation appears to significantly decrease only the occurrence of feeling rushed among men. Finally, we do not observe noteworthy differences between genders in terms of the impact of work cessation on physical discomforts (Panel C).

3.9 Robustness

We test the robustness of our findings by examining the significance and magnitude of our coefficient estimates across multiple specifications and sample selection strategies. In the primary analysis, we control for the possibility of having different age profiles of SWB under and above the pensionable threshold by including an interaction term between centered age and our instrument. We check the robustness of our findings to changes in the specification of the age control function. Table A9 and A10 in the Appendix show results controlling for a linear and a squared function of age, respectively. In addition, we use the same three age specifications while changing the age bandwidth, first to ten years around the pensionable threshold (Tables A11, A12, A13) and then to -10 (5 for women) to +20 years

(Tables A14, A15, A18). While the exact coefficient estimates and significance levels fluctuate between specifications and as the sample size changes, results are consistent with our baseline estimates (Tables 4 to 7), lending support for our main findings. We also obtain similar results when we control for objective health measures (Table A17), as well as when we substitute our outcome variable to "currently not working because too old to work" (Table A18).

Moreover, we perform specification tests common to the FRD setting, as recommended by Imbens and Lemieux (2008), such as testing the continuity of the density of age at the pensionable age threshold, testing the continuity of covariates at the threshold, and testing for "placebo" jumps at points where we expect no discontinuity. Results (see Section 3.13.3 in Appendix) support the validity of our estimation strategy.

3.10 Discussion

Retirement is an almost universal life transition which entails many consequences. New retirees must adapt to major changes, both in terms of the conceptualization of their role in society, as well as more practically with regards to time allocation, financial situation and family and social interactions. These transformations are likely to impact their well-being in various ways. In order to increase the existing body of evidence on this topic, our study assesses the well-being consequences of work-cessation at pensionable age in Russia, independently from any potential income effect associated with retirement, which we controlled for throughout our analyses. We find that the impact of work cessation on SWB is different depending on the facet of SWB under consideration.

On the one hand, our results show that evaluative well-being is mostly unaffected (with a slight insignificant tendency towards pejoration) by work cessation for both women and men. The observed absence of impact is similar to the findings of many other researchers (e.g. Albohassani and Alessie 2013; Bonsang and Klein 2012; Kesavayuth et al. 2016; Sohier 2020). However, unlike Bonsang and Klein (2011), but similar to Kesavayuth et al. (2016), we do not find any compensation between life domains, which could have explained the overall absence of effect. This difference between our results and those of Bonsang and Klein (2012) might be explained by our choice (similar to that of Kesavayuth et al. (2016)) to study the impact of work cessation alone rather than in combination with the income drop associated with retirement.

On the other hand, we demonstrate an improvement in the emotional aspects of SWB in our overall study population, which is mainly driven by men. In particular, the improvement in *emotion score* is linked to an increase in positive emotions as well as to a decrease in certain negative emotions, but is not associated with physical discomfort variables. As discussed earlier, most studies of the impact of retirement on emotional well-being focus on negative emotions or mental health indicators, and point

either towards no change (e.g., Chen 2020; Lindenboom 2002) or towards improvement (e.g., Charles 2004; Coe and Zamarro 2011). To our knowledge, no previous study assesses the causal impact of work cessation at pensionable age on an affect balance score.

The discrepancy of findings related to the two dimensions of SWB can be explained by differences in the determinants underlining these two concepts. Emotional well-being, and in particular *experienced well-being*, is strongly impacted by time allocation. As reported by Kahneman et al. (2004), negative feelings predominate during work-related activities, while positive feelings are often associated with leisure activities. Our observed improvement in emotional well-being can thus be explained by the fact that work cessation implies substituting less pleasurable work activities by more pleasant leisure activities. There is no reference in the literature to which we may compare the size of coefficients for the causal impact of work cessation on emotional well-being measures. However, we observe that they are substantially higher in absolute terms than coefficients corresponding to the association of the two control variables most correlated to emotional well-being. Indeed, the work cessation impact is two times stronger than the association between the WHO Disability score and our emotional well-being measures. The stronger effect of work cessation can again be understood by the fact that emotional well-being is intrinsically linked to time use, which in turn is directly affected by work cessation. Flores et al. (2015) show that individuals with disabilities spend relatively more time in leisure activities and relatively less time in work activities. This time substitution – which contributes to improving their experienced well-being – is similar to that occurring upon work cessation. However, disability is associated with lower net affect in all activities performed, counterbalancing the positive time substitution effect and resulting in an overall lower experienced well-being among individuals with disabilities. The fact that the work cessation effect appears to be larger than the association of a one standard deviation increase in the WHO disability index is thus plausible. The work cessation effect is also about three times larger in absolute value than the non-causal association of reporting a "good household income situation" (compared to "bad") with emotional well-being measures. This is in line with the fact that other researchers (e.g., Kahneman and Deaton 2010) show a relatively small influence of income on emotional well-being.

Our results are therefore in agreement with the standard neoclassical theory that hypothesizes that utility is increasing in leisure and decreasing in work. Evaluative well-being, however, is an intellectual construct strongly affected by considerations regarding the purpose of life as well as by social comparisons (Kahneman et al. 2006). The absence of impact of work cessation at pensionable age on evaluative well-being may thus be explained by the fact that retirement is socially perceived as a normal and expected transition. Moreover, these results are in line with the *continuity theory* claiming that individuals are generally able to maintain stable SWB when retiring (Wang et al. 2011). Finally,

Knabe et al. (2010) point out that the availability of more leisure does not seem to play any significant role in life satisfaction and argue that duration neglect[34] may be an explanation for this phenomenon.

This paradox is also described by Knabe et al. (2010) for unemployed individuals. Indeed, they show that the unemployed report lower life satisfaction (as is generally found in the literature (see Lucas et al. (2004) for a comprehensive review), but higher experienced well-being than employed individuals, whether or not income is controlled for. Even though the practical day-to-day realities of being unemployed and retired are very similar, i.e., spending time in leisure instead of working, it is interesting to note the difference between our results (showing no impact of work cessation at pensionable age on evaluative well-being) and those of Knabe et al. (2010) (showing a negative impact of unemployment on life satisfaction). Hetschko et al. (2014) suggest that working age individuals violate social norms by not working, whereas exiting the labor market is considered as legitimate for those over the retirement age threshold, providing a possible explanation for this difference.

It is important to underline that our analyses measure the impact of work cessation on SWB at pensionable age exclusively for the population of compliers, i.e., those who respond to the financial incentive provided by pension provision as it becomes available and retire exactly at the statutory age. Gerber and Radl (2014) show a curvilinear association between earnings potential and paid work beyond retirement age in Russia. They argue that most older adults who keep on working past retirement age may be classified into two categories: "the desperate" - those who cannot survive on their pension benefits alone - and "the opportunistic" – highly educated individuals who tend to keep on working in order to take advantage of financial rewards associated with market reforms. It thus appears that our compliers are those who can afford to stop working and/or are unlikely to reap high-earnings in a post-retirement job. Finally, individuals who dislike working – and can financially afford to retire – are likely to be among compliers.

Russia constitutes an interesting context in which to analyze potential gender differences in the consequences of work cessation on SWB. Indeed, women's employment has been historically high in Russia, where women typically work full-time rather than part-time. This implies that work cessation has the potential to affect women as much as men. However, the division of domestic work remains profoundly gendered, potentially entailing different SWB consequences of work cessation.

The literature regarding *role theory* suggests that men might be particularly affected by role disruption at retirement because their social identity tends to be focused on work, whereas women are more likely to have multiple social identities (Moen et al 1992; Thoits 1983; 2011) and benefit from greater

[34] Duration neglect conceptualizes that, although the intensity of an experience affects the way individuals remember its utility, the duration of the experience has little to no effect on remembered utility (Kahneman et al. 1997).

role continuity as caregivers (Elwell and Maltbie-Crannell 1981). It is indeed observed that men's SWB is more negatively impacted by unemployment than women's (see literature review by Dolan et al. 2008). On the contrary, Azmon and Izraeli (1993) report that attitudes towards retirement do not differ for men and women in Israel, even in a culture with strong family-orientation. They conclude that the hypothesis that women's primary orientation is towards home and the family, and that work is only secondary for them, is incorrect. Our results provide additional support for this conclusion in the context of Russia where we find no evidence of gender differences in evaluative well-being.

The fact that emotional well-being improvements are more pronounced for men in our study could be linked to differences in time use between genders upon retirement. Indeed, in line with what is generally found in the literature (e.g. Anxo et al. 2011; Arbache et al. 2010; Wodon and Blackden 2010; World Bank 2012) and using SAGE-Russia data, Flores et al. (2020) show that older women spend more time performing housework than older men, while the latter spend more time working and traveling. It is thus likely that work cessation entails a more pronounced substitution between work and leisure for men than for women, for whom part of the time previously spent working may be compensated by an increase in home production (as shown by Grogan and Summerfield 2019) and housework.

3.10.1 Policy implications

Our research yields important policy implications for the design of pension reforms. Policy makers should however take into consideration that the LATE effects that we estimate are only relevant for compliers and at the pension eligibility threshold. Our conclusions may thus not be generalizable to the general population or to different statutory retirement ages. Moreover, we cannot infer potential long-term SWB effects of work cessation.

We find that work cessation at pensionable age does not have a significant impact on evaluative well-being when controlling for potential income effects. However, it appears to generally raise hedonic aspects of SWB, most likely through changes in time use, and in particular through the substitution of unpleasant work-related activities with more pleasurable leisure activities. Policies raising the pensionable age can thus be expected to be rejected by citizens who correctly anticipate that their well-being would improve, were they to stop working. Such reforms should thus be accompanied by interventions aimed at compensating the shortfall in emotional well-being of individuals who will not retire at the expected age. These could include gradual decrease in working hours, adaptation of the work environment to the needs of older adults, introduction of flexible work schedules or of remote working whenever feasible.

Analyzing potential gender heterogeneity in the impact of work cessation at pensionable age may inspire gender-specific policies that could increase the overall well-being of older adults. Our results

show that the improvement in emotional well-being is stronger for men upon work cessation. We hypothesize that this may be due to the intra-household division of domestic tasks and care work. Policies and advocacy promoting more gender-equal allocations of house- and care-work within households may contribute towards reducing this gender gap. Taking a more long-term view into potential policies for redressing this situation for future generations, the introduction of non-transferable, well-compensated, paternity leave[35], and the availability of affordable public childcare, together with a reduction in gender-related income inequalities, are likely to foster a more balanced distribution of domestic work.

Public pension systems constitute an important social achievement that is currently challenged by issues of financial sustainability in many countries, providing an incentive to governments to raise retirement age in order to reduce costs. However, beyond the direct positive impact on public finances of such reforms, policymakers should also consider potential indirect budgetary effects, notably through changes of healthcare costs[36]. To the extent that the causal effects of work cessation at pensionable age are relevant to forecasting the implications of delayed pension eligibility, our results suggest that increasing pensionable age may entail adverse health effects through the channel of SWB[37], thereby increasing costs to society. In addition to the intrinsic interest that governments should take in the well-being of citizens, our research thus yields important conclusions in terms of potential economic consequences of raising the retirement age.

3.10.2 Limitations

Our study suffers from several limitations. First, FRDD estimates represent the Local Average Treatment Effect (LATE), i.e., the average short-term effect on the subpopulation of compliers who indeed stop working at the standard age threshold. Our estimates are thus local in two senses: around the pensionable age threshold and only driven by compliers. Our empirical strategy therefore does not allow us to assess the impact that work cessation would have had on individuals who did not actually stop working at the pensionable age threshold, nor the dynamics of the work cessation effect on SWB. This might have been of particular interest given existing evidence in the literature showing that the impact of retirement varies in the early years post retirement, with an initial increase of SWB – called the honeymoon effect - followed by a drop (e.g., Atchley 1976; Kim and Moen 2002). Nevertheless, our results are relevant for policy decision regarding the incremental increase or decrease of the statutory pensionable age.

[35] Haas and Hwang (2008), and Kotsadam and Finseraas (2011), among others, find a causal increase in the share of domestic and childcare-related tasks following the introduction of paid paternity leave in Sweden and Norway, respectively.
[36] Kapelyuk (2020) for example reports negative effects of retirement on health status in Russia, affecting only full-retirees.
[37] Several studies suggest that SWB may influence individuals' health (e.g., De Neve et al. 2013; Diener et al. 2017).

Second, SAGE data does not allow us to identify individuals who were eligible to early pension or unemployed. While the presence of early pensioners does not affect the validity of our estimates of the impact of work cessation at normal pensionable age, being able to identify each individual's specific eligibility threshold would have allowed us to refine our analyses. The fact that we cannot identify unemployed individuals under the pensionable age threshold may however constitute a threat to our identification strategy. Indeed, if – as reported by Hetschko et al. (2014) – unemployment is a source of stigma, while retirement is considered socially acceptable, the evaluative well-being of unemployed individuals may increase upon reaching the pensionable age threshold despite them not practically changing work status. It is thus possible that the absence of effect of work cessation on evaluative well-being in our study might be due to the fact that the estimated coefficients represent a weighted average of the (positive) effect on previously unemployed respondents and a hypothetically negative effect on those effectively exiting the labor market.

Third, we assess the impact of work cessation while keeping income fix, which is different from the real-life experience of retirement. While this is a purely hypothetical scenario, there is value in focusing exclusively on the effect of work cessation. Indeed, the work cessation aspect of retirement is universal while the income change aspect is context specific, varying through time, by place and by economic sector.

Fourth, while we measure income as well as possible given the availability of data in SAGE, we are unable to control for income at the individual level. It is therefore not impossible that our work cessation effect estimates may be biased, due to an individual income effect occurring at the pensionable age threshold. As shown by Figure 2a, our household-level income variables do no exhibit any discontinuity at the threshold. As may have been expected, this is due to a compensation between an increase in household income among individuals who keep on working after the threshold, effectively combining wage and pension income, and a decrease in household income among individuals who stop working. This observation provides support for the validity of our income measures.

Fifth, while several studies (e.g., Albolhassani and Alessie 2013; Bonsang and Klein 2012) highlight that SWB impacts of retirement depend on whether this outcome was voluntary or not, we cannot differentiate between voluntary and involuntary work cessation in our analysis.

Finally, our data does not allow us to study heterogeneous effects by socio-demographic category or occupation. Such heterogeneity would be interesting to evaluate given that attitudes towards work may vary by employment sector and occupation.

3.11 Conclusion

Our research contributes to the current evidence in the following ways. To start with, we are the first to quantitatively assess the impact of work cessation at pensionable age on SWB in the Russian context while addressing the endogeneity of retirement decisions. Second, unlike other studies, we contrast several measures of both evaluative and emotional well-being, including the highly relevant and rarely investigated experienced well-being concept. Finally, recognizing that retirement experiences may be different for men and women, we analyze the impact of work cessation on SWB separately by gender.

On the policy side, SWB is recognized as an essential social indicator (Stiglitz et al. 2009) that researchers and policymakers alike increasingly take into consideration for the design and evaluation of public policies (e.g. Horner 2014; Nikolova and Graham 2015). The SWB impact of retirement should, therefore, inform policy debates on potential changes to the pensionable age of citizens. Drawing on data from SAGE-Russia, this paper provides the first causal evidence on the impact of work cessation on the evaluative and emotional facets of SWB on the same population. Exploiting Russia's strict gender-specific pension eligibility ages to construct an instrument for work cessation, we determine that labor market exit increases emotional, but does not affect evaluative well-being in the short run. We also find evidence of gender specific effects, as the observed improvement in emotional well-being is mainly driven by men. The results of our study suggest that raising the pensionable age in Russia would significantly decrease short-run emotional well-being of the population. Corroborating our findings in other countries would be instrumental in strengthening and generalizing our conclusions.

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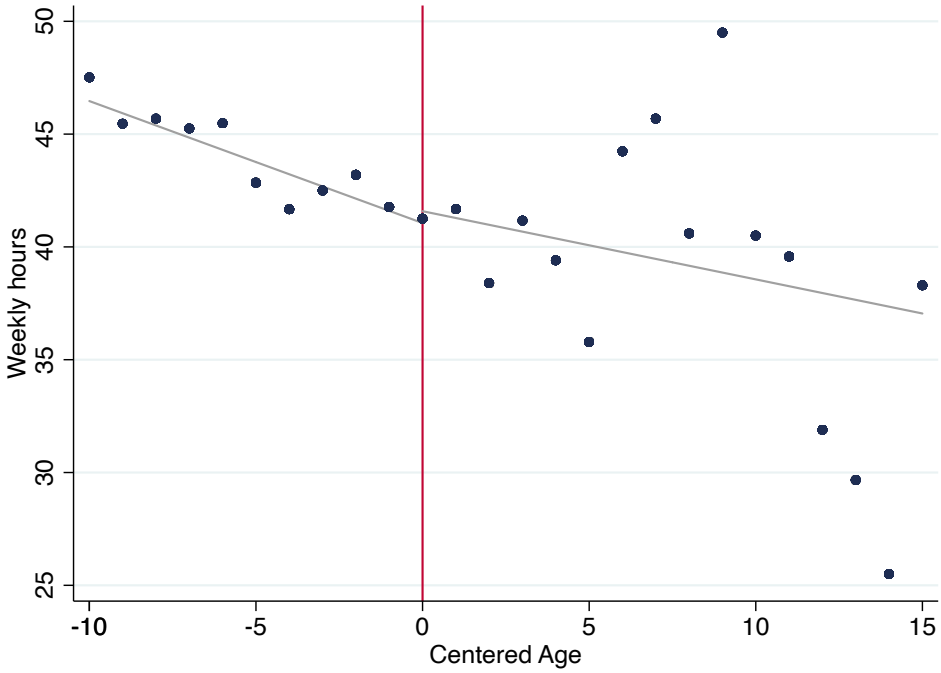
3.13 Appendix

Figure A1: Weekly hours worked among working individuals by distance to the pensionable age threshold



Note: SAGE-Russia (2007-2010). Figure A1 shows the association between reported weekly working hours (number of days worked*number of daily hours worked) and age, centered at the pensionable age threshold (55 for women and 60 for men) for the working population. Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold

Table A1: First stage estimates. Impact of crossing the pensionable age threshold on the probability of not working.

Second stage outcome	(1) Life satisf.	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Linear Age					
Above threshold	0.188***	0.188***	0.187***	0.187***	0.191***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	31.15	31.15	30.79	30.79	32.15
Quadratic Age					
Above threshold	0.175***	0.175***	0.174***	0.174***	0.179***
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	21.13	21.13	20.92	20.92	21.91
Interaction					
Above threshold	0.206***	0.206***	0.205***	0.205***	0.209***
	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	31.06	31.06	30.75	30.75	31.89
Observations	1,954	1,954	1,955	1,955	1,951
CV 5%	37.42	37.42	37.42	37.42	37.42
CV 10%	23.11	23.11	23.11	23.11	23.11
CV20%	15.06	15.06	15.06	15.06	15.06

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS first stage estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2: Descriptive OLS estimation. Evaluative and emotional well-being.

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**0.085***	**-0.000**	**0.177*****	**0.163*****	**0.299*****
	(0.049)	**(0.039)**	**(0.058)**	**(0.058)**	**(0.057)**
Age	-0.078	-0.010	0.031	0.055	-0.040
	(0.057)	(0.048)	(0.071)	(0.068)	(0.072)
$Age^2/100$	0.065	0.010	-0.017	-0.037	0.036
	(0.047)	(0.040)	(0.058)	(0.056)	(0.059)
Female	0.040	-0.021	-0.071	-0.104**	-0.071
	(0.042)	(0.036)	(0.051)	(0.049)	(0.049)
Rural	-0.081*	-0.049	-0.092	-0.115**	-0.054
	(0.049)	(0.041)	(0.057)	(0.055)	(0.053)
Education Level: Secondary	0.146	0.172*	0.139	0.241*	0.002
	(0.120)	(0.093)	(0.148)	(0.138)	(0.138)
Education Level: High school	0.106	0.112	0.136	0.247*	-0.022
	(0.115)	(0.088)	(0.142)	(0.131)	(0.133)
Education Level: College or higher	0.077	0.178*	0.127	0.261*	0.019
	(0.121)	(0.093)	(0.148)	(0.138)	(0.142)
Married	0.080*	0.070*	0.085	0.088	-0.018
	(0.046)	(0.039)	(0.058)	(0.057)	(0.055)
Number of adults in household	0.006	-0.011	0.054**	0.048**	0.036
	(0.021)	(0.017)	(0.024)	(0.023)	(0.025)
Number of children in household	-0.038	-0.031	-0.072	-0.064*	-0.023
	(0.036)	(0.029)	(0.046)	(0.038)	(0.039)
WHO disability score	-0.394***	-0.481***	-0.423***	-0.460***	-0.269***
	(0.035)	(0.031)	(0.045)	(0.043)	(0.045)
Self-assessed pain	-0.108***	-0.177***	0.000	-0.080***	-0.010
	(0.026)	(0.022)	(0.030)	(0.028)	(0.031)
Equivalent HH income	-0.004	0.044	-0.073	-0.033	-0.068
	(0.055)	(0.044)	(0.075)	(0.070)	(0.076)
Equivalent HH $income^2$	-0.002	-0.006	0.007	-0.000	0.008
	(0.008)	(0.005)	(0.012)	(0.010)	(0.012)
Equivalent HH $income^3$	0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income situation	0.358***	0.447***	0.057	0.033	0.088*
	(0.047)	(0.039)	(0.055)	(0.053)	(0.053)
Good HH income situation	0.563***	0.800***	0.245***	0.214***	0.181**
	(0.065)	(0.056)	(0.081)	(0.076)	(0.084)
Asset Index	0.025	-0.010	0.018	0.006	0.031
	(0.024)	(0.019)	(0.026)	(0.025)	(0.028)
Year = 2008	-0.019	-0.104**	-0.146**	-0.152**	-0.028
	(0.052)	(0.043)	(0.061)	(0.060)	(0.060)
Year = 2010	0.096*	0.006	0.012	-0.042	0.143**
	(0.057)	(0.049)	(0.068)	(0.066)	(0.068)
Constant	2.853	1.209	-0.629	-1.156	1.357
	(1.734)	(1.458)	(2.149)	(2.059)	(2.163)
Observations	1,954	1,954	1,955	1,955	1,951

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. OLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A3: Reduced form estimation. Evaluative and emotional well-being.

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Above threshold	**-0.115**	**-0.002**	**0.210****	**0.173****	**0.152***
	(0.074)	**(0.065)**	**(0.090)**	**(0.088)**	**(0.092)**
Distance from threshold	0.012	0.003	-0.003	0.000	-0.005
	(0.012)	(0.011)	(0.014)	(0.014)	(0.015)
(Distance from threshold) *	-0.003	-0.002	0.011	0.007	0.014
(Above threshold)	(0.013)	(0.012)	(0.015)	(0.015)	(0.016)
Female	0.020	-0.031	-0.131**	-0.160***	-0.110**
	(0.044)	(0.037)	(0.053)	(0.051)	(0.053)
Rural	-0.082*	-0.049	-0.098*	-0.120**	-0.062
	(0.049)	(0.041)	(0.057)	(0.055)	(0.053)
Education Level: Secondary	0.147	0.168*	0.149	0.255*	0.017
	(0.122)	(0.093)	(0.147)	(0.136)	(0.135)
Education Level: High school	0.093	0.108	0.130	0.247*	-0.038
	(0.116)	(0.088)	(0.141)	(0.129)	(0.131)
Education Level: College or higher	0.063	0.174*	0.112	0.254*	-0.010
	(0.122)	(0.092)	(0.147)	(0.135)	(0.140)
Married	0.086*	0.070*	0.092	0.095*	-0.002
	(0.046)	(0.039)	(0.057)	(0.056)	(0.055)
Number of adults in household	0.004	-0.010	0.055**	0.048**	0.034
	(0.021)	(0.017)	(0.024)	(0.024)	(0.025)
Number of children in household	-0.038	-0.031	-0.078*	-0.069*	-0.031
	(0.036)	(0.029)	(0.046)	(0.038)	(0.039)
WHO disability score	-0.384***	-0.480***	-0.404***	-0.443***	-0.237***
	(0.034)	(0.031)	(0.044)	(0.043)	(0.044)
Self-assessed pain	-0.107***	-0.176***	0.003	-0.077***	-0.006
	(0.026)	(0.022)	(0.029)	(0.028)	(0.031)
Equivalent HH income	-0.027	0.043	-0.111	-0.068	-0.134*
	(0.052)	(0.043)	(0.075)	(0.070)	(0.079)
Equivalent HH income^2	0.000	-0.006	0.011	0.004	0.016
	(0.007)	(0.005)	(0.012)	(0.011)	(0.013)
Equivalent HH income^3	-0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income situation	0.355***	0.447***	0.051	0.027	0.077
	(0.047)	(0.039)	(0.055)	(0.053)	(0.053)
Good HH income situation	0.562***	0.802***	0.221***	0.190**	0.147*
	(0.065)	(0.056)	(0.080)	(0.076)	(0.085)
Asset Index	0.024	-0.010	0.013	0.001	0.025
	(0.024)	(0.019)	(0.026)	(0.025)	(0.028)
Year = 2008	-0.013	-0.103**	-0.130**	-0.138**	-0.006
	(0.052)	(0.043)	(0.061)	(0.060)	(0.060)
Year = 2010	0.112*	0.007	0.037	-0.019	0.186***
	(0.057)	(0.050)	(0.068)	(0.066)	(0.068)
Constant	0.638***	0.949***	0.591***	0.758***	0.321
	(0.178)	(0.150)	(0.220)	(0.207)	(0.220)
Observations	1,954	1,954	1,955	1,955	1,951

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. OLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A4: Evaluative and emotional well-being. Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.559**	**-0.011**	**1.025****	**0.845***	**0.727***
	(0.373)	**(0.314)**	**(0.455)**	**(0.437)**	**(0.439)**
Distance from threshold	0.019	0.003	-0.017	-0.010	-0.014
	(0.016)	(0.014)	(0.019)	(0.018)	(0.019)
(Distance from threshold) *	0.001	-0.002	0.003	0.000	0.008
(Above threshold)	(0.013)	(0.011)	(0.015)	(0.014)	(0.015)
Female	-0.021	-0.032	-0.055	-0.097	-0.057
	(0.055)	(0.045)	(0.067)	(0.066)	(0.066)
Rural	-0.097*	-0.050	-0.072	-0.099*	-0.043
	(0.052)	(0.041)	(0.061)	(0.059)	(0.056)
Education Level: Secondary	0.195	0.169*	0.059	0.182	-0.045
	(0.131)	(0.097)	(0.158)	(0.147)	(0.146)
Education Level: High school	0.083	0.108	0.148	0.262*	-0.026
	(0.123)	(0.087)	(0.146)	(0.135)	(0.137)
Education Level: College or higher	0.030	0.173*	0.171	0.302**	0.033
	(0.130)	(0.094)	(0.155)	(0.143)	(0.148)
Married	0.116**	0.070*	0.038	0.050	-0.041
	(0.051)	(0.041)	(0.064)	(0.061)	(0.060)
Number of adults in household	-0.001	-0.010	0.064**	0.056**	0.041
	(0.022)	(0.017)	(0.026)	(0.024)	(0.026)
Number of children in household	-0.051	-0.031	-0.055	-0.050	-0.014
	(0.038)	(0.030)	(0.048)	(0.041)	(0.041)
WHO disability score	-0.326***	-0.479***	-0.511***	-0.531***	-0.313***
	(0.052)	(0.044)	(0.064)	(0.061)	(0.063)
Self-assessed pain	-0.100***	-0.176***	-0.010	-0.088***	-0.016
	(0.027)	(0.023)	(0.032)	(0.030)	(0.031)
Equivalent HH income	-0.151	0.041	0.118	0.121	0.027
	(0.101)	(0.085)	(0.122)	(0.115)	(0.127)
Equivalent HH income^2	0.015	-0.005	-0.016	-0.019	-0.004
	(0.012)	(0.010)	(0.015)	(0.014)	(0.016)
Equivalent HH income^3	-0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income situation	0.334***	0.447***	0.091	0.060	0.106*
	(0.050)	(0.041)	(0.060)	(0.058)	(0.055)
Good HH income situation	0.498***	0.801***	0.338***	0.287***	0.231**
	(0.080)	(0.066)	(0.099)	(0.094)	(0.097)
Asset Index	0.011	-0.011	0.037	0.021	0.041
	(0.026)	(0.020)	(0.029)	(0.028)	(0.029)
Year = 2008	0.031	-0.102**	-0.212***	-0.205***	-0.060
	(0.061)	(0.049)	(0.075)	(0.073)	(0.070)
Year = 2010	0.197**	0.009	-0.122	-0.149	0.078
	(0.084)	(0.069)	(0.102)	(0.098)	(0.101)
Constant	0.816***	0.952***	0.264	0.489*	0.089
	(0.247)	(0.206)	(0.303)	(0.289)	(0.300)
Observations	1,954	1,954	1,955	1,955	1,951
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	31.06	31.06	30.75	30.75	31.89

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A5: Domain satisfaction (WHOQoL-8 components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold)

	(1) Quality of life	(2) Satis. with health	(3) Energy for everyday life	(4) Satis. with ADL ability	(5) Satis. with yourself	(6) Satis. with pers. relations.	(7) Enough money to meet needs	(8) Satis. with conditions of living
Currently not working	**-0.536**	**0.015**	**0.086**	**0.117**	**-0.162**	**0.021**	**-0.067**	**0.239**
	(0.341)	**(0.325)**	**(0.337)**	**(0.331)**	**(0.387)**	**(0.399)**	**(0.371)**	**(0.409)**
Distance from threshold	0.012	-0.024*	-0.009	-0.010	0.001	-0.002	0.021	0.026
	(0.015)	(0.014)	(0.015)	(0.014)	(0.017)	(0.017)	(0.016)	(0.018)
(Distance from threshold) * (Above threshold)	0.004	0.023**	-0.007	0.011	0.006	0.010	-0.013	-0.030**
	(0.012)	(0.011)	(0.012)	(0.011)	(0.014)	(0.013)	(0.013)	(0.014)
Female	-0.033	0.008	-0.034	0.099**	0.014	0.006	-0.134**	-0.039
	(0.052)	(0.050)	(0.049)	(0.050)	(0.058)	(0.061)	(0.053)	(0.057)
Rural	-0.004	-0.030	0.028	-0.132***	-0.012	-0.076	-0.016	-0.025
	(0.047)	(0.047)	(0.043)	(0.045)	(0.052)	(0.052)	(0.047)	(0.053)
Education Level: Secondary	0.074	0.059	0.104	0.144	0.193	0.155	0.021	0.172
	(0.125)	(0.106)	(0.105)	(0.110)	(0.131)	(0.156)	(0.105)	(0.131)
Education Level: High	0.007	-0.022	0.074	0.155	0.124	0.107	-0.014	0.107
	(0.117)	(0.096)	(0.095)	(0.099)	(0.117)	(0.144)	(0.096)	(0.119)
Education Level: College or	0.063	0.099	0.106	0.225**	0.155	0.136	-0.023	0.133
	(0.124)	(0.103)	(0.102)	(0.107)	(0.126)	(0.151)	(0.105)	(0.127)
Married	0.038	0.045	-0.035	0.034	0.093*	0.148***	0.024	0.127**
	(0.049)	(0.046)	(0.045)	(0.045)	(0.053)	(0.056)	(0.051)	(0.056)
Number of adults in	0.008	0.022	-0.030	0.023	0.022	0.036*	-0.042**	-0.057**
	(0.021)	(0.019)	(0.019)	(0.018)	(0.021)	(0.021)	(0.020)	(0.024)
Number of children in	0.002	-0.023	0.009	0.024	-0.027	0.031	-0.089***	-0.043
	(0.039)	(0.032)	(0.037)	(0.031)	(0.042)	(0.041)	(0.034)	(0.042)
WHO disability score	-0.247***	-0.441***	-0.508***	-0.629***	-0.336***	-0.351***	-0.109**	-0.151***
	(0.048)	(0.047)	(0.048)	(0.046)	(0.055)	(0.058)	(0.049)	(0.056)
Self-assessed pain	-0.049*	-0.304***	-0.098***	-0.155***	-0.213***	-0.003	-0.093***	-0.019
	(0.026)	(0.026)	(0.025)	(0.026)	(0.031)	(0.034)	(0.025)	(0.028)
Equivalent HH income	-0.002	-0.064	0.043	0.055	-0.078	-0.018	0.181*	-0.009
	(0.093)	(0.088)	(0.090)	(0.091)	(0.110)	(0.111)	(0.100)	(0.114)
Equivalent HH income^2	-0.002	0.008	-0.001	-0.008	0.014	0.007	-0.031**	0.001
	(0.012)	(0.011)	(0.011)	(0.012)	(0.014)	(0.014)	(0.013)	(0.016)
Equivalent HH income^3	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.001**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income	0.289***	0.160***	0.209***	0.123***	0.224***	0.192***	0.756***	0.375***
	(0.047)	(0.044)	(0.044)	(0.045)	(0.052)	(0.055)	(0.049)	(0.054)
Good HH income situation	0.713***	0.268***	0.378***	0.240***	0.310***	0.237***	1.345***	0.655***
	(0.080)	(0.072)	(0.069)	(0.070)	(0.082)	(0.089)	(0.079)	(0.085)
Asset Index	0.027	-0.100***	0.025	-0.092***	-0.064**	-0.031	0.061**	0.090***
	(0.024)	(0.022)	(0.022)	(0.022)	(0.026)	(0.027)	(0.024)	(0.027)
Year = 2008	0.005	-0.109**	-0.103*	-0.104**	-0.089	-0.052	-0.067	-0.052
	(0.057)	(0.051)	(0.054)	(0.053)	(0.060)	(0.064)	(0.060)	(0.063)
Year = 2010	0.014	0.023	-0.028	0.090	0.060	0.097	-0.079	-0.026
	(0.076)	(0.073)	(0.075)	(0.075)	(0.087)	(0.090)	(0.083)	(0.092)
Constant	0.490**	1.613***	1.200***	1.663***	1.005***	0.555*	-0.420*	-0.332
	(0.236)	(0.206)	(0.230)	(0.218)	(0.262)	(0.287)	(0.242)	(0.262)
Observations	1,936	1,953	1,951	1,953	1,952	1,950	1,947	1,951
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	33.71	31.03	30.53	30.81	31.03	31.53	30.24	31.17

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A6: Positive and negative emotions (Emotion Score components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	(1) Positive emotion score	(2) Negative emotion score	(3) Negative emotion score
Currently not working	**0.730**	**-0.929****	**-0.670***
	(0.445)	**(0.431)**	**(0.394)**
Distance from threshold	-0.020	0.001	-0.007
	(0.019)	(0.019)	(0.017)
(Distance from threshold) * (Above threshold)	0.009	0.014	0.018
	(0.015)	(0.015)	(0.014)
Female	0.031	0.093	0.138**
	(0.066)	(0.065)	(0.060)
Rural	-0.033	0.056	0.087
	(0.059)	(0.060)	(0.055)
Education Level: Secondary	-0.027	-0.022	-0.176
	(0.135)	(0.170)	(0.145)
Education Level: High school	-0.027	-0.153	-0.286**
	(0.123)	(0.158)	(0.133)
Education Level: College or higher	0.040	-0.168	-0.334**
	(0.135)	(0.165)	(0.141)
Married	-0.119*	-0.099	-0.087
	(0.062)	(0.064)	(0.058)
Number of adults in household	0.080***	-0.046*	-0.041*
	(0.024)	(0.026)	(0.023)
Number of children in household	-0.059	0.059	0.057
	(0.046)	(0.048)	(0.038)
WHO disability score	-0.359***	0.485***	0.507***
	(0.059)	(0.066)	(0.059)
Self-assessed pain	0.064**	0.061*	0.154***
	(0.030)	(0.032)	(0.030)
Equivalent HH income	0.069	-0.152	-0.154
	(0.119)	(0.126)	(0.112)
Equivalent HH income^2	-0.007	0.023	0.026*
	(0.014)	(0.016)	(0.014)
Equivalent HH income^3	0.000	-0.000	-0.000*
	(0.000)	(0.000)	(0.000)
Moderate HH income situation	0.097*	-0.086	-0.051
	(0.056)	(0.060)	(0.056)
Good HH income situation	0.405***	-0.177*	-0.134
	(0.097)	(0.101)	(0.093)
Asset Index	0.071**	-0.005	0.010
	(0.029)	(0.028)	(0.026)
Year = 2008	-0.068	0.289***	0.264***
	(0.073)	(0.071)	(0.066)
Year = 2010	-0.025	0.214**	0.243***
	(0.099)	(0.097)	(0.088)
Constant	-0.008	-0.515*	-0.789***
	(0.289)	(0.300)	(0.270)
Observations	1,939	1,939	1,939
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	32.02	32.02	32.02

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Individual emotions and physical discomforts (Emotion Score components). Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +15 years around the threshold).

	Positive Emotions			Negative Emotions (No Phys.)							Physical Discomforts			
	(1) Calm/Relaxed	(2) Enjoyment	(3) Smile/Laugh	(4) Worried	(5) Rushed	(6) Irritated/Angry	(7) Depressed	(8) Tense/Stress.	(9) Lonely	(10) Bored	(11) Phys. pain	(12) Sleepiness	(13) Stom. ache	(14) Headache
Currently not working	**0.501****	**0.359***	**-0.185**	**-0.197**	**-0.472*****	**-0.016**	**-0.060**	**-0.539*****	**0.054**	**0.001**	**0.001**	**-0.141**	**0.063**	**0.135**
	(0.202)	**(0.184)**	**(0.203)**	**(0.139)**	**(0.182)**	**(0.098)**	**(0.106)**	**(0.189)**	**(0.108)**	**(0.110)**	**(0.118)**	**(0.180)**	**(0.062)**	**(0.164)**
Distance from threshold	-0.014	-0.009	0.005	0.005	0.005	-0.002	-0.003	0.010	-0.006	-0.006	-0.004	-0.000	-0.003	-0.007
	(0.009)	(0.008)	(0.009)	(0.006)	(0.008)	(0.004)	(0.005)	(0.008)	(0.004)	(0.005)	(0.005)	(0.008)	(0.003)	(0.007)
(Distance from threshold) * (Above threshold)	0.005	0.004	-0.002	-0.003	0.001	0.001	0.003	0.001	0.005	0.009**	0.005	0.006	0.000	0.003
	(0.007)	(0.006)	(0.007)	(0.005)	(0.006)	(0.003)	(0.004)	(0.007)	(0.004)	(0.004)	(0.004)	(0.006)	(0.002)	(0.006)
Female	0.009	-0.006	0.025	0.012	0.046*	0.011	0.019	-0.001	0.014	0.019	0.026	-0.024	0.009	0.119***
	(0.030)	(0.027)	(0.029)	(0.020)	(0.026)	(0.015)	(0.015)	(0.028)	(0.017)	(0.017)	(0.018)	(0.027)	(0.009)	(0.024)
Rural	0.020	-0.054**	0.006	0.024	-0.009	0.020	0.014	-0.009	0.017	0.004	0.017	0.056**	-0.002	0.013
	(0.027)	(0.025)	(0.026)	(0.019)	(0.023)	(0.014)	(0.015)	(0.025)	(0.016)	(0.016)	(0.018)	(0.025)	(0.009)	(0.023)
Educ. level: Secondary	-0.070	0.031	0.022	0.064	0.066	-0.046	-0.023	0.030	-0.040	-0.066	-0.105**	-0.054	-0.035	-0.078
	(0.063)	(0.058)	(0.059)	(0.047)	(0.052)	(0.044)	(0.045)	(0.058)	(0.051)	(0.051)	(0.048)	(0.063)	(0.030)	(0.057)
Educ. level: High school	-0.025	0.028	-0.027	0.021	0.021	-0.071*	-0.037	-0.026	-0.038	-0.060	-0.087**	-0.104*	-0.031	-0.071
	(0.057)	(0.054)	(0.053)	(0.042)	(0.047)	(0.041)	(0.041)	(0.053)	(0.047)	(0.048)	(0.044)	(0.057)	(0.029)	(0.051)
Educ. level: College or higher	-0.028	0.058	0.005	0.020	0.000	-0.071*	-0.022	-0.025	-0.048	-0.067	-0.110**	-0.109*	-0.035	-0.101*
	(0.063)	(0.058)	(0.058)	(0.044)	(0.052)	(0.042)	(0.043)	(0.057)	(0.048)	(0.050)	(0.046)	(0.061)	(0.029)	(0.055)
Married	-0.043	-0.045*	-0.024	-0.013	0.009	-0.009	-0.002	0.007	-0.073***	-0.052***	0.012	-0.040	-0.013	0.013
	(0.028)	(0.025)	(0.028)	(0.020)	(0.025)	(0.015)	(0.016)	(0.027)	(0.017)	(0.017)	(0.018)	(0.026)	(0.009)	(0.024)
Number of adults in HH	0.029***	0.011	0.033***	-0.001	-0.017*	0.003	-0.003	-0.021**	-0.004	-0.014**	-0.005	-0.003	0.004	-0.010
	(0.011)	(0.010)	(0.011)	(0.008)	(0.010)	(0.006)	(0.006)	(0.010)	(0.007)	(0.007)	(0.007)	(0.010)	(0.003)	(0.009)
Number of children in HH	-0.000	-0.020	-0.034*	0.001	0.021	-0.009	0.031**	0.035*	0.000	0.002	0.012	-0.001	-0.007	0.023
	(0.021)	(0.019)	(0.018)	(0.015)	(0.018)	(0.008)	(0.015)	(0.020)	(0.013)	(0.013)	(0.014)	(0.018)	(0.005)	(0.017)
WHO disability score	-0.127***	-0.106***	-0.094***	0.100***	0.096***	0.039**	0.081***	0.169***	0.075***	0.081***	0.096***	0.091***	0.006	0.072***
	(0.027)	(0.025)	(0.026)	(0.021)	(0.024)	(0.016)	(0.018)	(0.026)	(0.017)	(0.018)	(0.018)	(0.026)	(0.010)	(0.024)
Self-assessed pain	0.004	0.012	0.041***	0.032***	0.010	0.005	0.015*	0.018	0.001	-0.000	0.086***	0.032**	0.017***	0.062***
	(0.014)	(0.013)	(0.014)	(0.010)	(0.012)	(0.007)	(0.008)	(0.013)	(0.009)	(0.009)	(0.010)	(0.013)	(0.005)	(0.012)
Equivalent HH income	0.141**	0.014	-0.088	-0.047	-0.088*	0.019	0.002	-0.129**	0.014	0.027	-0.009	-0.028	0.017	-0.049
	(0.056)	(0.051)	(0.054)	(0.042)	(0.051)	(0.028)	(0.032)	(0.053)	(0.030)	(0.033)	(0.033)	(0.049)	(0.018)	(0.045)
Equivalent HH income^2	-0.018***	-0.003	0.015**	0.008	0.011	-0.003	-0.001	0.020***	-0.002	-0.001	0.002	0.008	-0.001	0.005
	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.004)	(0.004)	(0.007)	(0.004)	(0.004)	(0.004)	(0.006)	(0.003)	(0.005)
Equivalent HH income^3	0.000***	0.000	-0.000**	-0.000	-0.000	0.000	0.000	-0.000***	0.000	0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income situ.	0.015	0.065***	0.008	-0.026	-0.011	-0.022	-0.017	-0.059**	-0.006	0.024	0.008	-0.000	0.005	0.009
	(0.026)	(0.024)	(0.025)	(0.019)	(0.022)	(0.013)	(0.015)	(0.025)	(0.017)	(0.017)	(0.017)	(0.024)	(0.009)	(0.023)
Good HH income situation	0.112**	0.156***	0.100**	-0.032	-0.049	-0.034	-0.025	-0.115***	-0.005	0.031	0.001	-0.011	-0.002	0.008
	(0.046)	(0.038)	(0.047)	(0.031)	(0.040)	(0.021)	(0.023)	(0.042)	(0.026)	(0.028)	(0.026)	(0.040)	(0.012)	(0.038)
Asset Index	0.011	0.041***	0.014	0.008	0.012	0.001	-0.014**	-0.002	-0.010	-0.004	0.012	-0.003	0.002	0.013
	(0.014)	(0.012)	(0.013)	(0.009)	(0.012)	(0.006)	(0.007)	(0.012)	(0.008)	(0.008)	(0.008)	(0.012)	(0.005)	(0.011)
Year = 2008	-0.061*	-0.013	0.010	0.053**	0.111***	0.014	0.037**	0.081***	0.039**	0.039**	0.034*	0.050*	0.003	0.010
	(0.033)	(0.029)	(0.032)	(0.021)	(0.028)	(0.016)	(0.017)	(0.030)	(0.019)	(0.020)	(0.019)	(0.029)	(0.010)	(0.027)
Year = 2010	-0.043	-0.039	0.057	0.053*	0.063	0.001	0.020	0.145***	0.012	-0.010	0.055**	0.044	-0.002	0.058
	(0.046)	(0.040)	(0.045)	(0.031)	(0.039)	(0.021)	(0.024)	(0.042)	(0.025)	(0.026)	(0.026)	(0.040)	(0.014)	(0.037)
Constant	0.629***	0.617***	0.508***	-0.103	0.130	0.017	-0.051	0.160	-0.032	-0.043	-0.211**	0.165	-0.035	-0.109
	(0.132)	(0.121)	(0.128)	(0.089)	(0.118)	(0.072)	(0.072)	(0.123)	(0.079)	(0.081)	(0.082)	(0.119)	(0.048)	(0.106)
Observations	1,937	1,936	1,938	1,933	1,933	1,939	1,938	1,937	1,939	1,939	1,935	1,938	1,939	1,937
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	32.37	31.99	32.06	32.51	32.51	32.02	31.95	32.04	32.02	32.02	31.90	32.28	32.02	33.15

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3.13.1 Analysis of gender differences: first stage estimates.

Table A8: First stage estimates. Impact of crossing the pensionable age threshold on the probability of not working, by gender.

	Female					Male				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	Life satisf.	WHO quality of life	Emotion Score (no phys.)	Emotion score	Experien-ced well-being	Life satisf.	WHO quality of life	Emotion Score (no phys.)	Emotion score	Experien-ced well-being
Above threshold	**0.263*** **	**0.263*** **	**0.262*** **	**0.262*** **	**0.266*** **	**0.278*** **	**0.278*** **	**0.278*** **	**0.278*** **	**0.280*** **
	(0.057)	**(0.057)**	**(0.057)**	**(0.057)**	**(0.057)**	**(0.054)**	**(0.054)**	**(0.054)**	**(0.054)**	**(0.054)**
Control variables	X	X	X	X	X	X	X	X	X	X
Observations	1,735	1,735	1,736	1,736	1,732	961	961	961	961	960
F stat for weak ident(Kleibergen-Paap rk Wald F statistic)	21.30	21.30	21.13	21.13	21.67	26.46	26.46	26.46	26.46	26.81
CV 5%	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42
CV 10%	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11
CV20%	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06

Note: SAGE-Russia (2007-2010). Full sample. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3.13.2 Robustness Checks

Table A9: Evaluative and emotional well-being. Controlling for a linear function of age (sample from -10 (-5 for women) to +15 years around the threshold).

	(1)	(2)	(3)	(4)	(5)
	Life satisfaction	WHO quality of life	Emotion score (no phys.)	Emotion score	Experienced well-being
Currently not working	**-0.576**	**0.015**	**0.982****	**0.839***	**0.621**
	(0.377)	**(0.298)**	**(0.449)**	**(0.435)**	**(0.424)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	31.15	31.15	30.79	30.79	32.15

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a linear function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A10: Evaluative and emotional well-being. Controlling for a quadratic function of age (sample from -10 (-5 for women) to +15 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.504**	**0.068**	**1.204****	**0.914***	**0.920***
	(0.443)	**(0.369)**	**(0.556)**	**(0.526)**	**(0.527)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	21.13	21.13	20.92	20.92	21.91

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a quadratic function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A11: Evaluative and emotional well-being. Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +10 years around the threshold).

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.794**	**0.049**	**1.293****	**1.014***	**1.156***
	(0.519)	**(0.414)**	**(0.624)**	**(0.590)**	**(0.600)**
Control Variables	X	X	X	X	X
Observations	1,586	1,586	1,587	1,587	1,583
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	17.40	17.40	17.21	17.21	17.94

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +10 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A12: Evaluative and emotional well-being. Controlling for a linear function of age (sample from -10 (-5 for women) to +10 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.936**	**0.062**	**1.386****	**1.095***	**1.291***
	(0.593)	**(0.446)**	**(0.696)**	**(0.656)**	**(0.666)**
Control Variables	X	X	X	X	X
Observations	1,586	1,586	1,587	1,587	1,583
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	14.12	14.12	13.95	13.95	14.63

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +10 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a linear function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A13: Evaluative and emotional well-being. Controlling for a quadratic function of age (sample from -10 (-5 for women) to +10 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.783**	**0.016**	**1.285***	**0.975**	**1.287****
	(0.554)	**(0.442)**	**(0.664)**	**(0.625)**	**(0.652)**
Control Variables	X	X	X	X	X
Observations	1,586	1,586	1,587	1,587	1,583
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	14.98	14.98	14.86	14.86	15.54

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +10 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a quadratic function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A14: Evaluative and emotional well-being. Controlling for different trends on each side of the pensionable age threshold (sample from -10 (-5 for women) to +20 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.492**	**-0.023**	**0.880****	**0.685***	**0.601**
	(0.322)	**(0.275)**	**(0.390)**	**(0.375)**	**(0.378)**
Control Variables	X	X	X	X	X
Observations	2,298	2,298	2,299	2,299	2,295
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	41.59	41.59	41.24	41.24	42.56

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +20 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A15: Evaluative and emotional well-being. Controlling for a linear function of age (sample from -10 (-5 for women) to +20 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.468**	**0.005**	**0.751****	**0.584***	**0.440**
	(0.287)	**(0.231)**	**(0.336)**	**(0.325)**	**(0.319)**
Control Variables	X	X	X	X	X
Observations	2,298	2,298	2,299	2,299	2,295
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	55.76	55.76	55.25	55.25	57.24

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +20 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a linear function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A16: Evaluative and emotional well-being. Controlling for a quadratic function of age (sample from -10 (-5 for women) to +20 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working	**-0.463**	**0.081**	**1.274****	**0.994****	**0.920***
	(0.408)	**(0.338)**	**(0.521)**	**(0.495)**	**(0.484)**
Control Variables	X	X	X	X	X
Observations	2,298	2,298	2,299	2,299	2,295
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	25.24	25.24	24.97	24.97	26.13

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +20 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and control for a quadratic function of age. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A17: Evaluative and emotional well-being. Controlling for objective health measures (sample from -10 (-5 for women) to +15 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced Well-being
Currently not working	**-0.513**	**0.060**	**1.031****	**0.856***	**0.654**
	(0.394)	**(0.340)**	**(0.486)**	**(0.470)**	**(0.459)**
Distance from threshold	0.018	0.000	-0.021	-0.013	-0.013
	(0.017)	(0.015)	(0.021)	(0.020)	(0.020)
(Distance from threshold) * (Above threshold)	0.001	-0.003	0.005	-0.001	0.007
	(0.014)	(0.012)	(0.016)	(0.015)	(0.016)
Female	-0.043	-0.047	-0.056	-0.112	-0.078
	(0.058)	(0.048)	(0.072)	(0.070)	(0.070)
Rural	-0.105*	-0.056	-0.079	-0.117*	-0.017
	(0.055)	(0.044)	(0.066)	(0.063)	(0.060)
Education Level: Secondary	0.098	0.147	0.134	0.200	0.050
	(0.137)	(0.104)	(0.165)	(0.152)	(0.156)
Education Level: High school	-0.001	0.106	0.221	0.291**	0.066
	(0.133)	(0.097)	(0.159)	(0.146)	(0.152)
Education Level: College or higher	-0.030	0.189*	0.270	0.357**	0.130
	(0.144)	(0.106)	(0.170)	(0.158)	(0.168)
Married	0.111**	0.045	-0.005	0.007	-0.068
	(0.056)	(0.045)	(0.070)	(0.066)	(0.066)
Number of adults in household	-0.010	-0.011	0.068**	0.058**	0.040
	(0.024)	(0.019)	(0.027)	(0.026)	(0.028)
Number of children in household	-0.016	-0.007	-0.007	-0.006	-0.002
	(0.041)	(0.033)	(0.046)	(0.040)	(0.044)
WHO disability score	-0.421***	-0.592***	-0.474***	-0.549***	-0.291***
	(0.049)	(0.043)	(0.061)	(0.057)	(0.058)
Inpatient care since 12m	**0.044**	**-0.075**	**-0.160****	**-0.171****	**-0.020**
	(0.063)	**(0.053)**	**(0.080)**	**(0.077)**	**(0.073)**
Outpatient care num 12m	**-0.005**	**-0.016****	**0.001**	**-0.002**	**-0.003**
	(0.007)	**(0.006)**	**(0.010)**	**(0.011)**	**(0.009)**
Equivalent household income	-0.142	0.047	0.109	0.116	0.013
	(0.103)	(0.090)	(0.127)	(0.120)	(0.132)
Equivalent household income^2	0.013	-0.007	-0.015	-0.018	-0.002
	(0.013)	(0.011)	(0.015)	(0.015)	(0.017)
Equivalent household income^3	-0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moderate HH income situation	0.355***	0.471***	0.090	0.070	0.130**
	(0.054)	(0.045)	(0.066)	(0.064)	(0.059)
Good HH income situation	0.554***	0.875***	0.352***	0.328***	0.244**
	(0.080)	(0.068)	(0.107)	(0.102)	(0.102)
Asset Index	0.011	-0.017	0.021	0.008	0.028
	(0.028)	(0.022)	(0.031)	(0.030)	(0.032)
Year = 2008	-0.003	-0.126**	-0.198**	-0.197**	-0.058
	(0.064)	(0.052)	(0.080)	(0.078)	(0.073)
Year = 2010	0.138	-0.041	-0.087	-0.132	0.079
	(0.085)	(0.072)	(0.106)	(0.102)	(0.104)
Constant	1.046***	1.111***	0.181	0.511	0.040
	(0.276)	(0.233)	(0.340)	(0.326)	(0.331)
Observations	1,749	1,749	1,750	1,750	1,746
F stat for weak identification (Kleibergen-Paap rk Wald F statistic)	28.64	28.64	28.29	28.29	29.47

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A18: Evaluative and emotional well-being. Changing the explanatory variable to "Not working because too old to work" (sample from -10 (-5 for women) to +15 years around the threshold)

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Currently not working because too old to work	**-0.525 (0.350)**	**-0.010 (0.295)**	**0.962** (0.426)**	**0.792* (0.411)**	**0.686* (0.415)**
Control Variables	X	X	X	X	X
Observations	1,954	1,954	1,955	1,955	1,951
F stat for weak identification(Kleibergen-Paap rk Wald F statistic)	47.64	47.64	47.37	47.37	48.43

Note: SAGE-Russia (2007-2010). Sample restricted to individuals -10 (-5 for women) to +15 years from the pensionable age threshold. 2SLS estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

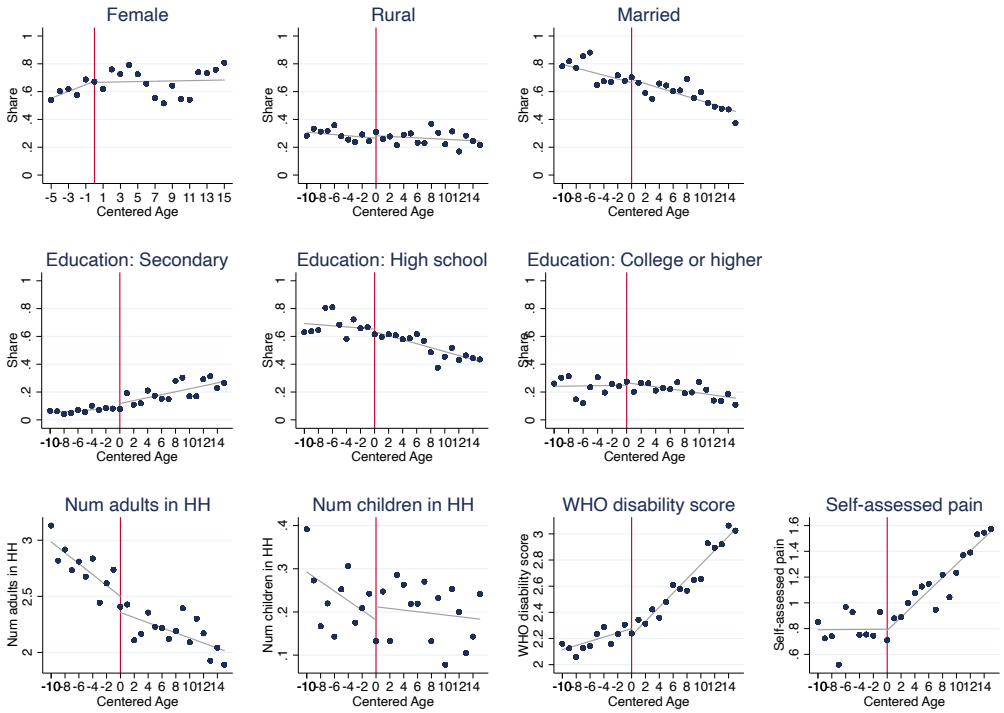
3.13.3 RDD Tests

We implement the falsification tests recommended by Imbens and Lemieux (2008) while keeping in mind that they are not fully applicable to our setting which is more akin to an instrumental variable strategy than to a standard RDD. Indeed, because of the small size of our dataset, we do not have enough local data around the threshold and must therefore use large windows to perform our estimations.

a. Testing for potential jumps in the value of covariates at the pensionable age threshold

Figure A2 shows graphically the evolution of the covariates around the pensionable age threshold. Table A19 shows the results of the formal test of the null hypothesis of a zero average effect of reaching the pensionable age threshold on covariates. As mentioned above, our window of analysis is large around the pensionable age threshold and we thus include age controls allowing for different trends on both sides of the threshold. We also include a female control to account for the fact that women's data only starts five year below the pensionable age threshold. None of the predetermined covariates show any sign of discontinuity at the threshold, supporting the validity of our estimation strategy. However, we notice - both graphically as well as in the formal tests - a significant change in household composition, and specifically, a decrease in the number of adults in the household. While this does not invalidate our approach, it hints to the fact that household composition changes may be on the causal pathway between work cessation at pensionable age and SWB.

Figure A2: Evolution of the covariates around the pensionable age threshold



Note: SAGE-Russia (2007-2010). Figure A2 shows the association between each control variable and age, centered at the pensionable age threshold separately by gender. Observations represent yearly averages and a separate linear regression line is fitted under and above the threshold for the sample of individuals between -10 (-5 for women) and +15 years around the threshold.

Table A19: Using control variables as outcomes to estimate the continuity of observed characteristics around the threshold.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rural	Married	Education: Secondary	Education: High school	Education: College or higher	Num adults in HH	Num children in HH	WHO disability score	Self-assessed pain
Above threshold	**0.022**	**-0.006**	**0.017**	**-0.020**	**0.028**	**-0.223****	**0.004**	**-0.073**	**-0.030**
	(0.039)	**(0.040)**	**(0.027)**	**(0.043)**	**(0.038)**	**(0.108)**	**(0.055)**	**(0.061)**	**(0.085)**
Female	-0.091***	-0.280***	-0.066***	0.100***	-0.011	-0.210***	-0.020	-0.025	0.117**
	(0.023)	(0.022)	(0.018)	(0.024)	(0.021)	(0.056)	(0.031)	(0.040)	(0.048)
Distance from threshold	0.001	0.009	0.010**	-0.010	-0.000	-0.022	-0.005	0.021**	-0.004
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.020)	(0.010)	(0.009)	(0.014)
(Distance from threshold) * (Above threshold)	-0.003	-0.024***	0.001	-0.004	-0.007	-0.000	0.004	0.033***	0.055***
	(0.007)	(0.007)	(0.005)	(0.008)	(0.007)	(0.021)	(0.010)	(0.011)	(0.015)
Constant	0.322***	0.881***	0.144***	0.586***	0.246***	2.719***	0.221***	2.313***	0.738***
	(0.037)	(0.034)	(0.026)	(0.040)	(0.036)	(0.103)	(0.050)	(0.060)	(0.079)
Observations	1,961	1,961	1,961	1,961	1,961	1,961	1,961	1,955	1,959

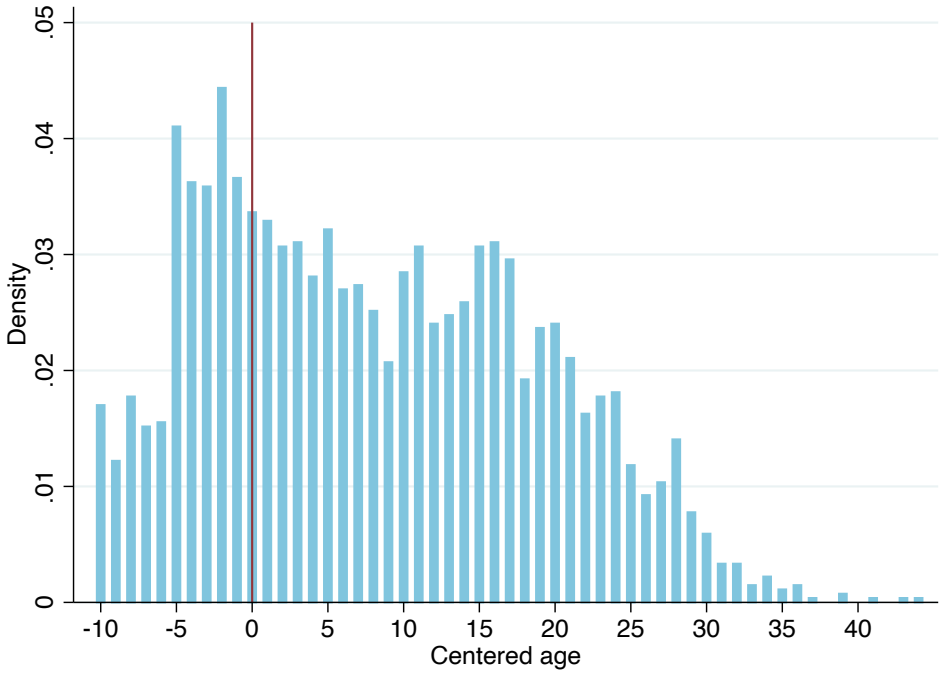
Note: SAGE-Russia (2007-2010). Sample restricted to individuals -5 to +15 years from the pensionable age threshold. 2SLS estimates. Estimations allow for different age trends on each side of the threshold, but do not include any additional control variable. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

b. *Testing for potential discontinuities in the conditional density of the centered age variable*

Figure A3 shows the density of the running variable (distance to the pensionable age threshold) around the threshold which shows graphically the absence of discontinuity. Moreover, we perform the

manipulation test based on density discontinuity proposed by Cattaneo et al. (2018) (Table A20) and fail to reject the null hypothesis of a smooth density across the threshold, providing further support against the manipulation of the running variable.

Figure A3: Histogram of centered age



Note: SAGE-Russia (2007-2010). The figure shows the distribution of age around the statutory pensionable age threshold. Age is centered at the pensionable age threshold. The red line indicates the cutoff.

Table A20: Test for discontinuity in density of age at the pensionable age threshold

	(1)	(2)	(3)
t	0.0924	0.0932	-0.1541
$p > \|t\|$	[0.9264]	[0.9257]	[0.8775]
BW_-	10	10	10
BW_+	15	20	10
N_-	735	735	735
N_+	1226	1571	858

Note: SAGE-Russia (2007-2010). Estimates proposed by Cattaneo et al. (2017). t is the t-statistic for a test with the null hypothesis of equality in densities at the pensionable age threshold c: $t = (f_+(c) - f_-(c))/\sqrt{\sigma_+^2(c) + \sigma_-^2(c)}$. P-values for a 2-sided test in square brackets. Estimates in columns (1) use the baseline bandwidth (-10 (-5 for women) to +15 years around the threshold), while columns (2) and (3) change the upper bound to +20 and +10, respectively. BW_- and BW_+ indicate the lower and upper bounds of the age distribution. The age cutoff c is 55 for women and 60 for men. N_- and N_+ are the number of observations under and above the threshold, respectively.

c. Testing for potential discontinuities in SWB at other ages.

We assess whether SWB is unexpectedly discontinuous at other values of the centered age variable. We use two placebo ages: 53 (Panel A) and 70 (Panel B), representing the median age below and above the pensionable age threshold, respectively. Panel A only uses observations on the left of the cutoff

value and Panel B exclusively observations on the right of the cutoff value in order to avoid estimating the regression function at a point where it is known to have a discontinuity.

Table A21: Placebo jumps at 53 and 70 years old

	(1) Life satisfaction	(2) WHO quality of life	(3) Emotion score (no phys.)	(4) Emotion score	(5) Experienced well-being
Panel A: 53 years old					
Above threshold	**0.036**	**-0.007**	**0.131**	**0.082**	**0.202**
	(0.143)	**(0.120)**	**(0.180)**	**(0.168)**	**(0.169)**
Control variables	X	X	X	X	X
Observations	730	730	730	730	730
Panel B: At 70 years old					
Above threshold	**0.058**	**0.093**	**-0.039**	**-0.051**	**-0.019**
	(0.073)	**(0.060)**	**(0.091)**	**(0.088)**	**(0.091)**
Control variables	X	X	X	X	X
Observations	1,877	1,877	1,878	1,878	1,874

Note: SAGE-Russia (2007-2010). Reduced form estimates. Estimations include the full set of covariates and allow for different age trends on each side of the threshold. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1