I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

POLICY PAPER SERIES

IZA Policy Paper No. 181

Wealth Accumulation and Retirement Preparedness in Cross-National Perspective: A Gendered Analysis of Outcomes among Single Adults

Janet Gornick
Eva Sierminska

OCTOBER 2021

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

POLICY PAPER SERIES

IZA Policy Paper No. 181

Wealth Accumulation and Retirement Preparedness in Cross-National Perspective: A Gendered Analysis of Outcomes among Single Adults

Janet Gornick
CUNY

Eva Sierminska
LISER, IZA and DIW

OCTOBER 2021

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Wealth Accumulation and Retirement Preparedness in Cross-National Perspective: A Gendered Analysis of Outcomes among Single Adults

Wealth is an increasingly important dimension of economic well-being and is attracting rising attention in discussions of social inequality. In this paper, we compare – within and across countries – wealth outcomes, and link those to both employment-related factors and policy solutions that have the potential to improve wealth creation and retirement security for women. By constructing country-specific portraits of wealth outcomes and "retirement preparedness," we reveal extensive cross-national variation in multiple facets of wealth. Our regression analysis finds a statistically significant and positive effect of work experience on wealth, with that effect, in general, increasing over time. The effect of work experience for single women is greater than for single men, suggesting that, among men, other, stronger forces are at work in creating wealth. The retirement preparedness outcomes indicate that single women in all three countries are in a precarious position at retirement, with much lower expected annual wealth levels than single men. The second preparedness indicator, which links expected annual wealth to income, demonstrates that men have the potential to cover 1larger shares of their income at retirement – and thus are more able, than their female counterparts, to maintain standards of living achieved earlier in life. Our policy discussion indicates that employment remains a viable option for ultimately bolstering women's wealth accumulation. Many scholars, gender equality advocates, and policymakers have argued for raising women's employment rates – for a multitude of reasons – but few, if any, have made the case for strengthening women's employment in order to ultimately bolster women's wealth building. We hope to help reduce the gap in the literature on policy supports for women's employment and re-open the discussion on how women can create more wealth.

JEL Classification: J10, J16, I38
Keywords: wealth, gender, labor market

Corresponding author:
Eva Sierminska
LISER
11, Porte des Sciences
L-4364 Esch-sur-Alzette
Luxembourg
E-mail: eva.sierminska@liser.lu

I. Introduction and Framing

Wealth is an increasingly important dimension of economic well-being and is attracting rising attention in discussions of social inequality. Past literature has indicated that differences in labor market outcomes are the most significant factors explaining wealth differences between groups, especially differences between women and men (e.g., Sierminska et al 2010). Yet, the study of the relationship between employment outcomes and wealth is still in its infancy.

Our main goal, in this article, is to compare – within and across countries – wealth outcomes, and to link those to both employment-related factors and policy solutions that have the potential to improve wealth creation and retirement security. We focus on the economic situation of women and compare our findings to those of men, emphasizing gender gaps when they are prominent in our results.

We faced a number of challenges in our cross-country analysis of wealth outcomes. First, given that our data are available at the household level and that our main interest is in gender, an individual-level concept, we focus our analyses on households headed by adults who are single. That allows us to study women and men without the need to assign wealth ownership within households. Second, our concept of wealth does not include pension wealth. Few wealth surveys do, given the difficulty of measuring future wealth, especially public pension wealth. To ensure comparability across our sample of countries, we focus only on the wealth components available in all three surveys.

This article is organized as follows. In Section II, we synthesize relevant literature, and introduce our theoretical framework. In Section III, we describe our data and measures. In Sections IV and V, we construct and report country-specific portraits of wealth outcomes and "retirement preparedness." We define retirement preparedness, as the capacity of households to have accumulated wealth that will allow them to sustain their income level "near the age of retirement," for a period of time. These analyses reveal extensive cross-national variation in multiple facets of wealth. We augment our wealth-based analyses with indicators of income at retirement, to enable a fuller portrait of older persons' economic security.

Employment has been shown to be a large and important explanatory factor of the gender wealth gap and, so in Section VI, we analyze the relationship between life-long employment (work experience) and wealth, using regression techniques, focusing on how that relationship differs between women and men, as well as across countries and over time.

In Section VII, we discuss a selected set of wealth-related policies and institutions, which we relate qualitatively, to our main outcomes. First, we discuss employment-related policies. Although employment-supporting policies are not generally considered within the wealth literature, we argue that they should be, given the role that work experience plays in wealth accumulation. In terms of more direct wealth creation policies, we discuss policies that shape business activity and entrepreneurship, and those that affect homeownership. Finally, we look briefly at aspects of pensions. We include features of pensions for two reasons: one, expectations about future pension receipt are understood to shape savings behavior, and two, attributes of post-retirement pensions help us to assess the implications of our results on retirement

preparedness. Throughout this article, our central goal is to articulate pathways toward improving the economic well-being of women vis-à-vis wealth accumulation. Although we present some conclusions about how institutional variation across these three countries influences patterns of wealth and retirement-preparedness, we do not attempt to identify institutions that shape variation in gender wealth gaps *per se.* Such an analysis is outside the scope of this article.

In this study, we include three countries: Germany, Spain, and the United States, which span distinct welfare state models, as widely noted in comparative social policy scholarship. Germany is an exemplar of the "conservative" model, widespread in continental Europe, while Spain represents the "Latin Rim" model, and the U.S. is the quintessential example of the "liberal" model, common among Anglophone countries.

II. Literature and Theoretical Framework: Wealth and Employment

By now, a modest literature has developed on women's wealth accumulation and on gender wealth gaps. The standard framework on differences in wealth accumulation stipulates that assets in period *t+1* are the sum of assets (A_t), income (Y_t) less consumption (C_t) in period *t* augmented by the return on investments (*r*). Thus, $A_{t+1} = (1 + r)(A_t + Y_t - C_t)$ (Sierminska et al 2010). Any differences in these components between women and men result in different wealth outcomes. The literature shows that women and men differ in their behavior and opportunities; thus, their wealth trajectories differ. They save and invest differently, with divergent levels of returns (Chang 2010; Lersch 2017a) due to differences in risk attitudes (Bajtelsmit and Bernasek 1996; Jianakopolos and Bernasek 1998), and they have differential earnings resulting from gender differences in attachments to the labor market (Xiao 1995). Not much can be done regarding gender gaps in risk attitudes and preference for investment, apart from encouraging more financial literacy, but labor market attachment is an area where policy can make a difference.

Past literature indicates that gender gaps in employment status and history are the most important factors explaining gender disparities in wealth accumulation. Sierminska et al (2010) find that income and labor market experience explain most of the gender gap at the middle and top of the wealth distribution. In a cross-European study, decompositions indicate that income, education, and employment are the strongest explanatory factors, yet cross-nationally comparable data did not allow for the inclusion of life-time work experience (Sierminska and Grishina 2017). In addition, Ruel and Hauser (2013) report that those working in stable, full-time, higher prestige occupations will consistently earn more (and have higher permanent income), which will improve their savings ability.

What impairs women's wealth accumulation, compared to men's, are persistent gaps in employment rates, work hours, and ultimately earnings (Warren et al 2001). A vast literature reports that women earn less than men – hourly, weekly, monthly, and annually – in all industrialized countries. That is true for both gross gaps (with no controls) and net gaps (controlling for factors that differ by gender, including various worker and job characteristics)

(see Blau and Winkler (2017)).[1] Persistent occupational segregation also matters. Women and men tend to be concentrated in occupations with lesser potential for advancement and different exposures to labor market fluctuations, which affect their labor market positions differently over time (Goldin 2014; Sierminska et al 2019). Thus, even if saving rates were held constant, women would be expected to accumulate lower levels of wealth due to their weaker labor market position.

Experiencing such disadvantage throughout their working life, women are significantly less prepared at retirement to adequately provide for themselves (see Gornick et al 2009 for details). Following the accumulation equation, we examine asset accumulation at the age of retirement ($A_{ret\ age}$) in the form of "retirement preparedness" and compare that between women and men. According to the life-cycle theory of accumulation put forth by Modigliani decades ago (Rossi and Sierminska 2018), households accumulate wealth over the life course, until retirement. They then begin to decumulate wealth, which is used to supplement their income, smooth consumption, and/or pass on to their heirs. In this framework, wealth levels are set to peak at around the age of retirement.

Due to data limitations, we do not include pension wealth in our micro-level analyses – yet gender pension wealth gaps can be even more pronounced than net worth gaps (e.g., Cardova et al (2021) in Germany), indicating that the actual economic situation, post-retirement, is even worse for women compared to men than is suggested by our results on preparedness. Earlier research finds that women are less likely, than men, to be enrolled in private pension schemes (e.g., Foster and Semtherham 2013, Gardiner et al 2016), and, among pension recipients, the gender gap in mean pension levels is large and significant (Tinios et al 2015 for Germany and Spain). Johnson et al (1999), for example, find that median pension wealth for full-time workers on the current job is 76% greater for men than for women. Gender differences in age, occupational position, earnings levels, work hours, or having dependent children within a household account for most of the gender gap in pension wealth.[2]

III. Data and Measures

A. Data sources

The main data source for this study is the Luxembourg Wealth Study (LWS) Database. The LWS Database is one of two cross-national databases, produced and provided by LIS,[3] the cross-national data center in Luxembourg. It contains repeated cross-sections of harmonized household survey microdata, focused on wealth data, from 19 countries at up to eight time points.

[1] During our study years, gross earnings gaps (among full-time dependent employees) remain substantial although they decreased in all three countries. They are largest in the U.S. (23.6 decreasing to 18.2%), followed by Germany (19.1 to 16.2%), and Spain (17.2 to 11.5%) (OECD Employment Database).

[2] Other lines of analysis emphasize the central role that home-ownership plays both in wealth accumulation and in explaining variation in wealth inequality across countries and over time. See, e.g., Pfeffer and Waitkus 2020; and Flynn 2019.

[3] See https://www.lisdatacenter.org/ for a description of LIS, and for extensive documentation.

We also use country-level data in various parts of our analyses, described in the relevant sections.

B. Sample – countries, households, age

We utilize four waves in the LWS Database for each of our sample countries: Germany (2002, 2007, 2012, 2017); Spain (2002, 2008, 2011, 2014) and the United States (2001, 2007, 2013, 2016).[4] We selected these three countries because the associated datasets contain the two core variables needed for the study: total years of work experience and net worth.

Throughout this article, we focus on households headed by a single adult aged 25 to 64 - the "working-age" population. A single adult is one who currently lives in a household, with or without children, that contains just one adult. These households comprise of 22.3% of the sample in Germany, 29.2% in Spain and 22.5% in the United States.[5]

C. Variables and measures

Our main variable of interest is net worth. It is defined as the sum of financial (deposit accounts and investments, excluding pension assets[6]) and non-financial assets (principal residence and other real estate), minus total debt. In Table 1, we also report homeownership rates.

Due to the presence of outliers in our data, we bottom-code the wealth data at the 5th percentile and top-code at the 95th. Also, due to the skewness of the wealth data, as well as the existence of negative and zero values, we apply the inverse hyperbolic sine transformation in the regressions.[7] This is a standard approach in analyses of wealth distributions (See Pence (2006) for details) with the added benefit that it allows easy interpretation of regression coefficients, similar to when a log transformation is used.

In the section on retirement preparedness, we make use of income as well as wealth data. Our main income variable is annual disposable household income (DI), which refers to households' market income (mainly from labor, and supplemented by capital income) plus transfer income, minus income taxes and social contributions paid.[8,9] Note that, although our core wealth variable (net worth) does not include pension wealth, our main income variable (DI) does include pension income (i.e., income from public non-contributory pensions, public contributory pensions, as well as private pensions, both occupational and individual).

---

[4] The original data sources are, for Germany - Socio-Economic Panel; for Spain - Survey of Household Finances; for the U.S. - Survey of Consumer Finances.

[5] In Germany, 69% are female, in Spain 60%, and in the U.S. 58%.

[6] Pension assets are excluded because they are not consistently available; all of these are excluded: voluntary individual pensions, occupational pensions (defined benefit and defined contribution), and social security pension entitlements (defined benefit and defined contribution).

[7] The inverse hyperbolic sine transformation is defined as: $\log\left(y_i + (y_i^2 + 1)^{1/2}\right)$, where y_i is the variable of interest.

[8] The datasets from Spain do not include disposable household income – only gross household income, which is pre-tax. In the results section, we comment on the implication of this incomparability between Spain and the other two countries.

[9] We adjust all monetary values to 2011 USD, using PPP series available on the LIS website (in March 2020).

To create our "retirement preparedness" measures – with respect to wealth and its components: principal residence, financial assets, and debt – we first divide average wealth levels around the age of retirement by country-specific, and gender-specific, life-expectancy as of age 65.[10] This provides us with an average level of wealth over the remaining expected years of life or, in other words, expected annual wealth. To carry out this analysis, we construct a "near the age of retirement" age group, separately for each country. That age group is centered on each country's "effective retirement age" (ERA) ;[11] we then add 2.5 years on either side of the ERA, to arrive at a five-year age group for each country. To complement our retirement preparedness results, we present a measure of "average income at retirement"; which is the average DI for those in the ERA age group.

In our multivariate analyses, focused on factors that shape net worth, our main explanatory variable is total years of work experience,[12] defined as the number of years worked during the entire career. Our multivariate models also include control variables capturing education, parenting status, marital status, and occupation. These are described in Appendix A.

IV. Wealth Outcomes – Levels and Trends

First, we focus on providing wealth portraits in terms of levels and trends. To help explain variation in wealth levels, we include information on homeownership, typically the largest contributor to households' wealth portfolios; owned homes are, in general, a less liquid form of wealth than financial assets.

A. Levels

We first highlight our main findings on net worth (see Table 1). Considering the cross-national variation in wealth levels, a clear pattern emerges: the highest wealth levels are reported in Spain, followed by the U.S., and then Germany – and that is true for medians and means (with one exception in Germany in 2012). The ranking of countries by wealth can be explained, largely, by homeownership rates, which are highest in Spain (~70%) followed by the U.S. (~50%), and Germany (20%). The ranking for countries remains the same if couples' households are also included (results are in the Appendix Table A2).

<< TABLE 1 ABOUT HERE >>

When we consider gendered patterns of wealth (focused on medians) among single adults, a notable result emerges: In Spain, women generally report higher levels of net worth than do men; the gender wealth gap (favoring men) is largest in the U.S. and then in Germany. Gender

[10] Details are in Table A1.

[11] The average ERAs are as follows: Germany – 62; Spain – 63; U.S. – 64. See Table A1 for details. Although women's and men's effective retirement ages differ modestly (by about one year or less), we use the result for women for both genders, so that our analyses are based on common age groups.

[12] In the U.S. survey, years of total work experience is asked only of individuals who are currently employed. Thus, we impute work experience for the missing values (i.e., the non-employed). The details of this imputation, along with a robustness check, are provided in Table A3.

differences in homeownership are modest among singles. These findings are confirmed in other studies (Sierminska 2017).

B. Trends

Within-country trends indicate that wealth levels in Germany have been steadily increasing, while, in Spain and the U.S. macro-economic events stopped initially rising wealth levels and caused substantial declines at the beginning of the second decade of the 21st century. We see a relatively larger drop for women (compared to men) in the U.S., and a relatively larger drop for men (relative to women) in Spain.

V. Retirement Preparedness – Levels and Trends

These brief wealth portraits provide a starting point – and a point of comparison – for the analysis of retirement preparedness, which, as noted earlier, can be interpreted as expected annual wealth at retirement; see the left panel of Table 2. We do not relate the wealth levels to estimates of need, as we are primarily interested in how employment behaviors are associated with wealth levels in relation to income at the time of retirement. While retirement preparedness is related, of course, to levels of net worth throughout the life cycle, we consider it to be an especially powerful window on economic wellbeing, among both women and men, as it captures their capacity to live in relative economic security in their later years. To complete our overview of retirement preparedness, we include income measures in the two far-right columns. The first is average disposable household income (DI) at around the effective age of retirement and, second, average DI for that age group as a share of average DI among persons aged 45 to 54 years old.

A. Levels

Table 2 reports retirement preparedness for our three countries. First considering women, across countries, we find expected annual net worth at retirement to vary from 11,000-15,000 USD in the U.S., to about 8,000-14,000 USD in Spain and about 4,000-6,000 USD in Germany. Thus, contrary to our previous results on wealth (among singles aged 25-64), women in the U.S. at near-retirement age now have the highest wealth levels – surpassing those in Spain. This difference, vis-à-vis the earlier results, is not surprising, as it has been shown that the age gradients of household wealth in the U.S. and Spain are different. More specifically, *older* households in the U.S. are substantially better off in terms of wealth, compared to their counterparts in Spain, throughout the distribution (Bover 2010).

<< TABLE 2 ABOUT HERE >>

Gender differentials in expected wealth at retirement vary a lot, but on average women's wealth constitutes about 68% of men's in Germany and in the United States, and 54% in Spain. When captured as a share of income at retirement, women's expected annual net worth constitutes about 22% in Germany, about 50% in Spain and 45% in the U.S. Among their male counterparts, these ratios are higher in all three countries – and substantially so in Spain.[13]

[13] In addition, this may be a lower bound for Spain as disposable household income is not available, so our income measure is gross household income.

Among women, in all three countries, disposable household income around the age of retirement constitutes, on average, about 80% to 85% of income of those 45 to 54 year old's. Among men, there is more variation. German men, near retirement age, report income equal to about 83% of that of 45 to 54 year old's, while the parallel figure among men in the U.S. is about 76%. Men in Spain near retirement age are an exception; their income is modestly higher - about 13% higher - than that of younger age group. Overall, disposable household income at retirement for women is lower than for men in all three countries, and it is the highest in the U.S.

There are two main take-away points. First, single-women households in the U.S. have the highest expected annual wealth, at the end of our study period, and the majority is held in financial assets (unlike in Spain and Germany). Women in the U.S. also have the highest expected annual debt (in absolute levels and as a share of their portfolio). As a share of income at retirement, U.S. women are able to cover about a quarter of their retirement income, annually, via financial assets, while women in Germany and Spain are able to cover closer to 5% of their income. These results could indicate that women in all three countries will experience substantial declines in their standard of living, as they enter their retirement years in a hypothetical situation if income were to suddenly disappear. In each of these countries, gender gaps exist and men are able to cover larger shares of their income at retirement on average (9% in Germany, 18% in Spain and 28% in the U.S.) – and thus are more able, than their female counterparts, to maintain standards of living achieved earlier in life in the absence of income.

At the same time, as section VII will show, these higher levels of wealth in the U.S. are necessary given a less generous public pension system and high score on "pension privatization."

B. Trends

Retirement preparedness levels vary markedly over time – particularly during times of economic volatility. We find that, based on our indicators, older persons' economic security deteriorated over time. Most notably, when we focus on expected annual wealth as a share of income at retirement, on net worth specifically, we see that preparedness fell in nearly all cases for women and men. The only exception to that pattern is seen in Spain. The results in Spain are driven by falling income. The declining denominator increased the value of this preparedness indicator over time – which adds an important caveat to the conclusion that single older persons in Spain are experiencing more economic security in terms of wealth over time – yet paradoxically due to lower income levels (with the exception of the latest wave).

VI. Gender, Employment, and Work Experience

A. Variation in Labor Market Outcomes

We began our empirical analyses by assessing women's and men's levels and trends in two key variables – years of work experience and employment rates – across these countries and over time. (Results not shown due to space limitations).

We found a few straightforward results. First, averaged over our study period, Spanish women reported mean work experience of about 16 years – nearly three years fewer than their counterparts in Germany and in the U.S., where mean work experience was nearly 19 years. Second, men's years of work experience were substantially greater in all three countries - averaging nearly 25 years in Spain, 23 years in Germany, and 22 years in the U.S.

Third, both women's and men's work experience increased over the years.[14] However, increases among both women and men were modest - about two years among the women and a year or less among the men. Fourth, overall, employment rates parallel the results on work experience; among the women, for example, across the study years, Spanish women's employment rates lag those of their counterparts in Germany and the U.S. Clearly, years of total work experience are shaped by the likelihood of being employed in any given year.

B. Multivariate Analysis: Relationship Between Work Experience and Wealth

Our wealth portraits, presented earlier, reveal that gendered wealth outcomes vary both across countries and over time. In addition, our brief overview of employment outcomes, presented above, indicates that gendered outcomes – especially years of work experience – also vary both across countries and over time.

In this section, we combine these two sets of results, and analyze the effect of employment on wealth. Our specific goal is to assess the impact of labor market attachment (captured by work experience) on wealth (measured as net worth) and to place that impact in cross-country perspective. We conclude our micro-level empirical analyses with a set of regressions in which we estimate the effect of years of work experience on net worth, separately for single women and single men. We control for differences in household structure, education, marital history and occupation; we estimate wealth as a function of years of work experience, and control variables. The variables and the estimated equation are presented in Appendix A. Here, we focus on discussing our main findings, based on coefficients reported in Table 3. (Full specification results are in Appendix Table A5).

[14] It is important to note that few labor market studies – single-country or cross-national -- have focused on years of work experience. That is due in large part to the paucity of data. Most often, researchers interested in years of experience are restricted to creating accumulated experience using longitudinal data; few surveys ask about experience retroactively. Focused on the United States, Blau and Kahn (2017:791-92), assess "actual labor market experience"; they report that they "analyze data from the [Panel Study of Income Dynamics], which is the only data source that has information on actual labor-market experience (a crucial variable in gender analyses) for the full age range of the population." They also present years of experience for women aged 25-64, and for nearly the same time period – 1999 to 2011. However, we cannot compare our results directly – they count "full-time work experience", so the levels are lower – but the trend is very similar to what we find.

The first specification provides us with an overall effect, while the second specification provides the interaction with survey years (referred to by LIS as waves). We include these interactions to assess the change in the role of work experience over time. We expect the effects of work experience to be greater among women than among men because they have fewer years of work experience and have more room to tap this resource for wealth building. We expect the year effects to be significant and positive in countries where the greatest employment-related changes occurred.[15]

<< TABLE 3 ABOUT HERE >>

We find a statistically significant positive (non-linear) effect of work experience on net worth. The magnitude is greatest in Germany, followed by the U.S, and then Spain. One additional year of work experience is associated with an increase in net worth of 29% in Germany, 19% in the U.S., and 8% in Spain.[16] We find smaller effects for men: (15% in Germany, 16% in the U.S., and 8% in Spain). Among women, compared to men, wealth creation is more tightly related to their past employment as compared to other factors given that they have not achieved the full employment potential. These results support the notion that men, benefit from greater access than women to instruments facilitating wealth creation (a.k.a. the *wealth escalator*), a concept developed in detail in Chang (2010).

Considering the second specification, the consecutive interaction terms of work experience and survey year are referred to as the first, second, third, and fourth waves. An increasing magnitude and statistical significance of the coefficient of the interaction terms would indicate that, over time, work experience is correlated more strongly with higher levels of wealth. The results reported in Table 3 for single women show this to be the case in Spain. In Germany, the effect is significant for the third wave. In the U.S, we do not see this effect for single women. Thus, other factors appear to dominate for wealth creation in the U.S. during this time. Among single men, the interaction effect does not follow the same pattern as for women, although this is expected as their work experience is higher than women's and the trends are slightly different. During our analysis period, work experience increased in all countries for women and to some extent for men, particularly in Spain.[17]

In summary, work experience has a positive and significant effect on wealth in all countries for women and men. In Spain, the effect is half of that in Germany and in the U.S.. During the period of analysis, work experience has been increasing and the magnitude of the effect of work experience on wealth has been increasing (except in the U.S.).

[15] An increasing role of labor market variables in wealth building has previously been found in Germany, for the 2002 to 2012 period (Sierminska et al 2019).
[16] We calculate these based on the coefficients in Table 3 at the mean. These means are provided in Table A4. The results for all households are in Table A6.
[17] During our study period, among single women, work experience increased from 18.8 to 20.2 years in Germany, from 17.1 to 20.4 years in Spain; and from 18.1 to 20.0 years in the U.S. The patterns for single men have not been as systematic nor as striking in Germany and the U.S. In Spain, work experience for single men increased from 20.7 to 25 years.

VII. Policies Implications: Policy Packages that Shape Wealth Accumulation and Retirement Preparedness

In this section, we discuss a set of policies and institutions, which – based on prior literature – are understood to affect wealth building (directly and indirectly); we then relate these, qualitatively, to selected findings from our wealth portraits. We begin with a set of policies that shape women's employment outcomes. Most employment-supporting polices are not discussed in the wealth literature and the focus instead is on considering how the financial environment and institutions affect the structures of wealth portfolios (e.g., Bover et al 2016); we argue that employment-related policies should be given more consideration. We then consider two additional policy areas, both standard in the wealth-building literature: policies that shape entrepreneurship and that affect homeownership. Finally, we look briefly at aspects of pensions.

An overview of these policy provisions is presented in Table 4. The policy indicators refer to a single year that falls approximately in the middle of our range of years or, where possible, they correspond to the average value over the study years. (Based on our sources, no marked changes in these indicators during the years covered are observed.) A description of these policy indicators is provided in Appendix B. Below we provide "policy portraits" for each country and, subsequently, relate them to our outcomes.

<< TABLE 4 ABOUT HERE >>

A. Policy "portraits"

The patterns that emerge from Table 4 indicate that the policy/institutional environments vary across our three study countries. To describe this variation, we invoke the concept of the "policy package," meaning that we characterize policy environments based on a set of policies, rather than on individual policies or policy indicators.

In *Germany*, in comparative terms, we find generous spending on family benefits and on child care – spending is highest (or tied for highest) on all four expenditure indicators – and we find the most extensive paid leave, by far. Germany is also home to a modestly favorable environment for business/entrepreneurship, scoring between Spain and the U.S. on all four indicators. In contrast, incentives for homeownership are weakest in Germany, as captured by the "loan-to-value" (LTV) indicator – i.e., potential homebuyers face relatively higher down payment constraints – as well as fixed mortgage rates and the lack of equity withdrawal options. Finally, overall, public pension institutions are, like the business environment, moderately extensive/generous, relative to the other two countries. Germany's pension privatization score falls between those of the other two countries, as does its gross pension replacement rate for average and high earners, and the same is true for gross and net pension wealth for both men and women.

The policy/institutional environment in *Spain* is different. Overall, spending on family benefits is moderate, in most cases, higher than in the U.S. but lagging Germany's; paid leave is far less generous than in Germany but more favorable than in the U.S. Although bank regulations are comparatively relaxed in Spain, it scores lowest among these three countries on "financial

development", "competitiveness", and "economic freedom". Access to mortgages, as captured by the LTV, is moderate, although Spain has relatively short mortgage maturity and flexible interest rates. The public pension system in Spain is, overall, extensive and generous; Spain scores lowest on pension privatization, highest on all three indicators of gross replacement rates (by a large margin), and highest on all four measures of pension wealth (also by a substantial margin).

The *United States* exhibits yet a third policy package. Spending on family benefits (tax breaks are an exception) and child care is lowest among these three countries, and the U.S. – an extreme international outlier – guarantees no paid leave at the national level. The U.S. exhibits a mixed picture with respect to factors favorable to business/entrepreneurship; while it scores highest on "bank regulations" (with a high score indicating more strictness), it is also most favorable to business in terms of "financial development," "competitiveness," and "economic freedom." Mortgage conditions are notably favorable, in cross-national terms, with maximum LTVs reported to be as high as 90% (conditional on guarantee) and long mortgage maturity terms, as well as availability of equity withdrawal – all providing comparatively strong incentives for homeownership. Finally, overall, the U.S. public pension system is characterized by limited generosity; it scores highest on pension privatization (by a large margin), lowest on pension spending, lowest on gross replacement rates for average and high earners, and lowest on all four measures of pension wealth.

B. Associations between policy features and selected outcomes

We have too few country cases to formally assess the influence of policy configuration across our study countries. Our intention here is to identify and explore policy features that appear to shape – or, at least, are consistent with – a selection of our outcomes.

Years of work experience.

One of the core questions in this article concerns the relationship between years of work experience and wealth accumulation. Our regression results, reported in Section VI, indicate that work experience matters for wealth accumulation – and it matters a lot – especially for women. Among single women, we find that one additional year of work experience is associated with an increase in net worth of 29% in Germany, 19% in the U.S., and 8% in Spain.

These results suggest that a promising strategy for raising women's wealth accumulation is strengthening women's attachment to the labor market. A comprehensive analysis of policies that strengthen women's employment is well outside the scope of this article. The main (and most directly operating) policy instruments are public investments in employment-supportive services for families, especially child care for children below the age of compulsory schooling, and multiple forms of paid leave, specifically highly-paid leave, of limited length, and with flexible rules for take-up during children's early years (for a comprehensive review, see Blau and Winkler 2017).

Here, we focus on one of our findings – that German and U.S. women (across household types) report nearly equivalent years of experience while Spanish women's experience lags – and note that this pattern is not surprising given policy provisions in these countries. First, comparing

Germany and Spain, we see (in Table 4) that German expenditures on most services for families exceed Spain's, and that Germany offers employed women substantially more generous leaves.

Second, in the U.S. – a much studied case – the policy configuration that leads to higher levels of female employment, relative to Spain, are different. On the one hand, as reported in Table 4, in the U.S., public investments in services for families are limited, and nationally-mandated paid leave is non-existent. On the other hand, prior research indicates that the U.S. is home to a vast low-cost child care market, providing a partial substitute for publicly-financed care, and employed women increasingly receive leave at the state level and/or via employers (Gornick and Meyers 2003). A more problematic policy story is also well-documented in the U.S.: access to health insurance has long been linked to employment, an institutional feature that pushes up women's employment rates (Gornick and Meyers 2003).

Wealth outcomes - wealth levels, homeownership, and retirement preparedness.

A different set of institutional features shed light on what is driving some of our key wealth results.

In *Germany*, we find the lowest levels of net worth, homeownership, expected annual wealth at retirement and disposable household income at retirement. These outcomes seem largely consistent with Germany's weak incentives for home-buying, as well as its relatively generous (at least compared to the U.S.) pension system – which, prior research indicates, crowds out savings and in particular real-state ownership (e.g., Alessie et al 2013; d'Addio et al 2020). Also, we note that the German public pension system is accompanied by a high prevalence of occupational pension plans,[18] meaning that the public pension indicators understate the extensiveness of the German pension system and that extensiveness is consistent with the low level of disposable household income at retirement.

In *Spain*, we find, overall, the highest net worth and the highest rates of homeownership. Although the home-buying incentives are not the strongest among our three cases, Spain does have a favorable measure of profitability of house ownership (a high price to rent ratio) (Arrondel et al 2016), which could explain this result. Spanish women's lower expected wealth at retirement and lower disposable household income at retirement (relative to the other two countries) are consistent with Spain's exceptionally generous public pension system, which, as we have noted, may lead to lower levels of some forms of saving.[19]

In the *United States*, we find moderate levels of both net worth and homeownership, yet the highest level of expected annual wealth at retirement among women (edging above that reported in Spain). Again, the home ownership rate in the U.S. lags Spain's, even though there is a more favorable borrowing environment in the former. The moderate net worth outcome is likely the result of two countervailing influences: a favorable homeowning environment that allows housing to be a more liquid asset in the U.S. compared to other countries (which allows owners

[18] A strong second pillar of occupational pensions is present in Germany. About 60% of people who are employed are active members in this pension system. (https://www.pensionfundsonline.co.uk/content/country-profiles/germany).

[19] Spanish older women may also be more likely to be living in homes with other family members not captured in our sample.

to “cash-out” from net worth) and the relatively meager pension system (which is expected to increase savings). The high expected wealth at retirement for U.S. women, coupled with high levels of income at retirement, is consistent with the high level of privatization of pensions and low public pension spending. Elderly women in the U.S. need more wealth to sustain themselves as they are more likely to be income poor compared to women from Western Europe (Gornick et al 2009).

VIII. Discussion

A key goal of this article is to assess within-country employment-wealth relationships. That, in turn, could help to clarify whether policies that increase women’s employment have the potential to improve wealth creation among women in general, and retirement security, specifically.

Traditionally, studies have focused on the potential of public policies to boost women’s employment *or* on institutions that encourage savings or homeownership as a means to strengthen wealth accumulation. One of our goals, here, is to begin to link the two. We argue that strengthening policies that increase women's employment rates and, thus over time, their years of work experience, is a crucial policy strategy for increasing women's wealth accumulation. Our rationale is that, if individuals, in particular women, lack money, no policy in the world will be able to motivate them to purchase a home or invest in the stock market. On the other hand, encouraging and enabling women to strengthen their connection to paid work, throughout their life course, will have a positive effect their wealth creation and ultimately on their retirement preparedness.

Our empirical findings support this line of argument. Our multivariate analysis finds a statistically significant and positive effect of work experience on wealth, with that effect, in general, increasing over time. The effect of work experience for single women is greater than for single men, suggesting that, among men, other, stronger forces are at work in creating wealth. Our descriptive results for women and men indicate that women still lag substantially men’s work experience.

We have focused much of our attention on older households, in order to assess "retirement preparedness." Our preparedness outcomes are shaped by a multitude of factors – including national institutional environments and the incentives those create for saving and investing. Retirement preparedness is assessed, first, by comparing expected annual wealth at the age of retirement. This is when, from a life-cycle perspective, wealth ought to be at its maximum. Yet, single women in all three countries are in a precarious position at retirement, with much lower expected annual wealth levels than single men. Our second preparedness indicator, which links expected annual wealth to income, demonstrates that men have the potential to cover larger shares of their income at retirement – and thus are more able, than their female counterparts, to maintain standards of living achieved earlier in life. Disposable household income at retirement has increased over time for women yet the gap with men exhibits large fluctuations. In all three countries, our main indicators show that older persons’ economic security has deteriorated, with Spain as a partial exception.

While many scholars, gender equality advocates, and policymakers have argued for raising women's employment rates – for a multitude of reasons – few, if any, have made the case for strengthening women's employment in order to ultimately bolster women's wealth accumulation. We hope to contribute to research and policy analyses on wealth building by encouraging the inclusion of policy supports for women's employment, thus broadening the discussion about how to enable women to create more wealth.

References

Alessie R., Angelini V., and van Santen P. 2013. Pension Wealth and Household Savings in Europe: Evidence from SHARELIFE. European Economic Review, 63: 308 –328

Arrondel, L., Bartiloro, L., Fessler, P., Lindner, P., Mathä, T., Rampazzi, C., Savignac, F., Schmidt, T., Schürzc, M., Vermeuleng, P. (2016) "How do households allocate their assets? Stylized facts from the Eurosystem Household Finance and Consumption Survey," *International Journal of Central Banking, Vol 44*.

Bajtelsmit, V., and Bernasek, A. (1996) Why do women invest differently than men? *Financial Counselling and Planning*, 7, 1–10.

Blau, F.D., and Kahn, L.M. (2017) "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature* 2017, 55(3), 789–865

Blau, F.D., and Winkler, A.E. (2017) *The Economics of Women, Men, and Work*, 8th Edition. New York: Oxford University Press.

Bover, O. (2010) "Wealth Inequality and Household Structure: U.S. Vs. Spain," *Review of Income and Wealth*, 56(2): 259-290.

Bover, O., Casado, J.M., Costa, S., Du Caju, P., McCarthy, Y., Sierminska, E., Tzamourani, P., Villanueva, E. and Zavadil, T. (2016) "The Distribution of Debt Across Euro Area Countries: The Role of Individual Characteristics, Institutions and Credit Conditions," *International Journal of Central Banking, Vol 44*.

Cordova, K., Grabka, M. and Sierminska, E. (2021) Pension rights, employment and the gender wealth gap, unpublished manuscript

Chang, M.L. (2010) *Shortchanged: Why Women Have Less Wealth and What Can be Done About It*. Oxford University Press, Oxford.

d'Addio, A. Roger, M. and Savignac, F. (2020) "Pensions and household savings: cross-country heterogeneity in Europe," Working Paper Series 2372, ECB.

EFF (2017) Survey of Household Finances (EFF) 2014: methods, results and changes since 2011, Analytical Articles, Banco de Espana, Eurosistema, 2017

Foster, L., and Smetherham, J. (2013) "Gender and Pensions: An Analysis of Factors Affecting Women's Private Pension Scheme Membership in the United Kingdom." *Journal of Aging & Social Policy* 25(3):197-217

Flynn, L. (2019) "I'll Just Stay Home: Employment Inequality Among Parents". *Social Politics* 26(3):394-418.

Frick, J.R., Grabka, M.M., and Sierminska, E. (2007) Representative wealth data for Germany from the German SOEP. *DIW Discussion Paper* No. 562, Berlin, March.

Gardiner, J., Robinson, A.M., and Fakhfakh, F. (2016) "Exploring the private pension gender gap and occupation in later working life." *Work, Employment and Society* 30(4): 687-707.

Gornick, J.C., and Meyers, M.K. (2003) *Families that Work: Policies for Reconciling Parenting and Employment.* New York: Russell Sage Foundation Press.

Gornick, J.C., Sierminska, E., and Smeeding, T. (2009) "The Income and Wealth Packages of Older Women in Cross-National Perspective." *Journal of Gerontology: Social Sciences* 64B(3): 402-414.

Hegewisch, A., and Gornick, J.C. (2011) "The Impact of Work-Family Policies on Women's Employment: A Review of Research from OECD Countries." *Community, Work & Family* 14(2): 119-138.

Goldin, C. (2014) "A Grand Gender Convergence: Its Last Chapter." *American Economic Review* 104(4): 1091-1119.

Grabka, M.M., Marcus, J., and Sierminska, E. (2015) Wealth distribution within couples. *Review of Economics of the Household*, 13(3), 459–486.

Jianakopolos, N.A., and Bernasek, A. (1998) Are women more risk averse? *Economic Inquiry*, 36, 620-630.

Johnson, R.W, Sambamoorthi, U., and Crystal, S. (1999) "Gender differences in pension wealth: Estimates using provider data." *Gerontologist* 39(3): 320-333.

Lersch, P.M. (2017a) The Marriage Wealth Premium Revisited: Gender Disparities and Within-Individual Changes in Personal Wealth in Germany. *Demography*, 54(3), 961–983.

Lersch, P.M. (2017b) Individual Wealth and Subjective Financial Well-being in Marriage: Resource Integration or Separation? *Journal of Marriage and Family*, 79(5), 1211–1223.

Luxembourg Wealth Study (LWS) Database, http://www.lisdatacenter.org (Germany, Spain and the United States; {April, 2020-May, 2021}). Luxembourg: LIS.

OECD (2007) *Babies and Bosses - Reconciling Work and Family Life: A Synthesis of Findings for OECD Countries.* Paris: OECD.

OECD (2017) *The Pursuit of Gender Equality: An Uphill Battle*. Paris: OECD.

OECD (2017a), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris, https://doi.org/10.1787/entrepreneur_aag-2017-en.

OECD (2019) Pensions at a Glance - 2019. Paris: OECD. https://www.oecd.org/pensions/oecd-pensions-at-a-glance-19991363.htm

OECD Employment Database http://www.oecd.org/els/family/database.htm Paris: OECD.

Pence, K.M. (2006) "The Role of Wealth Transformations: An Application to Estimating the Effect of Tax Incentives on Saving," Contributions to Economic Analysis & Policy: 5(1), Art20.

Pfeffer, F., and Waitkus, N. (2020). "The Wealth Inequality of Nations". Luxembourg Wealth Study (LWS) Working Paper #33.

Ruel, E., and Hauser, R.M. (2013) Explaining the Gender Wealth Gap. *Demography*, 50(4), 1155–1176.

Sierminska, E., and Grishina, E. (2017) Wealth and Gender in Europe. European Commission, Directorate-General for Justice and Consumers, Luxembourg.

Sierminska, E., Frick, J.R., and Grabka, M.M. (2010) Examining the gender wealth gap. *Oxford Economic Papers*, 62(4): 669-690.

Sierminska, E., Piazzalunga, D., and Grabka, M.M. (2019) "Transitioning Towards More Equality? Wealth Gender Differences and the Changing Role of Explanatory Factors over Time," IZA Discussion Papers 12404, IZA.

Tinios, P., Bettio, F. and G. Betti (2015) "Men, Women and Pensions," European Commission, Directoriate-General for Justice and Consumers, Luxembourg.

Warren, T., Rowlingson, K. and Whyley, C. (2001) Female finances: Gender Wage Gaps and Gender Assets Gaps. *Work, Employment and Society*, 15: 465-488.

Xiao, J.J. (1995) Patterns of household financial asset ownership. *Financial Counseling and Planning*, 6, 99-106.

List of Online Appendices

Appendix Tables and Figure

Appendix A. Regression Analysis

A.1 Socio-demographic characteristics – data and measures

Our regression analyses include, as covariates, the level of educational attainment, occupation, marital status, and parental status – all coded in the LWS Database at the person level.

Educational attainment is coded as "low", "medium", and "high". "Low" refers to less than upper secondary education completed. "Medium" corresponds to upper secondary education completed or post-secondary non-tertiary education. "High" means tertiary education completed.

Marital status is coded as "married" or "not married", where "married" refers to being in a legally established union (either marriage or a registered union). Parental status – coded as "children" or "no children" – is based on the number of one's own children living in the household.

For our occupation variable, we use a three-variable classification system: "professional", "service, sales, and clerical", and "blue-collar". We code occupations into three broad groupings, based on the 9-category International Standard Classification of Occupations (ISCO). "Professional" includes "professionals, technicians and associate professionals" and "technicians and associate professionals". "Service, sales, and clerical" includes services, sales, and clerical workers, plus a small share of persons in armed forces occupations. "Blue-collar" includes skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators and assemblers, and elementary occupations.

A.2 Methodological details

We conclude our micro-level empirical analyses with a set of regressions in which we estimate the effect of years of work experience -- our main explanatory variable – on net worth, separately for women and men. We estimate wealth as a function of years of work experience, as well as education, parenting status, marital status, and occupation. We focus on reporting the main coefficients.

$$wealth = \beta_0 + \beta_1 work\_exp + \beta_2 work\_exp^2 + \beta_3 education + \beta_4 children + \beta_5 marital\ \_status + \beta_6 occupation + \varepsilon \quad \text{eq (1)}$$

We estimate equation (1) for two specifications, presented side by side, for each country. In Table 3 for single women and men and in the Appendix Table A6 for the whole sample. Our focus is on the effect of years of work experience on wealth. In the interest of space, we do not discuss the other covariates as they all produce coefficients in the expected direction, albeit with varying magnitudes, in all countries and specifications.

In Table A4, we present summary statistics for our covariates. In Table A3, we present the results of a robustness check, due to having imputed work experience in the U.S. dataset. We ran the same regressions, limited to persons currently employed; the results also show significant positive effects of work experience on wealth, among women, both all and single. In Table A5,

we present the full regression results, expanding on Table 3, and in Table A6 we present results for all women and men (not just singles),aged 25-64.

Appendix B. Definitions, Measures, and Sources, to Accompany Table 4.

Wealth accumulation levels and trends are driven by diverse factors, including institutional features that shape employment, as well as those that influence wealth accumulation more directly. To this end, we gathered information on diverse public policies known to affect women's employment outcomes, as well as those that influence entrepreneurship and homeownership. We also characterize countries' pension systems. Taken together, these indicators – reported in Table 4 – enable us build institutional profiles for our study countries.

Panel A: Policies/institutions that shape women's employment.

Panel A reports three indicators of financial supports for families, one that captures public investments in child care, and one that reports family leave entitlements.

• Family Benefits: Cash.
Public spending on family benefits, in cash, as % of GDP.
The effect of more extensive cash benefits for families on women's employment is theoretically ambiguous. These income transfers could function as a substitute for earnings (depressing employment) or they could help finance child care or other work-related expenses (encouraging employment). Some research indicates that, if work-family reconciliation provisions are generous (e.g., raising child care access), then larger cash transfers are associated with higher rates of women's employment.
Source: OECD Family Database, PF1.1. Public spending on family benefits
http://www.oecd.org/social/family/database.htm

• Family Benefits: Services.
Public spending on family benefits, in services, as % of GDP.
Higher levels of spending on services for families are generally associated with higher women's employment rates. Services can both raise women's labor supply – across these twelve country years, on average, about half of this indicator is accounted for by child care – and can also increase demand for women's employment in the public sector.
Source: OECD Family Database, PF1.1. Public spending on family benefits
http://www.oecd.org/social/family/database.htm

• Family Benefits: Tax Breaks.
Public spending on family benefits, in tax measures, as % of GDP.
Although, like cash benefits, spending on families via tax breaks has theoretically ambiguous effects, this form of spending is more likely to be associated with increased women's employment because eligibility is often linked to household spending on work-related expenses, including child care costs.
Source: OECD Family Database, PF1.1. Public spending on family benefits
http://www.oecd.org/social/family/database.htm

• Child Care.
Public expenditure on childcare and pre-primary education and total public expenditure on early childhood education and care, as a % of GDP.
In the literature on women's employment, greater public investments in child care and early education are nearly universally associated with higher women's employment rates.
Source: OECD Family Database, PF3.1. Public spending on childcare and early education
http://www.oecd.org/social/family/database.htm

• Paid Leave.
Total weeks of paid maternity, parental, and home care payments, available to mothers.
The overwhelming consensus in the literature is that public provision of paid maternity leave – when leave duration does not exceed about one year, as in these cases – is associated with higher rates of women's employment.
Source: OECD Family Database, PF2.5. Leave entitlements around childbirth
http://www.oecd.org/social/family/database.htm

Panel B. Financial Market Features

In Panel B, we report four indicators that shape financial markets.

• Bank Regulation Index.
An index of anti-competitive regulations in banking, taking into account regulatory barriers on domestic and foreign entry, restrictions on banking activities, and the extent of government ownership (higher values indicate increasing strictness).
The higher the value, the less flexible the banking sector. In a less flexible banking context, credit constraints may limit the average family's capacity to borrow.
Source: Andrews, Dan, Sánchez, Aida Caldera, and Johansson, Åsa (2011).

• Financial Development Index.
An index that combines 121 variables measuring stability and effectiveness of financial systems (higher values indicates more development).
This scores the breadth, depth, and efficiency of each country's financial system and capital markets; higher values indicate greater financial development.
Source: World Economic Forum (WEF), Financial Development Reports.
https://www.weforum.org/

• Competitiveness Index.
An index that combines over 100 variables (higher values indicate more competitiveness).
Its purpose is to gauge economies' overall capacity to raise productivity and, in turn, long-term growth.
Source: World Economic Forum (WEF), Global Competitiveness Reports.
https://www.weforum.org/

• Economic Freedom Index.
An index on which higher scores indicate less government intervention in the economy and a more flexible investment environment.

Source: Miller, Terry, et al (2014).

Panel C. Policies/institutions that shape homeownership.

Panel C provides information on mortgage markets. Past research has established that wealth is largely driven by homeownership; both non-financial and financial assets are higher for homeowners (Sierminska, 2018).

• Mortgage Maturity.
The typical number of years of mortgages.
Source: Andrews, Dan, Sánchez, Aida Caldera, and Johansson, Åsa (2011).

• Mortgages, Prevailing Type of Interest Rate.
The prevalence of fixed rate mortgages.
Source: Andrews, Dan, Sánchez, Aida Caldera, and Johansson, Åsa (2011).

• Mortgage Equity Withdrawal.
The possibility of mortgage equity withdrawal.
Source: Andrews, Dan, Sánchez, Aida Caldera, and Johansson, Åsa (2011).

• Max Loan-To-Value (LTV) Ratios.
The existence of regulatory limits on loan-to-value ratios.
Source: Andrews, Dan, Sánchez, Aida Caldera, and Johansson, Åsa (2011).

Panel D1. Policies/institutions: pensions.

The two parts of Panel D capture elements of private and public pension systems. Panel D2 incudes two pension indicators that are available, disaggregated by gender.

• Pension Privatization Index.
A "compound index of private pension provision based on a number of quantifiable variables (theoretical replacement rates of public plans, assets of funded pension schemes, private pension expenditure and coverage by private pension plans) that … can be used to empirically categorize the extent to which … countries have privatized their pension provision (De Deken 2013:270)."
Higher values indicate more pension privatization. A higher pension privatization index score combined with lower public pension spending will encourage additional private savings in order to finance retirement.
Source: De Deken, Johan (2013).

• Public Pension Spending.
Public spending, defined as all cash expenditures (including lump-sum payments) on old-age and survivors' pensions, as a share of GDP.
Source: OECD SoxExp data.
https://data.oecd.org/socialexp/pension-spending.htm

• Gross Pension Replacement Rates from Mandatory Public Pension Schemes.

Gross replacement rates from public schemes, defined as gross pension entitlement divided by gross pre-retirement earnings.
Replacement rates are presented for low, average, and high earners.
Source: OECD iLibrary.
https://www.oecd-ilibrary.org/sites/13b1576b-en/index.html?itemId=/content/component/13b1576b-en

Panel D2. Policies/institutions: pensions, by gender.

• Gross Pension Wealth.
The stock of future discounted flows of pension benefits.
"Pension wealth relative to individual earnings before retirement measures the total discounted value of the lifetime flow of all retirement incomes in mandatory pension schemes at retirement age. For average earners, pension wealth for men is 8.9 times and for women 9.8 times annual individual earnings on average in OECD countries. Gross pension wealth relative to annual individual earnings is higher for women because of their longer life expectancy. The main determinants of differences across countries are differences in the gross replacement rate, in the length of the retirement period measured by remaining life expectancy at the normal retirement age, and in indexation rules (OECD 2019)".
Source: OECD 2019
https://www.oecd.org/pensions/oecd-pensions-at-a-glance-19991363.htm

• Net Pension Wealth.
The stock of future discounted flows of pension benefits, after accounting for taxes and social contributions.
"As with gross pension wealth, net pension wealth relative to individual net earnings measures the total discounted value of the lifetime flow of all retirement incomes in mandatory pension schemes at retirement age. For average earners, net pension wealth for men is 10.6 times and for women 11.7 times annual individual net earnings on average in OECD countries. Net pension wealth relative to annual individual earnings is higher for women because of their longer life expectancy. The main determinants of differences across countries are differences in the net replacement rate, in the length of the retirement period measured by remaining life expectancy at the normal retirement age, and in
indexation rules (OECD 2019)".
Source: OECD 2019
https://www.oecd.org/pensions/oecd-pensions-at-a-glance-19991363.htm

Table A1. Average effective retirement age and life expectancy at 65 – women.

	Average effective age of retirement				Retirement preparedness interval		
					Average	Low end	High end
Germany	2002	2007	2012	2017			
	60.2	60.8	61.7	63.4	62	59	64
Spain	2002	2008	2011	2014			
	61.2	63.0	63.5	63.1	63	60	65
United States	2001	2007	2013	2016			
	63.5	64.0	64.9	65.4	64	62	67
	Life expectancy at 65						
					Average		
Germany	2002	2007	2012	2017			
	19.6	20.7	21	21.2	21		
Spain	2002	2008	2011	2014			
	21.0	22.1	23	23.4	22		
United States	2001	2007	2013	2016			
	19.2	20.0	20.5	20.6	20		

Source: OECD Pensions at a Glance (http://oe.cd/pag)

Note: OECD estimates derived from the European and national labour force surveys. The average effective age of retirement is defined by OECD as the average age of exit from the labor force during a 5-year period. Our data source for life expectancy at age 65 is also from OECD, specifically from the yearly OECD Database. OECD (2021), "Life expectancy at 65" (indicator), https://doi.org/10.1787/0e9a3f00-en (accessed on 07 May 2021).

Table A2. Wealth levels and homeownership for the whole sample –all, women and men, aged 25-64 (2011 USD).

		Net Worth								Homeownership			
All		Overall		Women	Men	Women/	Women	Men	Women/	Overall	Women	Men	Women/
		median	mean	median	median	Men	mean	mean	Men				Men
Germany	2002	42,979	169,828	41,593	45,059	0.92	169,312	170,382	0.99	46.0	46.1	45.9	1.00
	2007	43,491	159,428	40,677	46,049	0.88	159,413	159,445	1.00	46.1	45.9	46.3	0.99
	2012	53,072	152,570	48,980	58,458	0.84	151,335	154,008	0.98	48.9	48.2	49.8	0.97
	2017	73,049	181,993	67,430	82,040	0.82	178,985	185,532	0.96	47.6	46.9	48.4	0.97
Spain	2002	157,973	226,305	137,171	168,851	0.81	182,030	244,274	0.75	76.6	73.6	77.8	0.95
	2008	236,326	317,766	212,392	254,929	0.83	277,929	355,278	0.78	80.4	77.3	83.3	0.93
	2011	184,542	261,522	165,714	201,858	0.82	234,077	281,869	0.83	80.6	79.2	81.5	0.97
	2014	124,819	208,371	109,806	136,572	0.80	185,388	227,607	0.81	77.7	72.9	81.6	0.89
United States	2001	87,401	228,322	86,016	88,367	0.97	228,706	227,920	1.00	71.1	70.9	71.3	1.00
	2007	101,869	238,830	101,544	102,216	0.99	240,907	236,671	1.02	71.4	72.1	70.7	1.02
	2013	52,286	178,368	53,397	51,330	1.04	178,996	177,731	1.01	66.8	68.5	65.2	1.05
	2016	61,575	188,352	63,356	59,106	1.07	189,871	186,865	1.02	65.1	66.1	64.1	1.03

Source: Luxembourg Wealth Study (LWS) Database

Table A3. Net worth regression results – all and single, women (employed only, pooled data).

Women	Germany		Spain		United States		Single women	Germany		Spain		United States	
	coef	se	coef	se	coef	se		coef	se	coef	se	coef	se
work_expl	0.254 *	0.008	0.180 *	0.016	0.118 *	0.011		0.265 *	0.016	0.191 *	0.023	0.174 *	0.026
work_exp^2	-0.003 *	0.000	-0.002 *	0.000	0.000	0.000		-0.002 *	0.000	-0.002 *	0.000	0.000	0.001
low	-1.739 *	0.089	0.000	0.135	-0.485 *	0.160		-0.827 *	0.165	-0.249	0.231	0.231	0.281
high	1.461 *	0.045	1.020 *	0.111	1.196 *	0.077		1.946 *	0.103	1.021 *	0.197	0.972 *	0.188
child	0.090 **	0.048	0.064	0.095	-0.537 *	0.069		-0.572 *	0.096	0.023	0.134	-1.053 *	0.173
married	3.732 *	0.047	1.478 *	0.092	4.670 *	0.089		0.230	1.180	0.604 *	0.223	1.512 *	0.645
prof	0.789 *	0.050	1.068 *	0.103	0.461 *	0.078		0.869 *	0.109	1.314 *	0.182	-0.046	0.185
blue	-1.464 *	0.074	-0.786 *	0.145	0.131	0.137		-1.808 *	0.147	-1.324 *	0.251	-0.221	0.281
miss_occ	-0.568 *	0.090						-1.478 *	0.187				
work_exp*wave2													
work_exp*wave3													
work_exp*wave4													
year indicators	Yes		Yes		Yes			Yes		Yes		Yes	
_cons	1.737 *	0.105	8.1418 *	0.218	5.147	0.151		0.394 **	0.194	8.092 *	0.306	4.539 *	0.320
N	22799		2592		7848			5507		1012		2099	
R^2	0.137		0.121		0.156			0.1245		0.1408		0.081	

Source: Luxembourg Wealth Study (LWS) Database

Notes:

* p < 0:1, ** p < 0:05, *** p < 0:01. Robust standard errors.

coef = coefficients; se = robust standard errors.

Imputation:

Years of total work experience in the U.S. survey is asked only of individuals who are currently employed. In order to include the U.S. in our regressions, we imputed work experience for non-employed individuals, using the following regression:

Work experience=β_0+β_1 age+β_2 ⟦age⟧^2+β_3 low education+β_4 high education+β_5 children+β_6 married+β_7 union+β_8 never_married, estimated for employed individuals.

There are multiple ways to approach this problem. We conclude that this method is sufficient in our case. Above, we tested the robustness of our results, by running our main regression among the currently employed. We find that the results are in line for those for the whole sample.

Table A4. Summary statistics – to accompany regression results (single women and men).

Women	Germany		Spain		United States	
	mean	sd	mean	sd	mean	sd
work_exp	18.06	11.04	20.76	11.27	20.12	10.69
low	0.12	0.33	0.41	0.49	0.11	0.31
high	0.27	0.44	0.32	0.47	0.41	0.49
child	0.53	0.50	0.50	0.50	0.43	0.50
married	0.00	0.02	0.02	0.12	0.01	0.10
miss_wexp	0.01	0.11	0.06	0.24	0.00	0.05
prof	0.37	0.48	0.28	0.45	0.34	0.47
blue	0.09	0.29	0.14	0.35	0.07	0.25
wave 1	0.16	0.37	0.22	0.41	0.21	0.41
wave 2	0.17	0.38	0.28	0.45	0.19	0.40
wave 3	0.36	0.48	0.24	0.43	0.30	0.46
wave 4	0.30	0.46	0.26	0.44	0.30	0.46

Men	Germany		Spain		United States	
	mean	sd	mean	sd	mean	sd
work_exp	19.76	11.67	25.28	11.39	22.21	11.69
low	0.09	0.28	0.41	0.49	0.10	0.30
high	0.32	0.47	0.30	0.46	0.45	0.50
child	0.11	0.31	0.14	0.35	0.14	0.34
married	0.00	0.05	0.02	0.15	0.01	0.10
miss_wexp	0.01	0.08	0.01	0.09	0.00	0.03
prof	0.36	0.48	0.31	0.46	0.35	0.48
blue	0.24	0.43	0.20	0.40	0.24	0.42
wave 1	0.23	0.42	0.19	0.39	0.19	0.39
wave 2	0.22	0.41	0.26	0.44	0.20	0.40
wave 3	0.27	0.44	0.25	0.43	0.30	0.46
wave 4	0.28	0.45	0.30	0.46	0.31	0.46

Source: Luxembourg Wealth Study (LWS) Database

Table A5. Net worth regression results (including covariates) – single women and men, aged 25-64.

Single Women	Germany				Spain				United States			
	coef		se	coef		se	coef		se	coef		se	coef		se
wexptl	0.241	*	0.011	0.228	*	0.014	0.069	*	0.018	0.029	***	0.018	0.137	*	0.024	0.157	*	0.026
wexp2	0.001	*	0.000	-0.001	*	0.000	0.000		0.000	0.000		0.000	0.001	**	0.001	0.001	**	0.001
low	-1.174	*	-0.110	-1.172	*	0.110	-0.282	*	0.166	-0.234		0.167	0.561	*	0.201	-0.563	*	0.201
high	1.801	*	0.091	1.802	*	0.091	1.315	*	0.159	1.293	*	0.157	1.220	*	0.163	1.219	*	0.163
child	0.602	*	0.080	-0.596	*	0.080	0.048		0.115	0.057		0.114	0.899	*	0.149	-0.896	*	0.149
married	0.505		1.011	0.479		1.002	0.160		0.419	-0.123		0.425	0.112		0.579	0.099		0.578
prof	1.698	*	0.090	1.691	*	0.091	0.878	*	0.135	0.822	*	0.135	0.387	*	0.166	0.376	**	0.166
blue	0.971	*	0.132	-0.978	*	0.132	1.629	*	0.215	-1.648	*	0.214	0.422		0.272	0.426		0.272
miss_occ	0.712	*	0.175	-0.716	*	0.175												
wexp*wave2				0.015		0.010				0.038	*	0.012				-0.030	***	0.018
wexp*wave3				0.017	**	0.009				0.039	*	0.014				-0.031	**	0.017
wexp*wave4				0.010		0.009				0.126	*	0.013				-0.026		0.017
year indicators	Yes			Yes			Yes			Yes			Yes			Yes		
_cons	0.161		0.139	0.380	*	0.190	9.862	*	0.222	10.740	*	0.216	4.150	*	0.295	3.734	*	0.371
N	7525			7525			1532			1532			2821			2821		
R^2	0.148			0.148			0.109			0.118			0.087			0.087		
Single Men	Germany				Spain				United States			
	coef		se	coef		se	coef		se	coef		se	coef		se	coef		se
wexptl	0.068	*	0.016	0.076	*	0.018	0.202	*	0.021	0.187	*	0.021	0.133	*	0.025	0.170	*	0.028
wexp2	0.002	*	0.000	0.002	*	0.000	-0.002	*	0.000	-0.003	*	0.000	0.001		0.001	0.000		0.001
low	-2.901	*	0.171	-2.872	*	0.171	-0.500	*	0.172	-0.501	*	0.174	-1.543	*	0.239	-1.544	*	0.240
high	2.335	*	0.122	2.344	*	0.121	1.418	*	0.154	1.403	*	0.154	0.133		0.175	0.128		0.175
child	0.475	*	0.165	0.477	*	0.165	0.065		0.178	0.056		0.178	0.444	**	0.208	0.400	***	0.208
married	2.516	*	0.597	2.433	*	0.600	-1.905	*	0.582	-1.911	*	0.581	-1.777	**	0.724	-1.790	**	0.731
prof	2.946	*	0.130	2.921	*	0.130	1.111	*	0.128	1.082	*	0.129	3.303	*	0.183	3.314	*	0.184
blue	1.293	*	0.135	1.273	*	0.135	-0.350	***	0.191	-0.355	***	0.192	0.731	*	0.194	0.734	*	0.194
miss_occ	-0.650	*	0.247	-0.635	*	0.247				0.000		(omitted)				0.000		(omittec
wexp*wave2				-0.051	*	0.013				0.042	*	0.015				-0.036	***	0.019
wexp*wave3				-0.045	*	0.012				0.026		0.017				-0.063	*	0.018
wexp*wave4				0.031	*	0.011				0.024		0.016				-0.017		0.018
year indicators																		
_cons																		
N	4416			4416			1010			1010			2014			2014		
R^2	0.1406			0.143			0.135			0.136			0.104			0.106		

Source: Luxembourg Wealth Study (LWS) Database

Notes:

* p < 0:1, ** p < 0:05, *** p < 0:01. Robust standard errors.

coef = coefficients; se = robust standard errors.

Work experience is imputed in the U.S.

Table A6. Net worth regression results (including covariates) – all women and men, aged 25-64.

Women	Germany				Spain				United States			
	coef		se	coef		se	coef		se	coef		se	coef		se
wexptl	0.254	*	0.006	0.234	*	0.007	0.084	*	0.011	0.046	*	0.011	0.179	*	0.010	0.169	*	0.010
wexp2	-0.003	*	0.000	-0.003	*	0.000	0.000		0.000	0.000		0.000	-0.001	*	0.000	-0.001	*	0.000
low	-2.228	*	0.063	-2.216	*	0.063	-0.225	**	0.091	-0.193	**	0.092	-1.164	*	0.109	-1.168	*	0.109
high	1.525	*	0.039	1.537	*	0.039	1.017	*	0.090	1.018	*	0.090	1.610	*	0.056	1.607	*	0.056
child	-0.223	*	0.040	-0.209	*	0.040	-0.049		0.073	-0.034		0.074	-0.309	*	0.055	-0.320	*	0.055
married	4.212	*	0.039	4.215	*	0.040	1.526	*	0.072	1.511	*	0.072	5.082	*	0.074	5.079	*	0.074
prof	0.925	*	0.040	0.915	*	0.041	0.671	*	0.081	0.648	*	0.080	-0.044		0.056	-0.040		0.056
blue	-1.193	*	0.068	-1.200	*	0.068	-1.161	*	0.120	-1.172	*	0.120	0.056		0.130	0.052		0.131
miss_occ	-0.398	*	0.084	-0.391	*	0.084												
wexp*wave2				-0.005		0.005				0.033	*	0.008				-0.003		0.007
wexp*wave3				0.036	*	0.005				0.038	*	0.008				0.023	*	0.007
wexp*wave4				0.028	*	0.004				0.078	*	0.009				0.029	*	0.007
year indicators	Yes			Yes			Yes			Yes			Yes			Yes		
_cons	1.839	*	0.075	2.153	*	0.094	9.909	*	0.137	10.566	*	0.140	4.089	*	0.135	4.335	*	0.158
N	32497			32497						4261			12109			12109		
R^2	0.152			0.153						0.092			0.191			0.191		

Men	Germany				Spain				United States			
	coef		se	coef		se	coef		se	coef		se	coef		se
wexptl	0.222	*	0.008	0.228	*	0.008	0.196	*	0.009	0.168	*	0.009	0.170	*	0.010	0.155	*	0.011
wexp2	-0.001	*	0.000	-0.001	*	0.000	-0.002	*	0.000	-0.002	*	0.000	-0.001	*	0.000	-0.001	*	0.000
low	-2.868	*	0.081	-2.873	*	0.081	-0.635	*	0.056	-0.579	*	0.056	-0.595	*	0.101	-0.600	*	0.101
high	2.099	*	0.044	2.096	*	0.044	0.911	*	0.047	0.915	*	0.047	1.125	*	0.063	1.128	*	0.063
child	0.272	*	0.045	0.280	*	0.045	0.077		0.053	0.114		0.054	-0.028		0.058	-0.043		0.058
married	1.957	*	0.054	1.961	*	0.054	1.096	*	0.072	1.050	*	0.072	2.381	*	0.071	2.375	*	0.071
prof	2.793	*	0.052	2.800	*	0.052	0.991	*	0.042	0.991	*	0.042	2.050	*	0.063	2.053	*	0.063
blue	0.497	*	0.057	0.502	*	0.057	0.053		0.063	0.015		0.063	0.286	*	0.078	0.280	*	0.078
miss_occ	-0.406	*	0.109	-0.404	*	0.109				0.000		(omitted)				0.000		(omitted)
wexp*wave2				-0.013	*	0.005				0.024	*	0.005				-0.006		0.006
wexp*wave3				0.008	***	0.005				0.039	*	0.005				0.013		0.007
wexp*wave4				-0.018	*	0.004				0.070	*	0.006				0.049	*	0.006
year indicators																		
_cons																		
N	27278			27878			7247			7247			59152			59152		
R^2	0.171			0.171			0.153			0.157			0.167			0.169		

Source: Luxembourg Wealth Study (LWS) Database

Notes:

* p < 0:1, ** p < 0:05, *** p < 0:01. Robust standard errors.

coef = coefficients; se = robust standard errors.

Work experience is imputed in the U.S.