
Article

Old and new welfare states retaining older workers in the face of crisis: the case of COVID-19 in Europe

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Abstract

The Coronavirus pandemic was a unique crisis in Europe as an unprecedented health and labour market shock barely disrupted long-term trends towards active ageing. We study the role of social policy responses and pre-existing welfare state institutions in moderating older workers' early exit following the crisis. Using a cross-nationally harmonized panel survey in Europe, we examine whether variations in national labour market policies and pension institutions explain older workers' exit outcomes following COVID-19, net of the economic shock and pre-pandemic employment levels. Results show that, across countries, the rollout of novel job retention schemes was consistently associated with the retention of older workers, whereas extended unemployment insurance likely had a limited influence. Higher retirement ages and greater reliance on private pensions were modestly associated with lower exit rates only among low-educated workers. Our findings confirm the significance of welfare states managing the crisis-driven economic shock and offer policy implications.

Key words: COVID-19; retirement; labour market policies; pensions; welfare state.

JEL classification: H55; J26; J65

1. Introduction

During economic recessions, older workers face an increased risk of retreating from the labour force, often leading to permanent retirement even during a subsequent recovery phase. Historically in European welfare states, institutions promoting early retirement, such as pre-retirement programmes, disability pensions, special unemployment benefits for older workers, and even private occupational

pensions, were developed during economic downturns as a socially peaceful means to prevent mass unemployment (Ebbinghaus 2006). For most older workers, such systems have offered alternative ‘pathways’ to permanent retirement before reaching the normal retirement age (Kohli et al., 1991). The trend of early retirement began to reverse in the late 1990s; thanks to major pension and labour market reforms across Europe aimed at promoting active ageing (Ebbinghaus and Hofäcker 2013; Hofäcker, Hess and König 2016). However, the Great Recession once again disrupted a long-term rise in old-age employment, although swift recoveries followed in the 2010s.

The Coronavirus pandemic posed even greater challenges for older workers than previous recessions, due to the augmented risk of fatal illness in addition to the labour market crisis. The pandemic could thus potentially halt or even overturn the decades-long trend towards active ageing in Europe. However, the pandemic impact on old-age employment seems to have been marginal and short-lived compared to those in previous recessions. Table 1 compares changes in employment rates of those aged 55 to 64 after the Great Recession and after the recent pandemic among countries that showed a downturn or stagnation in either of the two periods. Most countries, except for Sweden, the United Kingdom, Germany, and Italy, experienced much greater disruptions following the Great Recession, whereas the pandemic resulted in, if any, only trivial declines in employment rates. Overall, old-age employment in Europe reached the pre-pandemic level already by mid-2021 (Ando et al., 2022), which was a stark contrast to the case of the United States, where older workers had not fully returned to the labour market until early 2022 (Goda et al., 2023).

Table 1. Changes in employment rates, age 55–64, after Great Recession and COVID-19 Pandemic.

Country	2007	Lowest 2008–12	Diff	2019	Lowest 2020–22	Diff
Nordic						
Denmark	58.9	54.7	−4.2	71.3	71.4	0.1
Sweden	70.0	70.0	0	77.7	76.9	−0.8
Liberal						
United Kingdom	57.4	56.7	−0.7	66.3	64.8	−1.5
Ireland	53.8	49.3	−4.5	61.8	61.8	0
Central						
Switzerland	67.2	66.2	−1	73.0	72.3	−0.7
Germany	51.3	53.7	2.4	72.7	71.7	−1
France	38.2	38.2	0	53.1	53.8	0.7
Southern						
Italy	33.7	34.3	0.6	54.3	53.4	−0.9
Malta	29.5	29.1	−0.4	50.1	51	0.9
Spain	44.5	43.5	−1	53.8	54.7	0.9
Portugal	51.0	46.5	−4.5	60.4	60.4	0
Greece	42.7	36.5	−6.2	43.2	44.6	1.4
Eastern						
Hungary	32.2	30.9	−1.3	56.7	59.6	2.9
Romania	41.4	39.9	−1.5	47.8	43.8	−4
Slovenia	33.5	31.2	−2.3	48.6	50.5	1.9
Baltic						
Estonia	59.9	53.8	−6.1	71.9	71.3	−0.6
Latvia	58.0	47.8	−10.2	67.3	67.8	0.5
Lithuania	53.2	48.3	−4.9	68.4	67.6	−0.8

Source: Eurostat Database. Data for United Kingdom are from the OECD.

The fast recovery across European labour markets has been mainly attributed to an immediate and widespread adoption of job retention schemes (Ando et al., 2022; Müller, Schulten, and Drahoukoupil 2022). Nevertheless, the extent of initial economic shocks and fiscal responses to address them varied significantly across countries, depending on the intensity of virus containment measures (Capano et al., 2020; Hale et al., 2021) and social policy strategies to protect workers and support businesses (Béland et al., 2021; Ebbinghaus and Lehner 2022). Moreover, studies evaluating employment and job loss outcomes during COVID-19 have shown that the shock affected workers heterogeneously depending on their socio-economic status (SES): those unable to work from home or in non-standard contracts, mostly low-educated and female workers, were particularly more affected than others (Adams-Prassl et al., 2020; Cortes and Forsythe 2023). Given that inequalities have already existed in late working lives by social class and gender (Radl 2013; Riekhoff and Kuitto 2022), concerns are raised that the COVID-19 crisis could exacerbate pre-existing inequalities among older workers in Europe.

The unexpectedly modest disruptions in old-age employment rates, despite severe labour market disruptions and their variation across European countries (see Figure S1, online supplementary data), require institutional explanations—those related to policy responses in the labour market and existing welfare state institutions. Similarly, the unequal nature of the pandemic offers a unique test case to examine the welfare state as a crisis management tool, since the primary goal of social policy is to protect the most disadvantaged groups from social risks.

Against this backdrop, we study how social policy responses as well as existing pension systems moderated older workers' exit from work across Europe following the COVID-19 pandemic. We assess the role of novel job retention schemes, the core policy innovation introduced in the wake of the pandemic, which we label as the 'new' welfare state. We also analyze the significance of extended unemployment insurance and pension systems associated with early or late retirement—conventional ('old') welfare states that are known to have influenced older workers' retirement patterns in the face of previous economic recessions (Duval 2003; O'Brien 2010).

The study design mainly exploits cross-national variations in labour market policies and pension institutions to explore how older workers' exit outcomes in the final stage of and after the pandemic were related to country-specific institutional features. Using a cross-nationally harmonized panel survey of older Europeans combined with macro-level economic and institutional indicators, the study employs a set of macro-regressions and multilevel models to estimate the marginal associations between older workers' medium-term exit rates and relevant institutional factors, controlling for the degree of the exogenous shock and pre-pandemic levels of active ageing across countries. We also examine how these relationships differ by older workers' level of education, as the exposure to labour market shocks as well as the policy effects tend to vary across individuals in different SES groups.

Results show that the rollout of job retention schemes in 2020 was systematically related to the retention of older workers after the pandemic, whereas extended unemployment insurance likely had a limited influence. The effect of job retention schemes was particularly stronger for lower-educated workers and was robust across multiple analytical approaches and sensitivity checks. Pension systems with higher retirement ages and greater reliance on private pensions were also modestly linked with lower exit rates, but those effects were less robust and limited to lower-educated workers.

Our contributions to the literature are threefold. First, we contribute to the longstanding literature on comparative retirement systems, mainly studied in public economics, macro-sociology, and comparative political economy. While economic studies focus on social security programmes imposing 'implicit taxes' on individuals working additional years in old age by proposing dynamic labour supply models (Stock and Wise 1990; Gruber and Wise 1998; Börsch-Supan, 2000; Duval, 2003; Gruber and Wise 2004; Blundell et al., 2016; Börsch-Supan et al., 2021; Geyer and Welteke 2021),

sociological and political approaches emphasize structural constraints on older workers and their interactions with welfare states that facilitate socially peaceful early departures from the labour force (Walker 1981; Kohli et al., 1991; Guillemard and Rein 1993; Ebbinghaus 2006). More recent studies also highlight the role of workplace organizations and their practices as significant moderators of macro-structural and institutional factors (Mertens and Romeu-Gordo 2023; Qvist 2023). We advance this line of literature by demonstrating that ad-hoc policy responses and existing welfare states play a crucial role in shaping early exit outcomes against a common shock across countries.

Our second contribution is to the studies of the social stratification of retirement transition (Turek and Henkens 2023). These studies find that retirement timing and processes are stratified by gender, level of education, and occupational class (Fasang 2010; Radl 2013; Riekhoff and Kuitto 2022), while their social gradients are also related to macro-structural and institutional factors (Mäcken et al., 2022). Our study adds to these findings by exploring educational differences in early exit patterns during the most recent economic crisis and whether the differences are moderated by institutional conditions.

Finally, the study advances the understanding of welfare states as a crisis management tool by providing an empirical investigation on the effectiveness of social policy responses to the pandemic (Béland et al., 2021; Moreira and Hick 2021). Previous studies have established distinct purposes and functions of two policy approaches to tackling the labour market crisis: protecting jobs (job retention schemes) versus supporting income against job losses (unemployment insurance) (Birinci et al., 2021; Ebbinghaus and Lehner 2022; Giupponi et al., 2022). Building on their theoretical models and discussions, our findings show that job retention schemes did prevent older workers' exit from work whereas extended unemployment benefits at best had a limited effect on facilitating exit, suggesting the former is generally preferred while the latter can be used in a complementary manner.

2. Background and framework

2.1 Institutional framework to understand early retirement patterns across countries

To understand cross-national variations in early retirement and its reversals, comparative institutional studies have developed a framework identifying push, pull, and retention factors (Ebbinghaus and Hofäcker 2013; Hofäcker, Hess and König 2016). *Push* factors are institutional features and structural constraints that undermine the demand for older workers, including economic recessions and seniority-related wage systems or employment protections. Conversely, *pull* factors mainly consist of public welfare benefits, such as early retirement pensions, special unemployment programmes, and disability pensions for older workers that offer financial pathways to exit the labour market earlier than the normal retirement age. Finally, *retention* factors involve labour market policies aimed at activating the older labour force, primarily through training and matching programmes for older job seekers and wage subsidies for hiring older workers.

The COVID-19 pandemic was a common shock across Europe, intensifying structural constraints that *push* older workers out of work through the dual risk of fatal illness and unemployment, albeit the extent of the shock varied across countries. However, the patterns of exit from work among older workers and its social gradients during the crisis are unlikely to unfold uniformly across countries, not least due to the variation in the intensity of the shock but also to its interactions with ad-hoc policy responses and established welfare state institutions. Therefore, the cross-country patterns of early exit during the pandemic should be understood as an outcome of the interplay between the demand-side shocks and institutions moderating them.

2.2 Protecting jobs versus income: policy responses to the labour market crisis

As the pandemic broke out in early 2020, European welfare states reacted to the crisis immediately with strong fiscal expansions on a much larger scale than those during the Great Recession. A striking feature in the domain of labour market policy was a massive rollout of job retention schemes (JRSs) in nearly all European countries, including those in Southern and Eastern Europe. Inspired by the success story of short-time work during the Great Recession and facilitated by the EU's temporary Support to mitigate Unemployment Risks in an Emergency (SURE) programme, governments swiftly introduced novel wage subsidies and furlough schemes or expanded existing short-time work policies (Ebbinghaus and Lehner 2022; Müller, Schulten, and Drahokoupil 2022). Countries also expanded existing unemployment insurance (UI) schemes to support income for workers against the risk of job loss. Temporary UI measures included increasing benefit durations, relaxing eligibility requirements to cover non-standard workers and the self-employed, raising benefit levels, and providing additional lump-sum payments for low-wage workers (Moreira and Hick 2021).

JRSs and UI share the aim of insuring workers against the risk of severe income losses during economic recessions and thereby function as automatic stabilizers, but they do so through different instruments: the former protects jobs by supporting firms' payroll conditional to preserving the existing employment relationships, whereas the latter transfers benefits to individuals who lost their job while seeking new work. Therefore, JRSs are more effective in preventing unemployment from skyrocketing, as seen in the robust inverse relationship between the take-up rates of JRSs and unemployment rates across countries during the first year of the pandemic (Ebbinghaus and Lehner 2022; Giupponi et al., 2022). On the other hand, generous UI payments tend to keep the level of unemployment high during crises by affecting the reservation wage of job seekers, leading to entrenched long-term unemployment (Boeri and Ours 2013).

JRSs are generally preferred over UI benefits as a crisis management strategy because they facilitate a swift return of workers without incurring training costs and frictions in job matching when the demand begins to rebound (Birinci et al., 2021; Giupponi et al., 2022). However, the conceptual distinction between the two approaches is not always clear-cut. Beyond maintaining existing employment contracts, the conditionality of JRSs varies hugely from partial or full reductions in working hours to pure wage subsidies without any requirement for working-time reductions. Short-time work with full reductions in working hours or temporary layoff subsidies, also known as furlough schemes, are not clearly distinguished from partial unemployment benefits. In practice, many countries implemented short-time work schemes as part of existing UI systems (Müller, Schulten, and Drahokoupil 2022).

The two policy tools are also complementary to each other, as the rollout of JRSs tends to limit the upsurge of (more expensive) UI expenditures, and UI benefits can protect workers who are not covered by JRSs (Birinci et al., 2021; Giupponi et al., 2022). While most European governments during the pandemic utilized combinations of both, their relative importance within the fiscal packages appeared different across countries: Continental and Southern European countries and the United Kingdom adopted JRSs as their main strategy, whereas Nordic countries relied more on conventional UI tools (Ebbinghaus and Lehner 2022). Our hypotheses are based on the idea that these policy variations could lead to different exit outcomes among older workers in the subsequent recovery phase.

We hypothesize that a greater scale of JRS utilization contributed to limiting older workers' exit from work during and after the pandemic (Hypothesis 1-1). This is because the requirement to preserve employment relationships can function as a *retention* factor against the labour market crisis. JRSs also tend to prefer labour market insiders who are in stable employment relationships (Giupponi et al., 2022), which is often the case for older workers in firms. Nevertheless, the

socioeconomic gradient in the JRS effect is less straightforward, since low-SES workers were more likely to experience initial job losses and thus were less likely to be covered by JRSs (Hypothesis 1-2a). On the other hand, low-productivity firms that hire more low-SES workers could benefit more from JRSs than high-productivity firms, especially when the schemes are generous (Hypothesis 1-2b).

Contrary to JRSs, expanding UI policies in the face of economic crises often means providing extra incentives to firms for discharging redundant workers, as seen in the explicit case of Finland during the pandemic (Greve et al., 2021). Generous UI benefits are also strongly associated with longer unemployment spells (Giupponi et al., 2022). For older workers, UI benefits are provided longer than for other age groups in many countries, and longer unemployment spells significantly reduce their chances of re-employment, often leading to permanent retirement (Heisig and Radl 2017). Therefore, a greater emphasis on UI policies in response to the pandemic should increase the incidence of older workers' exit from work (Hypothesis 2-1). Low-SES workers are likely to be affected more strongly by these policies due to their higher risk of job loss in the early pandemic (Hypothesis 2-2).

2.3 Role of pension institutions as pull factors

In addition to ad-hoc social policies to mitigate the initial shock, existing welfare state institutions can also play a significant role in moderating the crisis. Studies across social sciences have identified national pension systems as one of the most prominent institutional determinants shaping the extent and timing of older workers' exit from work (Gruber and Wise 1998; Ebbinghaus 2006; Blundell et al., 2016; Hofäcker, Hess and König 2016; Börsch-Supan et al., 2021). Among relevant components of pension systems, eligibility rules allowing pension receipts prior to the standard pension age create direct incentives for early retirement. Though countries have recently imposed more restrictions on receiving early pensions, such as increasing financial penalties and raising the early retirement age, the availability of these options can still provide exit incentives when facing labour market crises. Therefore, lower early pension ages are likely to be associated with higher exit rates following the pandemic, net of pre-existing activation levels (Hypothesis 3-1). This association could be greater for lower-educated groups, not only because they were affected by the crisis but also because in many countries, early pension schemes are more generous for older workers in low-skilled occupations (Hypothesis 3-2).

The overall generosity of public pension benefits could similarly function as a pull factor for early exit, even though average benefit levels are mostly applied to retirees above the standard pension age—most commonly 65 or even higher in some countries. Generous and guaranteed future pension income in defined-benefit systems may incentivize older workers to retire early, especially in hard times like the COVID-19 pandemic. This may be more of a case for individuals who can afford their living through private wealth or who can rely on social programmes until they reach the normal pension age. Generous benefit levels of public pensions could thus be related to higher exit rates (Hypothesis 4-1). The educational gradient in this case could be ambiguous, as lower-SES workers tend to have smaller accrued private wealth to afford pre-pension-age retirement (Hypothesis 4-2a), but also more likely to be eligible for pre-retirement programmes (Hypothesis 4-2b).

Pull factors linked with public pensions could be less salient in systems where private occupational or individual pension schemes prevail. As most private schemes nowadays are defined contribution plans, older workers can gain much higher pension income from additional years of employment than they would have under public systems. Moreover, as pension wealth accruals are heavily influenced by financial market fluctuations, economic crises could force older workers to postpone their planned retirement, as observed during the Great Recession (Goda et al., 2011; McFall 2011). Therefore, pension systems' greater reliance on private pension schemes may incentivize older workers to immediately

return to work in the subsequent recovery, resulting in lower exit rates (Hypothesis 5-1). However, a notable phenomenon during the pandemic was that the initial stock market crash recovered swiftly and transformed into a boom within a year of the outbreak. Among high-SES older workers with sufficient wealth accruals, private pensions could offer a financial route to early retirement, provided that the health risk was present. We thus expect the negative relationship between the scale of private pensions and exit rates would be less evident among high-SES workers (Hypothesis 5-2).

3. Data and methods

3.1 Individual-level data and variables

We mainly use the ninth regular wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) and the SHARE Corona Survey. SHARE is a cross-nationally harmonized panel survey targeted at individuals aged 50 or over in Europe that contains data on respondents' labour market activities and socio-demographic characteristics. The SHARE Corona Survey is particularly useful for our study because its questionnaire was specially developed for surveying older people's socio-economic and health situations during the COVID-19 pandemic. Unlike regular waves that are collected through face-to-face interviews, the SHARE Corona Survey was conducted through computer-assisted telephone interviews as in-person fieldwork was suspended (SHARE-ERIC 2024).

The SHARE Corona Survey consists of two rounds, but our analysis mainly draws on its second round (SCS 2) and the regular Wave 9, which were carried out between June and August 2021 and between October 2021 and September 2022, respectively. The SCS 2 data were collected during the period when the pandemic was reaching its end, and JRSs were being phased out unless made permanent (Drahokoupil and Müller 2021). Wave 9 can be considered as the beginning of the post-pandemic era, as economic activity and labour market performance in Europe had largely recovered to pre-pandemic levels by late 2021 (Ando et al., 2022). Consequently, the two surveys are within an appropriate time frame to capture older workers' exit patterns at the end of and after the crisis.

We also utilize the first round of the SHARE Corona Survey (SCS 1) to identify pre-pandemic employment statuses based on a retrospective question: 'At the time when Corona broke out, were you employed or self-employed, including working for family business?' This is mainly to limit our sample to respondents who were employed at the time of the COVID-19 outbreak. Similarly, the regular Waves 7 and 8 were partly exploited to impute missing information on respondents' level of education in SCS 2. Among twenty-nine countries included in SHARE—twenty-seven EU nations plus Israel and Switzerland—Cyprus, Ireland, and Israel were excluded due to data limitations. For Israel and Cyprus, comparable macro-level variables (introduced in the following section) were not available, while Ireland did not participate in SCS 1 and 2. The final sample was restricted to individuals born between 1958 and 1969—those aged 51 to 62 in 2020 and 53 to 64 in 2022.

Our two dependent variables measuring exit patterns are *labour market exit* and *employment exit*. Both are binary variables that indicate whether the respondent was out of the labour force (*labour market exit*) or simply not employed (*employment exit*) at the time of the two interviews. Since the analytical sample only includes individuals who were employed at the beginning of the pandemic, the former captures those who made a transition from employment in February or March 2020 to one of the inactivity statuses including retired, permanently sick or disabled, homemaker and the 'other' category, during or after the pandemic. *Employment exit* counts unemployed individuals, along with all those classified as inactive, as exit cases. These variables respectively represent intensive (*labour market exit*) and extensive (*employment exit*) margins to capture older workers' exit outcomes.

We use both outcome measures due to conceptual and practical ambiguities of labour force statuses in old age. Among individuals approaching age 65, inactivity statuses other than retirement often constitute transitory states preceding eventual retirement, as few inactive older adults later return to the labour market. Similarly, unemployment in old age is associated with a higher risk of labour force exit (Marmora and Ritter 2015; Heisig and Radl 2017), albeit returns to work are more common among the unemployed than those inactive. Furthermore, the pandemic blurred the distinction between employment and unemployment. Many employees enrolled in job retention programmes worked zero hours while formally maintaining their contracts at least for some period. As the SHARE survey relies on self-reported job situations, these practically similar ‘furloughed’ experiences may have been recorded as either employment or unemployment, depending on respondents’ perceptions and their interpretation of policy terminology. We therefore test our hypotheses using the two measures, one including and the other excluding unemployment.

The main explanatory variable representing one’s SES is the level of *education*, an ordinal variable with three levels: low, mid and high. The categories are based on the International Standard Classification of Education (ISCED) to ensure cross-national comparability, where ISCED 0-2 was coded as low-educated, ISCED 3-4 as mid-educated and ISCED 5 or above as high-educated. For respondents with missing ISCED information, we used years of education to impute the categories: below 11 years was classified as low, 11 to 15 years as mid and 16 years or above as high. We consider education as a relevant proxy for skill level and occupational class, given that the occupation variable in the survey includes substantial missing values (about 60 per cent). Other individual-level predictors are *gender*, *cohort*, and household size (*HHsize*), all coded as categorical variables for compositional controls. The full list of individual-level variables, their categories and sample characteristics are summarized in Table S1 (online supplementary data).

3.2 Country-level data and variables

To test our hypotheses on the role of welfare state institutions, we use five main institutional variables along with two economic indicators at the country level. The first is the government expenditure on JRSs in 2020 (*JRS Spending*). *JRS Spending* adds up all expenditures on short-time work benefits, furlough schemes and wage subsidies from March to December 2020, extracted from country reports provided by Drahokoupil and Müller (2021). The total expenditures were divided by the nominal GDP of 2019 to adjust for the pre-pandemic size of the economy. As the aggregate expenditure is the product of benefit generosity, the period of rollout, eligibility, and take-up rates, *JRS Spending* effectively captures the relative scale of JRS rollouts throughout 2020 across countries with dissimilar policy designs. A missing observation for Hungary’s spending was imputed using alternative data provided by the European Social Policy Network (Baptista et al., 2021).

The second variable is the government expenditure on unemployment benefits in 2020, divided by the nominal GDP of 2019 (*UI Spending*). The UI expenditure data are drawn from the Eurostat database, but we subtracted expenditures on partial unemployment benefits from the aggregate expenditure because partial unemployment policies mostly overlap with JRSs (Eurostat 2022). *UI Spending* therefore includes full-time unemployment benefits plus lump-sum payments and early retirement benefits for unemployment reasons.

The third variable is the earliest age eligible to withdraw national pension benefits in 2021 (*Retirement Age*). In some countries, this is identical to the standard pension age, while in most countries pension benefits can be accessed earlier with a reduced rate. Since retirement ages are lower for women in several countries, we use gender-specific retirement ages in models fitted to male- or female-specific samples. In full-sample models, gender-averaged values are used instead. The data are mostly

drawn from the OECD's pensions at a glance (OECD 2021), complemented by descriptions from the EU Social Security Coordination (European Commission 2024).

Average benefit levels in public old-age pensions are captured using the net pension replacement rate in 2020 (*Pension RR*). This measure is based on the standard yearly net pension income received by the average production worker living in a single-person household. The indicator was drawn from the Social Insurance Entitlements Dataset, part of the Social Policy Indicator database (Nelson et al., 2020).

Finally, we use the OECD's private pension spending (*Private PS*) that measures total expenditure on retirement income from all private pension plans in 2019 as a percentage of GDP (OECD 2021). The variable is widely used as a proxy for the relative scale of private pension schemes within a country. As a few countries (i.e., Denmark, Switzerland, and the Netherlands) show exceptionally high levels of private pension spending compared to most others, we take the natural logarithm of this measure to prevent these outliers from affecting the results disproportionately.

Our macro-level control variables include the *GDP growth* rate in 2020 (*GDP Growth*) and the pre-pandemic employment rate (*Base Employment*) of the cohort born between 1956 and 1967. The former captures the degree of the economic shock in the first year of the pandemic that varied considerably across countries. We do not control the unemployment rate because it does not adequately reflect the exogenous shock, given the widespread use of JRSs. *Base Employment* was computed from the same retrospective question in SCS 1 on employment status at the onset of the pandemic. The selection of the birth cohort on average two years older than our main sample effectively makes this indicator a good predictor of exit rates in the following two years. This variable accounts for the baseline level of activation in old age, which typically reflects pre-existing institutions and norms regarding early or late retirement. Controlling this helps ensure that our main explanatory variables capture value-added effects during the pandemic. For models estimated separately for women and men, gender-specific employment rates were used.

For robustness checks, we additionally control the COVID-19 Stringency Index (*Stringency*) and the cumulative COVID-19 death rate (*Covid Death*), as *GDP Growth* may not fully capture all aspects of the exogenous shock. The Stringency Index is a composite measure encapsulating non-pharmaceutical containment policies across nine domains (Hale et al., 2021). Given that the index had evolved over time, we take country-specific averages for the first 12 months from March 2020 in our cross-sectional models. *Covid Death* counts the number of cumulative confirmed COVID-19 deaths per 100 million people up to 1 March 2021, obtained from Our World in Data (Mathieu et al., 2020). The complete dataset of country-level variables is presented in Tables S2 and S3 (online supplementary data).

3.3 Analytical strategy

We begin with a simple descriptive analysis to illustrate the bivariate correlations between the country-level exit rate and the five institutional variables of interest. We derive the aggregate exit rate based on *Employment Exit* because short-term effects of labour market policies are more likely to appear on the extensive margin of exiting work. However, as exit rates depend strongly on pre-pandemic activation levels and are influenced by the magnitude of the economic shock, we use residuals from an ordinary least squares (OLS) regression of the exit rate on *GDP Growth* and *Base Employment*, rather than the raw rates. This approach would effectively capture exit rates net of the two controls. We then compute education-specific exit rates within each country and estimate OLS regressions to examine the partial relationships between disaggregated exit rates and each explanatory variable, conditional on *GDP Growth* and *Base Employment*.

For a more conservative estimation, we run a set of multilevel linear regressions that include individual- and country-level fixed effects along with country-specific random effects. Given that our country-level policy indicators are cross-sectional, all models are estimated cross-sectionally within each wave, although the panel structure of SHARE was utilized for sample selection. To mitigate concerns about overparameterization in complex models with only twenty-six country-level observations, we construct separate specifications for labour market policies (*JRS Spending* and *UI Spending*) and for pension institutions (*Retirement Age*, *Pension RR* and *Private PS*).

The baseline models therefore include either the two labour market policy variables or the three pension variables, together with *GDP Growth* and *Base Employment* as controls, alongside four individual-level predictors. To assess whether institutional effects differ by SES, we introduce cross-level interaction terms between the institutional variable of interest and education levels. Both the baseline and interaction models are estimated for the two dependent variables (*labour market exit* and *employment exit*) using both SCS 2 and Wave 9 datasets to examine whether these effects persist over two distinct time periods.

All models contain random intercepts and slopes for all four individual-level predictors because assuming invariant individual-level effects across countries is prone to producing imprecise estimates for country-level effects (Heisig, Schaeffer and Giesecke 2017). Moreover, failure to include random slopes when testing cross-level interactions could severely underestimate standard errors, resulting in an overly optimistic inference (Heisig and Schaeffer 2019). Finally, our approach adopts linear probability models that employ restricted maximum-likelihood estimation combined with Satterthwaite's (1946) method for approximating the degrees of freedom. These methods enable a robust inference against concerns over the small level-2 sample size of 26 (Bryan and Jenkins 2016; Elff et al., 2021). Sampling weights are cross-sectional within each wave and are adjusted to assume equal population sizes across all countries so that institutional effects are not driven by countries with large populations.

For supplementary analysis, we estimate baseline models fitted separately to male- and female-only samples as the same institutional factor may influence exit patterns differently between women and men. Moreover, we check results without country-level variables to explore average socioeconomic differences across twenty-six countries in older workers' *employment exit*. As robustness checks, we add two country-level variables (*Stringency* and *Covid Death*) to all models to additionally control exogenous shocks during the initial crisis. Due to concerns over low degrees of freedom at the country level, we include only one institutional variable in each model along with these controls. Finally, we use the peak JRS take-up rate in 2020 (*JRS Take-up*) and logged pension fund assets in 2019 as a percentage of GDP (*Pension Fund*) as alternative measures for *JRS Spending* and *Private Pension Spending*, respectively.

4. Results

4.1 Macro-level descriptive findings

Table 2 presents simple bivariate correlations among all country-level variables used in the main analysis. Both *JRS Spending* and *UI Spending* show significant negative correlations with *GDP Growth*, indicating that countries with greater economic shocks in 2020 spent more budgets on labour market policies. However, there is no meaningful correlation between *JRS Spending* and *UI Spending*, suggesting that the two policy tools are neither complementary nor in a trade-off. A weak but negative correlation between *JRS Spending* and *Base Employment* reflects the fact that countries in Southern and Eastern Europe—those with typically low levels of old-age employment—were

Table 2. Pearson's correlations between macro-level predictors.

	JRS spending	UI spending	Retirement age	Pension RR	Private PS	Base Employment	GDP Growth
JRS spending	1.0						
UI spending	0.165	1.0					
Retirement age	0.047	0.292	1.0				
Pension RR	0.334 ⁺	0.199	0.118	1.0			
Private PS	0.203	0.254	0.611 ^{***}	0.021	1.0		
Base Employment	-0.318	0.035	0.482 [*]	-0.424 [*]	0.628 ^{***}	1.0	
GDP Growth	-0.588 ^{**}	-0.375 ⁺	0.026	-0.446 [*]	-0.080	0.478 ^{**}	1.0

Notes: ⁺ $P < .1$, ^{*} $P < .05$, ^{**} $P < .01$, ^{***} $P < .001$. Logged values are used for private PS.

heavily affected by the crisis (see the cross-country distribution of *GDP Growth* in Figure S1, online supplementary data).

Among the pension-system indicators, all three variables are highly correlated with *Base Employment*. Moreover, a notable correlation is present between *Retirement Age* and *Private Pension Spending*, indicating that countries with larger private pension schemes tend to have higher early pension ages in the public system. While these correlations confirm that the pre-pandemic employment rate is a reasonable proxy for a country's baseline institutions of early or late retirement, they also raise concerns about multicollinearity, as including these variables in the same model would undermine the precision of our estimates. Nevertheless, we do not find any significant relationship between the generosity of public pensions (*Pension RR*) and the other two pension indicators. There is instead an unexpected positive correlation between *Pension RR* and *JRS Spending*, which also warrants caution when interpreting subsequent results from regression analyses.

Figure 1 presents the bivariate correlations between the residualized exit rate and *JRS Spending* (1A and 1B) or *UI Spending* (1C and 1D). In all four plots, the Y-axis is residuals from an OLS regression of the country-level exit rate on *GDP Growth* and *Base Employment* (See Figure A2 [online supplementary data] for raw exit rates in each country disaggregated by unemployment and inactivity). Figure 1A shows that *JRS Spending* in 2020 has a strong negative association with exit rates across countries in mid-2021. The negative association was maintained but became weaker in the later period (Fig. 1B). In Fig. 1C, *UI Spending* also displays an unexpected negative correlation with the residualized exit rate in mid-2021, although it was less significant. The correlation disappears in Fig. 1D based on Wave 9.

Similarly, Fig. 2 illustrates the correlations between the residualized exit rate and the pension indicators—the earliest retirement age (2A and 2B), the net pension replacement rate (2C and 2D) and private pension spending (2E and 2F). A negative and significant correlation is observed only in Fig. 2A, between *Retirement Age* and the exit rate, consistent with Hypothesis 3-1. The relationship persists but is no longer statistically significant in the post-pandemic period (Fig. 2B). Negative and non-significant associations are also found in Figs. 2C (*Pension RR*) and 2E (*Private PS*), with the former contradicting our anticipation. However, both patterns disappear entirely in the later period (Figs. 2D and F).

Table 3 presents the main coefficients from forty cross-country regressions, where the aggregate or education-specific exit rates are regressed on each policy indicator while controlling for *GDP Growth* and *Base Employment*. The results for aggregate exit rates align strongly with those seen in Figs. 1 and 2: all five

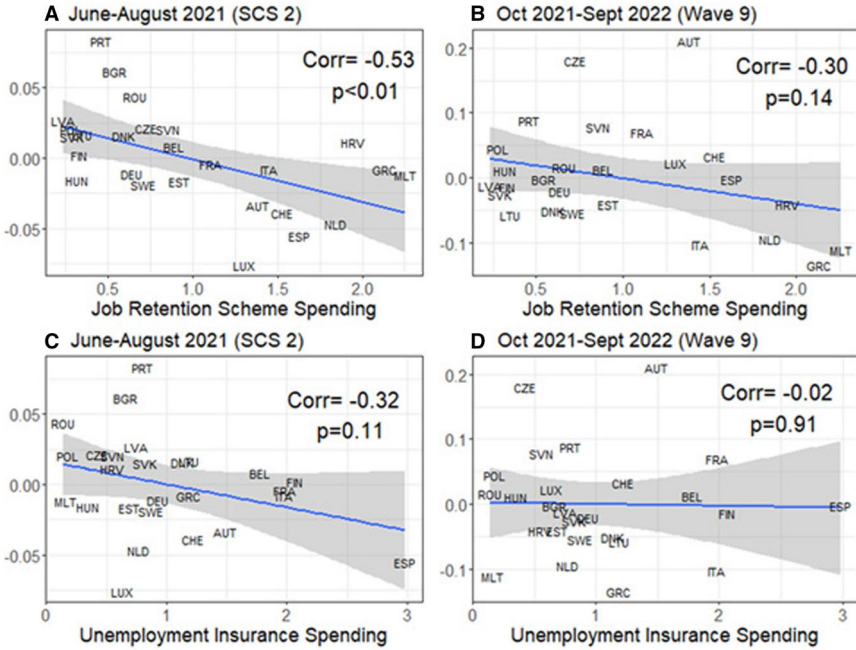


Figure 1. Correlations between labour market policies and residualized exit rates.
 Note: Y-axis indicates residuals from an OLS regression of the country-level exit rate on *GDP Growth* and *Base Employment*.

indicators are negatively associated with the exit rate in mid-2021, while in the later period the relationship was maintained only for *JRS Spending*. However, the coefficients regarding education-specific exit rates mostly do not support our hypotheses, except for those for *JRS Spending*. The coefficient of *JRS Spending* was the largest among low-educated workers and close to zero among high-educated workers. On the other hand, *UI spending* is significantly related to higher exit rates in both periods but only for the mid-educated group. Education-specific exit rates are not significantly associated with the three pension variables, except for an unexpected positive association between *Retirement Age* and the exit rate of high-educated workers.

4.2 Multilevel regression results

Figure 3 displays the marginal effects of labour market policies (*JRS Spending* and *UI Spending*) on the probabilities of *labour market exit* and *employment exit* by mid-2021 and by late 2021 to 2022, holding the level of economic shocks (*GDP Growth*) and pre-existing employment patterns (*Base Employment*) constant. The coefficient plots illustrate multilevel linear regression results presented in Tables S4 and S5 (online supplementary data).

Overall, Hypothesis 1-1 is supported by results from the SCS 2 data but to a lesser extent by those from Wave 9. The baseline estimates for the marginal effect of *JRS Spending* are negative and statistically significant for both exit outcomes in the left-hand-side panel. Higher *JRS Spending* by one percentage point across countries was associated with lower rates of *labour market exit* and *employment exit* by 2.0 and 3.5 percentage points, respectively. While the average effect was no longer significant in the later period, the education-specific effects showed similar patterns in the two periods. The

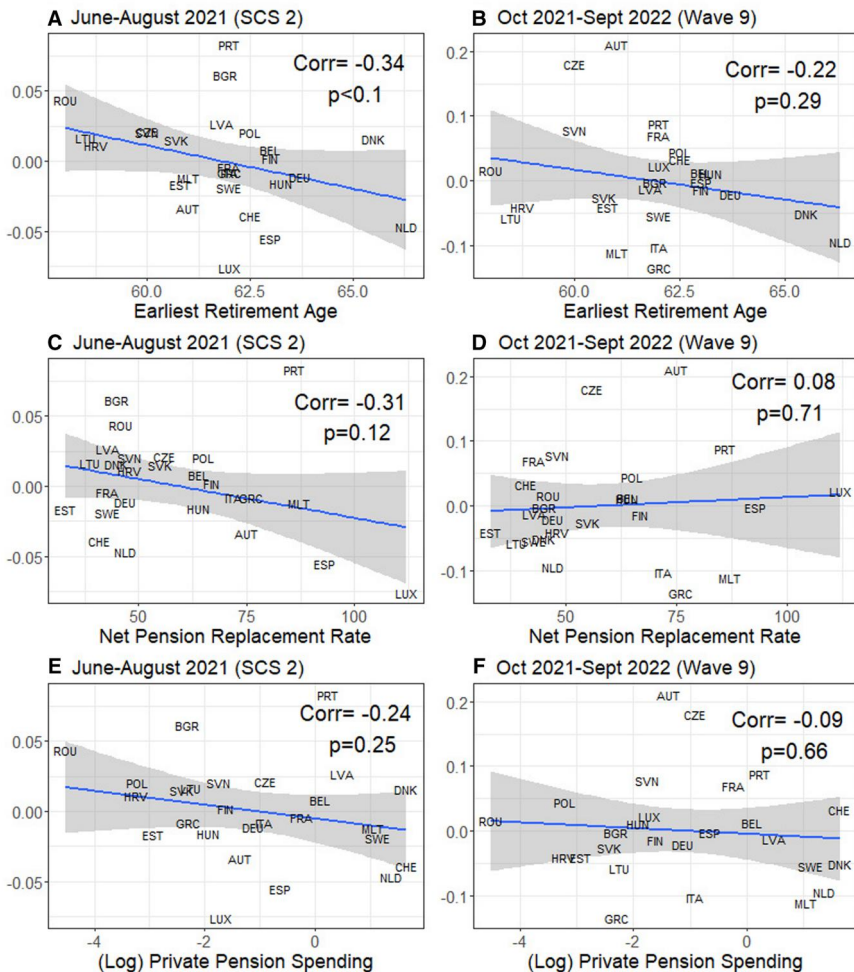


Figure 2. Correlations between pension institutions and residualized exit rates.

Note: Y-axis indicates residuals from an OLS regression of the country-level exit rate on *GDP Growth* and *Base Employment*.

estimated effects are the largest for the low-educated group, whereas the effects seem non-existent for the high-educated. For the mid-educated group, the negative coefficients are significant only in mid-2021. The educational gradients therefore support Hypothesis 1-2b, suggesting that low-SES workers were more likely to benefit from JRSs than higher-SES groups.

On the other hand, none of the baseline and interaction models shows significant effects for *UI Spending* in either of the two periods, implying that the significant coefficients seen in Table 3 may be attributable to unobserved confounders. A notable pattern found across the two periods is the negative associations between the exit rates of low-educated workers and *UI Spending*, which are at borderline statistical significance. However, these findings contradict Hypotheses 2-1 and 2-2, anticipating a positive association.

Table 3. Partial association between exit rates and key institutional variables.

	Exit rate, Jun.–Aug. 2021 (SCS 2)				Exit rate, Oct. 2021–Sept. 2022 (Wave 9)			
	Total	Low-Edu	Mid-Edu	High-Edu	Total	Low-Edu	Mid-Edu	High-Edu
JRS spending	-0.046***	-0.077 ⁺	-0.047 ⁺	0.008	-0.060 ⁺	-0.142 ⁺	-0.056	0.002
UI spending	-0.021 ⁺	0.014	0.045 ⁺	-0.013	-0.004	0.027	0.072*	-0.034
Retirement age	-0.009 ⁺	-0.016	-0.006	0.011*	-0.013	-0.014	-0.004	-0.009
Pension RR	-0.001 ⁺	-0.002	-0.001	0.000	0.000	0.001	0.000	0.000
Private PS	-0.012 ⁺	0.004	-0.008	0.000	-0.010	-0.028	-0.001	-0.003

Notes: ⁺ $P < .1$, * $P < .05$, *** $P < .001$; Each coefficient is estimated from separate country-level OLS regressions of the exit rate (aggregate or education-specific) on the institutional variable of interest, controlling for the *GDP Growth* and *Base Employment*. Therefore, each regression model including three independent variables were fitted to twenty-six country observations.

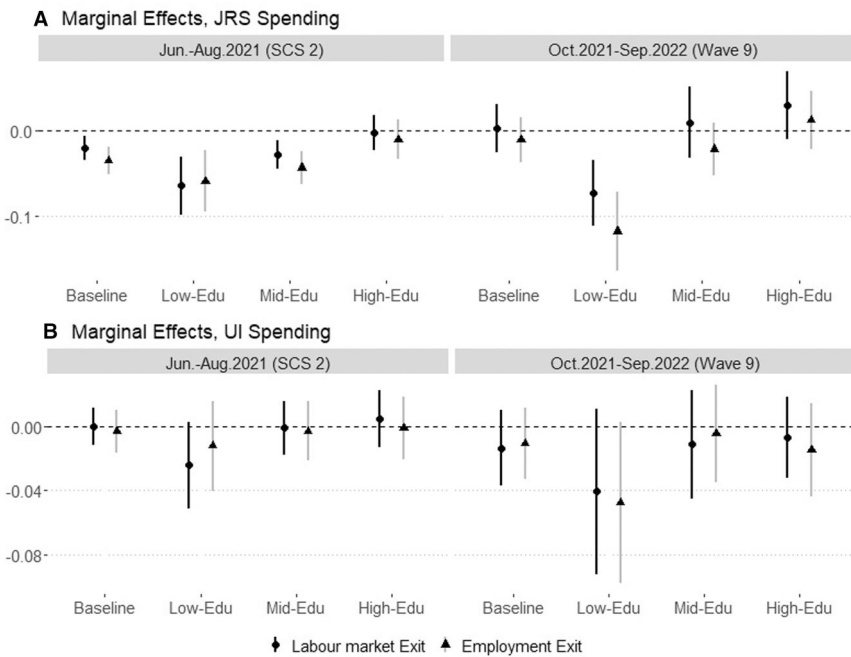


Figure 3. Marginal effects of labour market policies, mid-2021 and late-2021 to 2022.

Note: Figures illustrate coefficients from multilevel regression results in [Tables S4 and S5](#) (online supplementary data). Error bars are at 0.90 confidence level. All models control *GDP Growth* and *Base Employment*, along with respondents' education, gender, cohort, and household size.

Figure 4 shows the marginal effects of the pension-system indicators (*Retirement Age*, *Pension RR* and *Private PS*) on exit outcomes over the two periods, which are identical to the results presented in [Tables S6 and S7](#) (online supplementary data). While baseline results present no significant effect of all

three policies, their educational differences reveal complex and unexpected patterns diverging from the descriptive findings.

First, the exit rates of high-educated workers are positively linked with *Retirement Age* steadily in both periods, which counters Hypotheses 3-1 and 3-2 but is partly consistent with the macro-association reported in [Table 2](#). The counterintuitive pattern—higher exit rates in countries with higher retirement ages—implies that, for high-educated workers, the earliest eligible pension age may be largely irrelevant, and that other unidentified factors may play a more important role. Nevertheless, the negative and significant association between *Retirement Age* and low-educated workers’ *labour market exit* in the post-pandemic period provides partial support for Hypothesis 3-2.

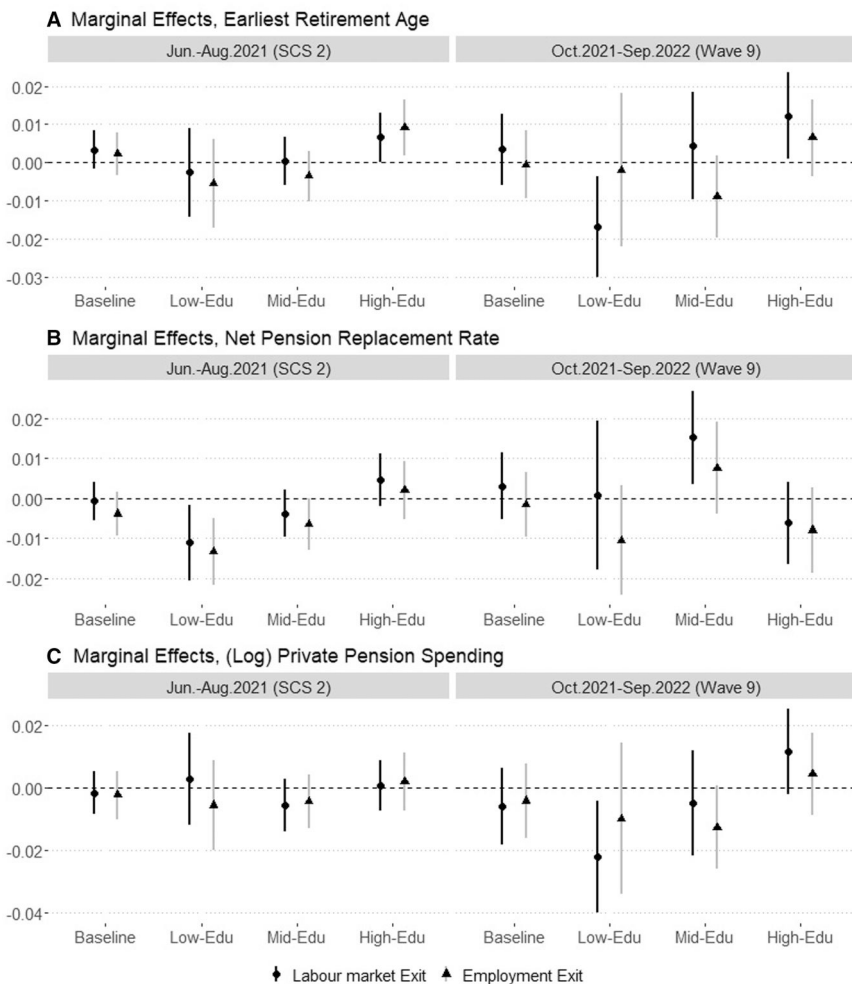


Figure 4. Marginal effects of pension institutions, mid-2021 and late 2021 to 2022.

Note: Figures illustrate coefficients from multilevel regression results in [Tables S6](#) and [S7](#) (online supplementary data). Error bars are at 0.90 confidence level. All models control *GDP Growth* and *Base Employment*, along with respondents’ education, gender, cohort, and household size.

Second, the educational gradient in the marginal effects of the pension replacement rate is inconsistent between the two periods. In SCS 2, the coefficients are negative and significant for the low- and mid-educated groups, contradicting Hypothesis 4-1. However, in the later period, positive associations emerge for both exit outcomes among mid-educated workers. Overall, these educational patterns do not support either Hypotheses 4-2a or 4-2b.

Finally, all estimates for the effect of *Private PS* in mid-2021 were null. However, a weak pattern of the educational difference consistent with Hypothesis 5-2 can be seen from the Wave 9 result, especially regarding *labour market exit*. Higher private pension spending by 100 per cent—equivalent to a unit increase in the logged value—is linked with a lower exit rate by 2.2 percentage points for the low-educated group.

4.3 Supplementary analysis

As a supplementary analysis, Tables S8 and S9 (online [supplementary data](#)) present gender-specific estimates for the baseline models. Table S8 (online [supplementary data](#)) reveals that the effects of *JRS Spending* similar to those in the main results appear only among men, although most estimates are not statistically significant in the gender-specific models. Moreover, *UI Spending* is positively associated with both exit outcomes among men in mid-2021 but the effect vanishes in the later period. Table S9 (online [supplementary data](#)) shows that the negative associations between exit outcomes and *Private PS* in mid-2021—consistent with the macro-correlations—are visible only among women. By contrast, the negative coefficients for *Pension RR* in mid-2021 seem to be driven by the male sample.

Table S10 (online [supplementary data](#)) presents results from models using *Employment Exit* as the dependent variable but excluding country-level predictors, since the coefficients for individual-level predictors often depend on the choice of upper-level variables included in the main analysis. The intercepts in Table S10 (online [supplementary data](#)) represent the exit rates of low-educated male workers in the oldest cohort living in single households, except for those in columns (3) and (6) estimated only for women. In mid-2021, the exit rate of high-educated workers was on average 7.5 percentage points lower than that of low-educated workers, whereas the differences in exit rates between low- and mid-educated workers and between men and women were not statistically significant. However, gender-specific models in columns (2) and (3) reveal that the gender gap in exit rates was much greater among low-educated workers than among the high-educated, while the educational gradient was steeper among women. In late 2021 and 2022, overall exit rates and their gender and educational differences became substantially larger compared to the earlier period.

4.4 Sensitivity analysis

For sensitivity analyses, we include the COVID-19 stringency index (*Stringency*) and cumulative COVID-19 death rates (*Covid Death*) as additional controls, while using *Employment Exit* as the dependent variable. This approach addresses concerns that the GDP decline may not adequately capture the exogenous shock of the pandemic. Results in Tables S11 and S12 (online [supplementary data](#)) indicate that these models yield estimates highly similar to the corresponding ones in Figs. 3 and 4. Notable differences are that the baseline coefficient for *JRS Spending* and the coefficient for *Private PS* among mid-educated workers become statistically significant in the Wave 9 survey.

We also use the peak JRS take-up rate (*JRS Take-up*) and logged pension fund assets as a percentage of GDP (*Pension Fund*) as alternative measures for *JRS Spending* and *Private PS*, respectively. Table S13 (online [supplementary data](#)) shows that models using *JRS Take-up* produce results that are nearly identical to the main estimates, except that the baseline effects are not statistically significant.

In [Table S14](#) (online [supplementary data](#)), the negative effect of *Pension Fund* is significant only for mid-educated workers in both periods.

5. Discussions and conclusion

In this study, we examined the role of novel JRSs ('new' welfare states), extended UI benefits and pre-existing pension institutions ('old' welfare states) in shaping older workers' exit from work following the COVID-19 pandemic. We identified five relevant institutional factors from the literature and assessed the extent to which cross-national variations in labour market policies and pension systems explain exit outcomes in Europe. Among these factors, we found robust evidence that the scale of JRS rollout is systematically linked with exit rates, supporting our main hypotheses: higher *JRS spending* in 2020 was associated with lower exit rates net of the 2020 economic shock and pre-pandemic levels of old-age employment, with stronger associations observed among lower-educated older workers. These findings were consistent across a range of analytical approaches, including macro-regressions, multilevel analysis, alternative outcome measures and an alternative indicator for the JRS rollout, and the inclusion of additional controls to better capture exogenous shocks.

By contrast, the findings on the role of 'old' welfare state institutions do not align clearly with our hypotheses and are mostly inconsistent. For *UI Spending*, none of the estimates from the main multilevel regressions is statistically significant, while at the country level only the exit rates of mid-educated workers show a positive association with this indicator. The significant association appears to be driven by men, whose exit rates in the gender-specific analysis were also positively associated with *UI Spending* but only in mid-2021.

Among pre-existing pension institutions, a higher *early retirement age* and greater *private pension spending* seem to be linked with lower probabilities of *labour market exit* only among lower-educated workers in the post-pandemic period, but these results are less robust with alternative specifications. At the macro level, there were still negative relationships visible between aggregate exit rates and these two pension indicators. Moreover, we find no evidence that generous public pension benefits, measured by net *pension replacement rates*, are associated with higher exit rates. In fact, our estimates indicate the opposite effect when statistically significant. The lack of consistent results across the pension-system indicators is likely attributable to strong multicollinearity among these indicators and *Base Employment*, which may lead to an overly conservative estimation with inflated variances.

Our findings overall confirm the significance of welfare state responses in moderating labour market shocks against older workers, by mitigating their exit from work during economic crises. Policy implications are many. In line with previous studies, JRSs are supported as effective crisis management tools by retaining existing employment relations ([Ebbinghaus and Lehner 2022](#); [Giupponi et al., 2022](#)). The retention effect was stronger for the low-educated, implying that workers in less privileged firms are more likely to benefit from such interventions. Given that this pattern was more evident when the outcome measure included those unemployed (*employment exit*), JRSs may have effectively prevented job loss during and after the pandemic among those at higher risk of unemployment.

However, policymakers should also note that JRSs can still have insider bias because they cannot protect the income of workers who had already lost their jobs before interventions. This helps explain why job losses were far more prevalent among young workers in less secure positions ([Ando et al., 2022](#)). Extended UI policies should therefore be utilized as a complementary tool, prioritizing workers in outsider positions to reduce poverty risks during economic downturns. Furthermore, the cross-country correlations between policy indicators in [Table 2](#) support that there is no trade-off between the use of JRSs and UI policies. Many countries in practice combined both approaches

complementarily in response to the pandemic. Extended UI support for less protected workers also does not seem to be linked with higher exit rates, especially during the post-pandemic recovery period.

Another implication is from the effect of higher retirement ages, which are negatively linked with the exit rate of low-educated workers, whereas among high-educated workers the association is consistently in the opposite direction. Although our evidence is cross-sectional, prior studies similarly find that raising the retirement age to reduce public pension spending increases old-age employment but worsens the financial situation of low-status workers (Etgeton 2018; Rabaté and Rochut 2020; Lee 2024). Therefore, it needs to be emphasized that minimum social protection should be strengthened for economically vulnerable older adults prior to the pension age when the retirement ages are raised. Meanwhile, standard pension generosity did not play a visible role in shaping early exits after the pandemic, possibly because early exit pathways are much less accessible than in previous crises.

One important caveat is that our empirical analysis is based on a selective sample—individuals who were employed at the beginning of the pandemic. This means that our findings do not apply to older adults who had already retreated from the labour market for other reasons, including being homemakers and permanent sickness or disability. That means our sample is overall positively selected, to a larger degree for female workers.

Secondly, our findings regarding the role of macro-institutions should not be confused with microlevel ‘treatment’ effects. For example, the negative relationship between private pension spending and labour market exit among low-educated workers does not indicate that those workers responded to an increase or decline in their private pension incomes. The institutional effect in this case rather suggests that low-educated workers are more likely to remain employed in pension systems that largely rely on private pension schemes than in dominant public systems. Similarly, our results do not establish causal effects in the sense of the potential outcomes framework, and thus our estimates do not represent behavioural responses to exogenous policy changes. For instance, the association between *UI Spending* and higher exit rates among mid-educated workers should not be understood as if this group is exceptionally responsive to UI policies. A more plausible interpretation is that structural conditions during the pandemic affected mid-educated workers differently from other groups, and UI schemes may have facilitated their exit from work under those conditions.

It should also be acknowledged that the exit rates in our data reflect only medium-term outcomes of the pandemic-induced labour market shock. Given that old-age employment rates in most countries have swiftly recovered an upward trend, it may be less convincing to assume that older workers who became inactive or unemployed by 2021 and 2022 will always result in permanent retirement. However, evidence from several countries shows that a sizeable share of older workers who left the labour market during the pandemic have not returned until recently (Goda et al., 2023; Rankl 2023). Given these findings, our individual-level findings showing strong educational gradients in the post-pandemic exit rates are concerning, as the pandemic could intensify existing socioeconomic inequalities among older workers. Future research should therefore continue to monitor how old-age inequalities evolve from a long-term perspective.

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Supplementary data

Supplementary data are available at *Socio-Economic Review* online.

Conflict of interest statement. None declared.

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