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Calling Older Workers Back to Work

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Calling Older Workers Back to Work*

Francesco Grigoli† Zsoka Koczan‡ Petia Topalova§

Abstract

Population aging in advanced economies could have significant macroeconomic implications, unless more individuals choose to participate in labor markets. In this context, the steep increase in the share of older workers who remain economically active since the mid-1990s is an overlooked yet encouraging trend. We identify the drivers of the rise in participation of the elderly relying on cross-country and individual-level data from advanced economies over the past three decades. Our findings suggest that the bulk of the increase in their participation is driven by gains in educational attainment and changes in labor market policies, such as the tax benefit system, and pension reforms. Urbanization and the increasing role of services also contributed, while automation weighed on their participation.

Keywords: Automation, elderly, labor force participation, pension.

JEL Codes: J11, J21, O33.

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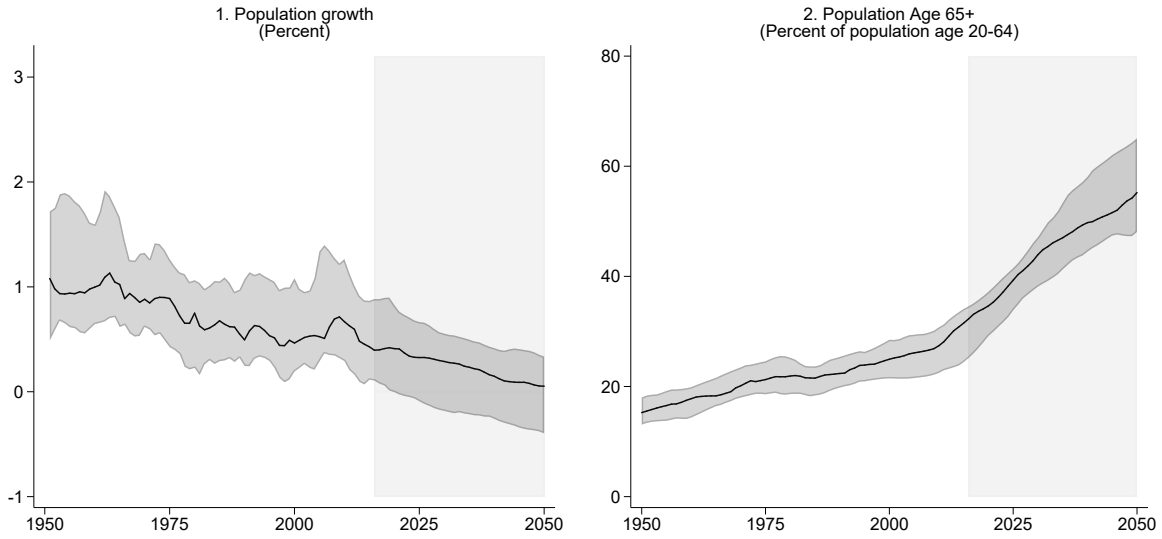
1 Introduction

Population growth in advanced economies (AEs) is slowing, life expectancy is rising, and the number of elderly is increasing steeply. As these trends gather pace, the United Nations projects that by the middle of this century, total population will be shrinking in almost half of AEs and that those currently considered working age will support close to double the number of elderly that they do now (Figure 1). Unless more people participate in labor markets, aging will significantly slow AEs' potential growth by depressing labor supply. Understanding recent trends in labor force participation rates across different groups of workers and their drivers is, thus, key to assess the macroeconomic implications of demographics and design policies to counteract its potentially adverse effects.

Figure 1: Demographic Transition in Advanced Economies



Source: Authors' calculations.
Notes: Based on a sample of 36 AEs. The black lines denote the averages, shaded dark grey areas denote the interquartile ranges for AEs, and light grey shaded areas indicate projections.

Over the past 30 years, the aggregate labor force participation rate in AEs, on average, barely changed (Figure 2). Headline numbers, however, hide stark differences in how the participation rates across age groups evolved over this time period. The young (between ages 15–24) are significantly less likely to be part of the labor force in 2016 than in 1985, reflecting greater investment in human capital (IMF, 2018a). Among prime-age workers, the small decline in participation rates of prime-age men was more than offset by the dramatic entry of prime-age women in the labor force, leading to overall gains in participation rates. A largely overlooked yet encouraging trend is the sharp increase in the participation rates of older men and women (aged over 55). In the median AE, an individual aged 55-64 is almost 20 percentage points more likely to be economically ac-

tive in 2016 than at the turn of the century.[1] The increase is particularly pronounced for the 55–64 age group, but in the past decade, even individuals older than 65 remained in the labor force longer.

What is behind the rise in labor force participation of the elderly? We examine the role of four sets of factors in older workers' participation decision: gains in educational attainment, labor market policies, structural changes in the economy, and the effects of technology and trade. To shed light on the importance of country-level policies and characteristics, we use panel regression on a sample of AEs during the past three and a half decades and compute the contribution of each factor to the dynamics of participation rates observed since the mid-1990s. We then examine individual-level data from 24 European economies since the beginning of the 2000s to zoom in on the role of individual characteristics.

Our findings suggest that gains in educational attainment and changes in policies, such as the tax benefit and pension systems, account for the bulk of the increase in the labor force attachment of older workers. Structural factors, such as urbanization and the rise of the service economy, also contributed positively. On the other hand, technological advances—the automation of tasks where labor is easily substituted by capital—weighed on participation of older workers.

Our contribution to the literature is threefold. First, we consider a wider set of factors that shape individuals' decisions to work, including policies and institutions, automation, and structural transformation. Second, we combine cross-country empirical findings with evidence from individual-level data to shed further light on the role of education and exposure to technological advances in workers' participation decisions. Finally, we re-visit earlier evidence in a significantly larger estimation sample, which captures the recent shifts in participation rates of older workers.[2]

2 Aggregate-Level Analysis

2.1 Methodology

Numerous interrelated factors influence individuals' decisions to supply labor as they age and assess the expected return to market work relative to non-participation. The aggregate analysis is based on a sample of 23 AEs since 1980. In line with the literature, we employ the following reduced-form specification:[3]

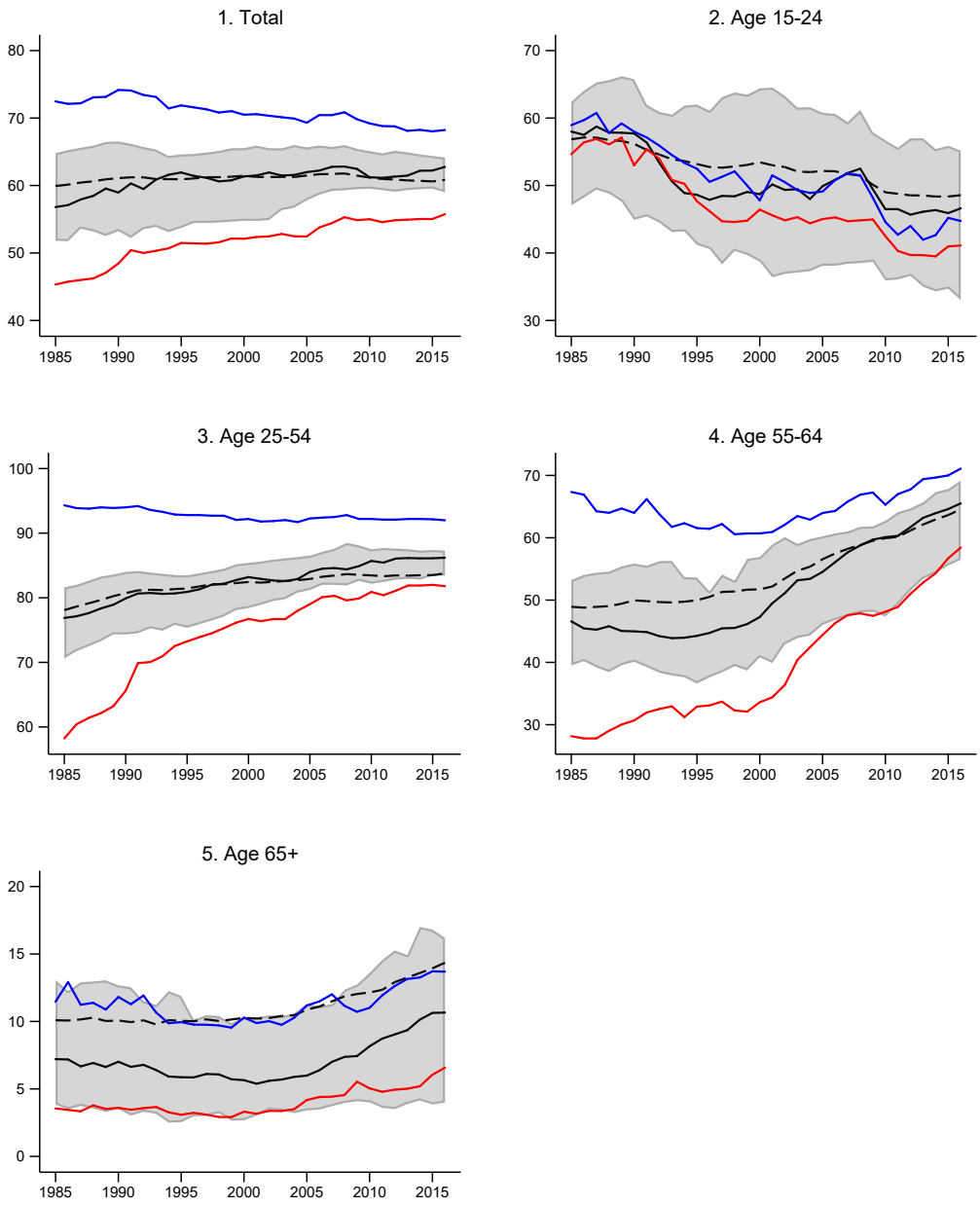
$$LFP^g_{i,t} = \beta^{X,g} X_{i,t} + \beta^{D,g} D_{i,t} + \beta^{GAP,g} GAP_{i,t-1} + \beta^{Z,g} Z^g_{i,t} + \pi^g_i + \tau^g_t + \epsilon^g_{i,t} \quad (1)$$

[1] For a discussion of earlier trends in retirement, see Blöndal and Scarpetta (1999) and Gruber and Wise (2000).

[2] See Blöndal and Scarpetta (1999), and Duval (2004), for cross-country analyses of retirement decisions.

[3] The empirical approach in the paper is widely used in the cross-country literature on labor market. Jaumotte (2003), Genre et al. (2010), Blau and Kahn (2013), Cipollone et al. (2013), Thévenon (2013), Dao et al. (2014), and Christiansen et al. (2016) look into the determinants of female labor force participation and employment, and Blöndal and Scarpetta (1999) and Duval (2004) investigate the effects of retirement decisions.

Figure 2: Labor Force Participation Rates by Age and Gender
(Percent)



Source: Authors' calculations.
Notes: Solid lines denote medians, dotted lines population-weighted averages, and shaded areas interquartile ranges.
Solid lines in blue and red denote medians for men and women, respectively.

where LFP denotes the participation rate of each group of older workers g in country i in year t.

X represents the set of policies and institutions that affect the relative benefits from working and individuals' prospects of finding (or retaining) a job. These include retirement incentives (proxied by the statutory retirement age and by the generosity of pension schemes purged from fluctuations due to cyclical and demographic factors), the labor tax wedge and the generosity of unemployment benefits, as well as institutions that affect labour markets more broadly such as union density, the degree of coordination in wage setting and public expenditure on active labor market policies (ALMP),

D denotes a set of factors that may shift the demand for labor. Technological progress may have reduced the demand for less-skilled labor in AEs, made certain jobs obsolete and may disproportionately affect older workers who may be unable to take advantage of new opportunities due to lack of relevant skills and training, preferences, hardship involved in relocating geographically, or a perceived inadequate return compared with their previous earnings. Exposure to technological change is measured here by the interaction between the country's exposure to automation through its initial occupational mix and the relative price of investment (as in Dao et al., 2019).

In contrast, the secular expansion of the services sector in many AEs (IMF, 2018b), and accompanying urbanization, may have created significant employment opportunities for women, who are seen to have a comparative advantage in services (Ngai and Petrongolo, 2017 and Olivetti and Petrongolo, 2017, among others), as well as older workers, being less physically demanding.

Participation decisions can also be shaped by short-lived changes in labor demand, such as those due to cyclical fluctuations (Elsby et al., 2015), captured here using GAP, the output gap. The rise in unemployment during recessions may lead some workers to drop out of the labor force permanently.

Individual characteristics, such as education, also determine potential earnings in the market place relative to being economically inactive, hence affecting participation decisions. Thus, the panel specification also controls for the share of workers with tertiary education Z (specific to group g), as well as π_i and τ_t country- and time-fixed effect.

Identifying the causal impact of these factors is challenging with country-level data. Some of the evidently endogenous variables, such as the output gap and trade openness, are included in the specification with a one-year lag. In the case of technological progress, we use the average relative price of capital across advanced economies, which should capture primarily changes in relative prices due to global technological progress, abstracting from the effect of endogenous policy choices such as capital and labor taxation that would shape country-specific prices. Also, we use the initial employment mix to measure the exposure of a country to routinization, which also minimizes potential reverse causality concerns. However, in general we refrain from giving a causal interpretation to the results obtained with aggregate data.

We calculate the contributions from each regressor to changes in the participation of group g be-

tween the years 1995 and 2011 as:

$$C^{S,g}_{i,1995,2011} = \widehat{\beta}^{S,g}(S^{g}_{i,2011} - S^{g}_{i,1995}) \tag{2}$$

with $S = \Big[X, D, GAP, Z\Big]$ and where $C^{S,g}_{i,t,t'}$ is the contribution of variable S.[4]

2.2 Results

The findings from estimating equation (1) are summarized in Table 1. Higher educational attainment, the relative increase in the service sector and urbanization, are strongly associated with higher labor supply of older workers, especially women, potentially through a larger set of opportunities to remain economically active.

In contrast, technological progress is associated with inactivity among older workers, highlighting the difficulties of workers displaced by automation in finding alternative employment. A decline in the relative price of investment—proxying technological advance—in countries where the initial occupation mix is tilted toward routine-task occupations is associated with lower participation of older workers, particularly men.

Finally, we find a strong role for labor market programs and institutions:

- As expected, a higher retirement age is associated with delayed exit from the labor market, while greater pension generosity seems to encourage early retirement.[5]
- A higher labor tax wedge is associated with lower labor force attachment among older workers. More generous unemployment benefits, on the other hand, seem to mainly depress participation of those aged 55–64, consistent with a discouragement effect or the use of unemployment benefits system as a path to early retirement.
- Somewhat surprisingly, higher public spending on ALMP tends to be associated with lower participation of older workers. This is suggestive of a possible substitution effect if ALMP promote participation of young and prime-age workers, which may be preferred by employers (Grigoli et al., 2020).
- Higher unionization rates are associated with lower participation of older workers. This could reflect the ability of unions to negotiate better retirement and pension conditions. Alternatively, unions may internalize the potentially detrimental effects that excessive wage pressure may have on overall employment, discouraging older workers from remaining in the labor force (Soskice, 1990 and Bassanini and Duval, 2006).

[4] 2011 is the last year for which all variables have values.

[5] The latter finding is robust to using measures of incentives for early retirement, such as the implicit tax on continued work or pension replacement rates.

Table 1: Drivers of Labor Force Participation Rates

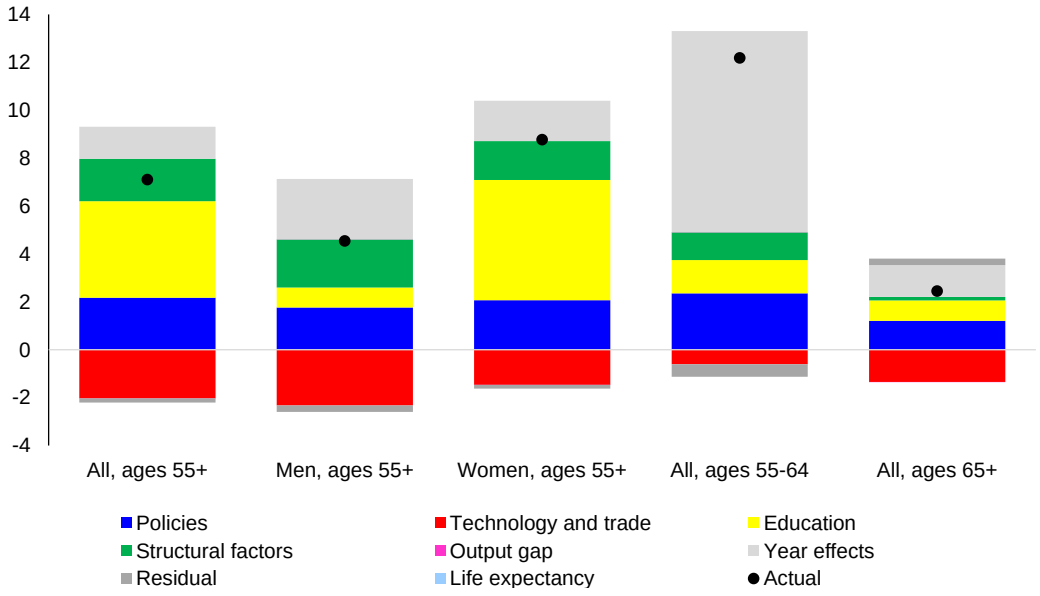
	All, ages 55+ (1)	Men, ages 55+ (2)	Women, ages 55+ (3)	All, ages 55–64 (4)	All, ages 65+ (5)
Lag of Output Gap	-0.013	0.018	-0.017	0.013	-0.043
	(0.067)	(0.098)	(0.049)	(0.062)	(0.048)
Routinization*Relative Price of Investment	0.496**	0.644**	0.351	0.455	-0.109
	(0.250)	(0.328)	(0.228)	(0.287)	(0.216)
Lag of Trade Openness	-0.062***	-0.076***	-0.041***	-0.013	-0.057***
	(0.010)	(0.014)	(0.009)	(0.011)	(0.011)
Relative Service Employment	0.011*	0.014**	0.009*	0.000	0.003
	(0.005)	(0.006)	(0.005)	(0.006)	(0.004)
Urbanization	0.194*	0.224	0.140	0.343**	-0.005
	(0.112)	(0.138)	(0.092)	(0.132)	(0.061)
Education (% Secondary)	0.041*	-0.001	0.049***	0.008	-0.010
	(0.020)	(0.019)	(0.017)	(0.033)	(0.009)
Education (% Tertiary)	0.404***	0.154***	0.473***	0.163**	0.151***
	(0.051)	(0.042)	(0.052)	(0.066)	(0.025)
Tax Wedge	-0.267***	-0.269***	-0.246***	-0.195***	-0.126***
	(0.034)	(0.038)	(0.030)	(0.032)	(0.028)
Unemployment Replacement Ratio	-0.088*	-0.080	-0.078*	-0.238***	-0.063***
	(0.046)	(0.050)	(0.044)	(0.045)	(0.017)
Public Spending on ALMP	-0.023**	-0.038***	-0.007	0.010	-0.013**
	(0.009)	(0.011)	(0.007)	(0.009)	(0.005)
Union Density	-0.120***	-0.110***	-0.108***	-0.139***	-0.074***
	(0.032)	(0.030)	(0.035)	(0.036)	(0.009)
Coordination of Wage-Setting	0.044	0.365	-0.200	0.027	-0.074
	(0.221)	(0.299)	(0.167)	(0.274)	(0.125)
Statutory Retirement Age	0.638***	0.269	0.637***	1.039***	0.390***
	(0.176)	(0.268)	(0.149)	(0.223)	(0.084)
Public Spending on Old-Age Pension	-0.756***	-1.071***	-0.480***	-1.230***	-0.229*
	(0.160)	(0.256)	(0.107)	(0.181)	(0.124)
Public Spending on Incapacity	-0.443	-0.682	-0.260	-0.251	-0.785***
	(0.574)	(0.642)	(0.516)	(0.718)	(0.202)
Observations	568	568	568	568	568
Countries	23	23	23	23	23
R-squared	0.686	0.510	0.814	0.810	0.516

Source: Authors' calculations.
Notes: The countries included in the sample are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States. All specifications include country and year fixed effects. Driscoll-Kraay standard errors are reported in parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Putting policies, education, structural shifts, and technology together, we examine the contributions of these factors to changes in participation between 1995 and 2011 in Figure 3. Supportive policies and educational gains were key factors behind the increase in the participation of older workers, especially women. Structural transformation contributed positively as well. On the other hand, technological advances weighed on participation of older workers, in particular for men. The share of the increase in participation attributed to the time fixed effects—which is larger for men and those aged 55–64—could reflect global forces, concurrent changes in policies, structural transformations, changing returns to education, rising life expectancy, or scars from the global financial crisis. The latter might have delayed retirement due to suppressed returns on retirement savings as global interest rates fell, losses in financial wealth, and potentially higher indebtedness.[6]

[6]Our findings are robust to applying the logistic transformation to participation rates; alternative corrections to standard errors; using five-year averages to avoid distortions arising from difficulties in controlling for cyclical effects and undetected local unit roots; excluding the global financial crisis; and dropping one country at a time.

Figure 3: Average Contributions to Changes in Participation Rates, 1995–2011
(Percentage points)



3 Individual-Level Analysis

3.1 Methodology

The use of micro data from the European Labour Force Survey for 24 AEs during 2000–16 allows us to explore individual and household-level determinants of participation, while also mitigating the endogeneity bias in regressions relying on aggregate data.

To conduct the analysis, we draw a random sample of 10,000 individuals per country per year and estimate logit models of the following form:

$$\Phi(S_j = 1) = \beta^C C_i + \beta^H H_j + \beta^R R_j + \pi_c + \upsilon_r + \tau_t + \epsilon_j \tag{3}$$

where Φ is the probability function; S is a dummy variable for whether the individual j is in the labor force; C includes a set of individual characteristics such as age, gender, whether the individual was born in the country, whether s/he lives in an urban area, and highest level of completed education; H includes measures of family composition; R is the routinization score of an individual's occupation (if currently employed) or last occupation (if currently unemployed or inactive); π_c, υ_r, and τ_t are country-, region-, and year-fixed effects. We cluster standard errors at the country-year level.

3.2 Results

In line with the aggregate findings, the results from the logit estimations in Table 2 point to large effects of higher education on participation, with somewhat larger effects for the 55–64 age group and for women. With the exception of the age group 65+, living in urban areas also increases participation. Interestingly, the presence of other employed adults in the household is associated with a higher likelihood of being active, likely pointing to local labor market effects. The findings of the micro analysis also confirm the significant negative correlation between exposure to routine tasks and the probability of being part of the labor force.

Table 2: Determinants of Being in the Labor Force

	All, ages 55+ (1)	Men, ages 55+ (2)	Women, ages 55+ (3)	All, ages 55–64 (4)	All, ages 65+ (5)
Age	0.285***	0.251***	0.314***	0.770***	1.396***
	(0.013)	(0.011)	(0.017)	(0.006)	(0.113)
Age Squared	1.008***	1.009***	1.008***	1.000***	0.998***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	1.403***			1.480***	1.196***
	(0.038)			(0.049)	(0.031)
Upper Secondary Education	1.248***	1.184***	1.270***	1.275***	1.209***
	(0.025)	(0.030)	(0.028)	(0.030)	(0.036)
Tertiary Education	1.748***	1.654***	1.803***	1.851***	1.594***
	(0.055)	(0.057)	(0.070)	(0.072)	(0.059)
Born in Country	0.993	0.983	1.009	0.972	1.091**
	(0.031)	(0.033)	(0.040)	(0.032)	(0.046)
Urban	1.038***	1.045**	1.035*	1.051***	1.019
	(0.015)	(0.019)	(0.019)	(0.017)	(0.027)
Number of Children in Household	0.972**	1.009	0.920***	0.971**	0.960*
	(0.011)	(0.016)	(0.014)	(0.012)	(0.020)
One Adult with Children	1.552***	1.522***	1.611***	1.551***	1.785***
	(0.091)	(0.172)	(0.112)	(0.100)	(0.394)
Couple without Children	0.818***	0.950**	0.756***	0.832***	0.842***
	(0.014)	(0.022)	(0.017)	(0.015)	(0.025)
Couple with Children	1.313***	1.440***	1.281***	1.304***	1.446***
	(0.038)	(0.058)	(0.061)	(0.041)	(0.128)
Other Household Structure	0.845***	0.962	0.793***	0.866***	0.812***
	(0.020)	(0.029)	(0.023)	(0.020)	(0.038)
Other Employed Adult(s) in Household	1.571***	1.562***	1.601***	1.539***	1.703***
	(0.043)	(0.044)	(0.051)	(0.039)	(0.091)
RTI Score of Occupation	0.757***	0.711***	0.816***	0.770***	0.716***
	(0.010)	(0.011)	(0.012)	(0.012)	(0.013)
Lagged Output Gap	1.028***	1.030***	1.027***	1.027***	1.031***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.007)
Number of Observations	335,693	188,529	147,157	249,251	86,441

Source: Authors' calculations.
Notes: Logit regressions are based on a random sample of 10,000 respondents per country per year from 24 countries: Austria, Belgium, Cyprus, Czech Republic, Denmark, Germany, Estonia, Finland, France, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom. The table reports exponentiated coefficients. All specifications include country, region, and year fixed effects. The base category for education is "up to lower secondary education", for family composition the base category is "one adult without children". Standard errors clustered at the country-year level. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

4 Conclusions

In this paper, we explore the factors behind the dramatic increase in labor force participation of older workers in AEs. Our analysis suggests that gains in educational attainment, reductions in the tax wedge and the generosity of unemployment benefits, increases in the retirement age, and less generous pension systems account for the bulk of the increase in the labor force attachment of workers older than 55 since the mid-1990s. Structural factors, such as urbanization and a higher share of employment in the service sector, also contributed positively. Conversely, technological advances, namely automation, weighed on the labor supply of older workers, in particular for men.

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