



Working Beyond 50

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Contents

Introduction	2
Some Stylized Facts About Work Beyond 50	3
Age and Work Capacity	4
Economic Underpinnings of the Old Employment Rate	8
Labor Supply and Age	9
Labor Demand: The (Un)willingness of Firms to Employ or Recruit Older Workers	9
Policy-Induced Barriers	15
Generous (Early)Retirement Benefits, Implicit Tax on Continuing Work	15
No Remunerated Work When Drawing Pensions, Age Discrimination Laws	16
What Could Policy Do to Help Older Individuals?	17
Summary	19
Cross-References	20
References	21

Abstract

This chapter reviews the works by economists on what it means to work beyond the age of 50. That question directly echoes the context of aging populations characterizing most advanced economies. Aging poses stark dilemmas for living standards and the sustainability of social protection schemes. From a policy point of view, what is key is offsetting the rising old dependency ratio. Several things could contribute to that, but the most likely one is lifting the employment rate, especially among workers aged 50-plus whose propensity to work is still below that of prime-age adults and where it was in a not-so-distant past. This chapter examines how the labor market for older workers has developed in advanced economies since the mid-1980s and the major factors at stake. A great deal of attention is paid to the different barriers to working after 50, where they originate

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from, and how better-designed and evidence-based policy might help overcome them.

Introduction

Life expectancy has been on the rise since the turn of the nineteenth century due to standards of living improvements and medical progress. Since then, every decade, advanced countries have recorded 2 years of longevity gain (Oeppen and Vaupel 2002). But in combination with lower fertility, this trend is causing demographic aging. Some economists consider it to be a major challenge, possibly as important as tackling climate change or other global threats (Martin 2018). The consequences could indeed be far-reaching. *Ceteris paribus*, aging will cause shrinking labor forces and a surge of old-age dependency. It should be stressed, however, that there is no absolute consensus on an alarmist vision of aging (Bloom et al. 2010; Börsch-Supan 2013). But most economists agree that increased longevity, while a boon for many, is putting immense pressure on social protection systems, in particular for the so-called pay-as-you-go (PAYG) pensions, i.e., a system in which contributions finance pension benefits levied from current workers, which contrasts with funded systems where contributions are invested to pay for future pension benefits.

It is possible to counteract the shrinkage of the working-age population and the related surge of the old dependency ratio. Several economists (Acemoglu 2010; Bloom et al. 2010; Vandenberghe 2017) have explored, theoretically and empirically, the different possible levers. They comprise inter alia: (i) accelerated labor productivity growth and higher capital intensity or educational attainment, (ii) more systematic and extended female participation to the labor force (at least in countries where it remains low), (iii) slightly longer hours of work, (iv) more immigration, or even (v) shorter initial education (Börsch-Supan 2013). If one privileges pension policies, the cost of aging could be met via higher pension contributions or lower pension benefits. That said, among policymakers, the principal approach has consisted in lifting the age of retirement. Works done at the OECD (Oliveira Martins et al. 2005) have shown that in most member states (except Japan and perhaps Italy), indexing actual retirement age on (rising) life expectancy could stabilize old-age dependency ratios, averting the need for a dramatic rise of (mostly labor-based) contributions financing PAYG pensions, or for widespread cuts of the level of pension benefits in real terms. Furthermore, firmer retirement policies enacted recently have contributed to significantly lifting the old employment rate (more on this below). Statutory retirement ages have in several instances been increased from 65 to 67. Also, there has been a widespread alignment of women's retirement age on men's. And in some parts of the world, one might soon see the age of 70 becoming the retirement *new normal*. Candidates for this comprise Denmark and the Netherlands, i.e., two countries that have enacted automatic adjustment rules where the reference retirement age is indexed on life expectancy (OECD 2012).

Such a context makes it pertinent to study what it means to work beyond 50. Several key questions emerge and have been examined by economists. First, are older individuals fit enough to work extra years, possibly up to the age of 70? Second, if so, are they willing to keep toiling up to that advanced age? Third, are employers also willing to continue employing or to recruit them? These two decisions are not equivalent, as will become clear later in this chapter. What do we know about the prevalence of age discrimination (also referred to as *ageism*), but also about the age, skill, productivity, and labor cost nexus? Is there robust evidence that age inevitably leads to lower workplace productivity? And, simultaneously, what is the role of older workers' relative labor cost in explaining firms' (un)willingness to employ or recruit them? Fourth, are there policy-induced barriers to old employment? These are some of the key questions reviewed in this survey.

The rest of the chapter is organized as follows. Section “[Some Stylized Facts About Work Beyond 50](#)” exposes the evolution of the share of the 50-plus in the workforce and their employment rate. Section “[Age and Work Capacity](#)” presents the works of economists on the health-driven capacity to work and how it evolves with age. Section “[Economic Underpinnings of the Old Employment Rate](#)” focuses on the many economic determinants of the employment rates of older individuals, in particular the role of the specificities of work and the labor market for that group. Both the labor demand and the labor supply facets of elderly employment are considered. Section “[Policy-Induced Barriers](#)” discusses the role of policy-related barriers to work beyond the age of 50, while Section “[Summary](#)” summarizes and concludes.

Some Stylized Facts About Work Beyond 50

For the USA, Allen (2019) reports that, between 1998 and 2019, the share of workers aged 55 or more has risen from 12.4% to 23.1%. And by 2028, that share is expected to rise to 25.2%. Similar, if not more robust, trends exist in Europe and Japan. This is the consequence of two elements. First, due to aging, the demographic growth for the 50-plus has been more rapid. The second and probably more decisive force has been a recent rise of the employment rate of that age group.

The employment pattern among individuals aged 50 or more has changed since the mid-1990s. During the preceding decades, in most OECD countries, participation in employment dropped steadily. Many older workers opted – or from the 1970s onward were strongly encouraged – to retire before the statutory retirement age. In that period, it was common to talk about a “normal” retirement age of 60 or even less. As explained by Martin (2018), the trend toward early retirement was driven by a range of factors: (i) vigorous growth in real incomes which increased the demand for leisure and facilitated saving; (ii) the ease with which PAYG pension systems in many countries could finance high replacement rates, in part because of the relatively small number of pensioners compared to a fast expanding pool of contributors (Aaron 1966); and (iii) from the mid-1970s systematic public policies fostering early retirement to combat the overall unemployment crisis triggered by the

successive oil shocks. The (questionable) mantra was that it would help reduce two-digit youth unemployment rates.

Since the mid-1990s, the push for early retirement has been stopped and very often completely reverted. This is clearly visible in Figs. 1, 2, and 3. At the same time, this change in trend needs to be put into a longer-term perspective. Employment rate gains recorded since the mid-1990s have still not brought OECD countries back to their pre-1980s situation, and even less to their end-of-nineteenth-century level. In 1890, in the USA, Germany, France, or the UK, over 80% of men older than 64 toiled in the labor force (Costa 1998). By contrast, in 2020, the OECD 60–64 employment rate was 50%, and the 65–69 rate 30%. Also, as illustrated by the case of France (Fig. 3) with its relatively low employment rate over the 60–69 age band, post-1990s cross-country differences remain sizable and hint at the important role of social security and labor market institutions in the matter of old employment rate.

Age and Work Capacity

Raising the employment rate of older individuals is de facto the primary response adopted by policymakers to cope with the consequences of demographic aging. The first question raised by this overall policy orientation is that of the ability of older

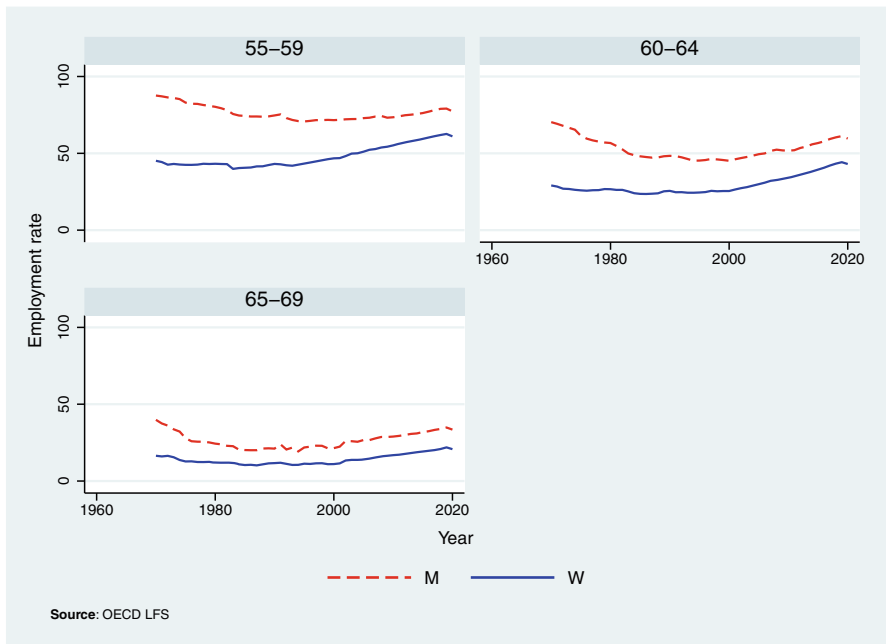


Fig. 1 Long-term evolution of the old employment rate. Individuals aged 55–59, 60–64, and 65–69. OECD average

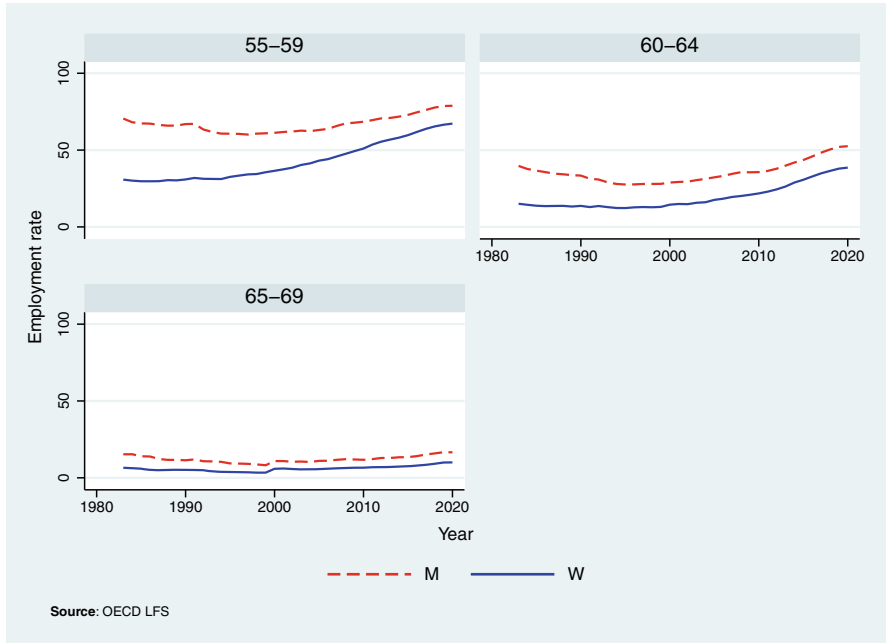


Fig. 2 Long-term evolution of the old employment rate. Individuals aged 55–59, 60–64, and 65–69, EU27

individuals to continue to work. Many stakeholders promptly claim that individuals are too frail to continue working productively after 60, particularly those who spent many years in arduous occupations.

However, the scientific consensus is that older people's health has improved steadily over the past 200 years. Oeppen and Vaupel (2002) show that the best-performance life expectancy (i.e., the one corresponding to the country of the planet with the highest life expectancy) has risen by more than 2 years every decade. Exploiting data from the Global Burden of Diseases Study, other works show that morbidity rates among individuals aged 50–69 and 70+ dropped significantly between 1990 and 2017. For the USA, Cutler et al. (2013a) analyzing a representative sample of the entire elderly population between 1991 and 2009 concluded to compression of morbidity toward the end of life, meaning that the onset of chronic illness/disability has been postponed, and this postponement dominates the simultaneous increase in life expectancy. For Europe, using the Survey of Health, Aging, and Retirement in Europe (SHARE) data, Abeliansky and Strulik (2019) find that, for each additional year of birth, *health deficits* fall by 1.4–1.5%. A health deficit consists of the share of a set of typical aging-related health conditions that an individual is suffering from at a certain age. The smaller the share, the lesser is the deficit.

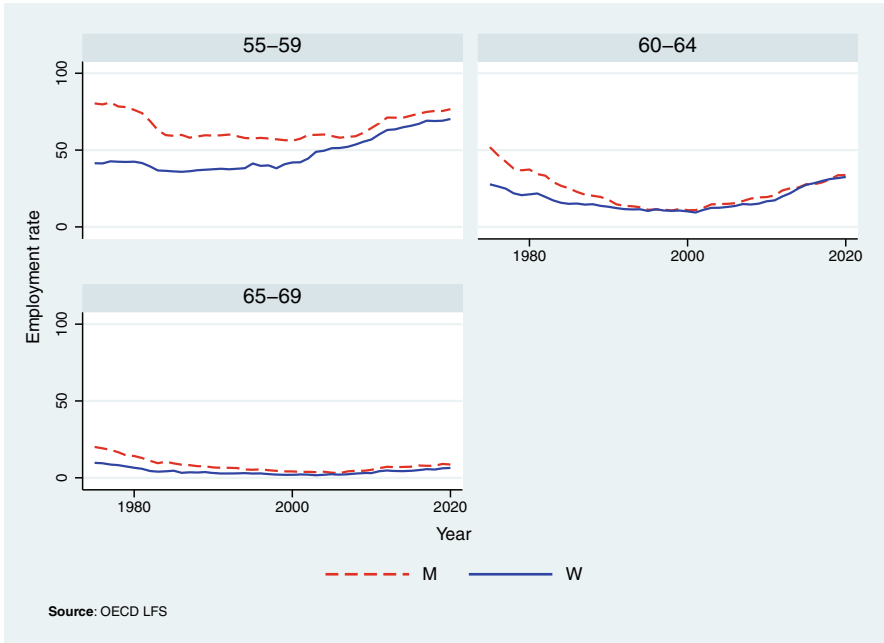


Fig. 3 Long-term evolution of the old employment rate. Individuals aged 55–59, 60–64, and 65–69, France

Such an avalanche of positive developments may explain why authors like Börsch-Supan (2014) argue that most workers are probably fit enough to stay in remunerated work until the age of 70. However, recent developments in the USA indicate that long-term longevity and health improvements cannot be taken for granted. Recent data show that US life expectancy has plateaued or even fallen for some groups. US baby boomers, despite their longer life expectancy, are more frequently afflicted by chronic disease and disability. Recent health surveys point at lower self-rated health than for previous same-age cohorts. A similar trend could be emerging in Europe (Börsch-Supan et al. 2021b).

The point is that the above evidence remains either very aggregate or solely focused on health. Many economists have worked on the a priori more relevant health-work relationship using data where both dimensions are observed simultaneously (Bassanini and Caroli 2015). One of the focal points is how age impacts the so-called *work capacity*. The seminal paper on that issue was published by Cutler et al. (2013b). Recent applications and developments of Cutler's method comprise Banks et al. (2016), Wise (2017), or Vandenberghe (2021a).

These papers use a two-stage method to estimate work capacity and its evolution past the age of 50. The first stage estimates the relationship between employment (sometimes also hours) and health at ages just inferior to the typical current retirement age. The focus on that age group is to identify (in the econometric sense of the

word) the health-employment relationship before workers become eligible for social security or related benefits. At stage two of the method, stage-one estimates are mobilized to forecast the capacity to work beyond current retirement ages. In econometric terms, the exercise consists of [at stage 1] collecting the best possible coefficients describing the health-work relationship of the “young-old,” and [at stage 2] applying these coefficients to the health level observed among the “old-old”. The Cutler method rests on the assumption that the health-work relationship could be identical for both groups. Still, it delivers work capacity estimates that fall with age, as health deteriorates with age. The outcomes of economists’ study of work capacity are essentially fourfold.

First, there is robust evidence that “young-old” with health conditions work less. This result is relatively standard as it is present in most of the works implementing the Cutler method (Wise 2017; Coile et al. 2016; Banks et al. 2016) and many other works by labor and health economics (Blundell et al. 2021). The few works à la Cutler looking at the impact of declining health on the number of *hours* worked (i.e., the intensive margin of work) show it is also negative. But the magnitude of the effect is small and generally not statistically significant. Hence, Vandenberghe (2021a) postulates that older individuals with limiting health conditions rarely adjust work at the intensive margin but rather completely exit from the labor force.

Second, in comparison with poor physical health, poor cognition has seemingly little impact on older individuals’ propensity to work, be it their employment rate and the number of hours they work (Vandenberghe 2021a). Age-driven cognition losses turn out to be relatively poor predictors of the evolution of work capacity. An important nuance is that such a result could be due to the used data being better at measuring physical health than cognition, particularly the facets of cognition relevant to work. In SHARE, for Europe, items assessing cognition focus on basic mental capabilities whose loss is generally associated with very advanced age.

Third, between the age of 50 and 70, a maximum 35% of the recorded work reduction can be ascribed to an age-driven deterioration of health or cognition. The percentage is even smaller when considering the 50–67 or 50–68 age bands. These results are supportive of a work capacity that, overall, remains significant and is not dramatically altered after the age of 50, possibly up to the age 70 (Wise 2017; Blundell et al. 2021). However, this conclusion calls for several nuances regarding what it means for work beyond 50. Would a well-preserved work capacity mechanically translate into more work past the age of 50? Not necessarily. Some individuals may prefer trading early retirement (more leisure) for higher pension benefits. Furthermore, some countries could still be rich enough to finance retirement before their citizen’s work capacity plummets. In advanced economies, old-age pension schemes are no longer primarily designed as invalidity schemes (Costa 1998). Finally, some older individuals may face serious demand-side barrier to employment (see more on this in section “[Economic Underpinnings of the Old Employment Rate](#)”).

Fourth, heterogeneity exists and has policy implications. The speed of health and work capacity decline is far from uniform. Vandenberghe (2021c) finds that the level of GDP per head matters quite a lot in predicting health (and thus work capacity à la

Cutler) at an older age. Also, there is evidence that, within a country, work capacity declines faster among low-income, low-educated individuals (Wise 2017). Recent works show that there is a lot of health heterogeneity across individuals inside a given country, and possibly also longevity differences, even inside relatively narrowly defined socioeconomic groups (Vandenberghe 2021a). This has implications for the feasibility and desirability of retirement age differentiation: i.e., the most commonly touted policy option to deal with working capacity differences past the age of 50. When trying to account for longevity heterogeneity, should policymakers go for socioeconomic, occupation-based differentiated retirement ages? Or should they rather enforce a uniform (and now rising) retirement age, backed up by disability benefits whose access is conditional on an individualized health assessment? Work by Vandenberghe (2021c) shows that extended retirement age differentiation (i.e., the use of up to 200 different retirement ages) would fail to properly match older people's health status entire distribution. Under a regime of systematic, but inevitably proxy-based, retirement age differentiation, there would be many situations with no retirement for people with serious health conditions and, simultaneously, numerous cases where entirely healthy people go for retirement.

Economic Underpinnings of the Old Employment Rate

Without a doubt, physical health declines with age. However, the literature on work capacity shows that (on average) ill-health is probably not the primary determinant of the important variations of the elderly employment rate or a systematic obstacle to prolonged careers. Recent work by Vandenberghe (2021b) suggests it is even less the case of mental health, which is much less predictive of work beyond 50 than physical health. Also, while an individual's health is a negative function of age, the underlying decline is generally not abrupt. Hence, Heywood and Siebert (2009) say that age-related health problems cannot account for the prevalent mode of transition to retirement, nor the sizable cross-country differences in terms of same-age employment rates.

If not only health or cognition, what else? Quite invariably, the answer to that question points at the specific labor market for older workers hypothesis. What matters is a series of economic factors leading to a low/high propensity to be in paid employment beyond a certain age. Economists' focus alternate from the demand or the supply side of the labor market. Yet, what they observe is always the outcome of the interplay between labor supply and demand. Regarding the supply side, economists have worked on the age-driven preferences for more leisure, on spouses' coordinated retirement decisions, on the role of caretakers' obligations, or still – despite many pension reforms aimed at fixing the problem – on the lack of financial incentives to continue working at an older age. As to the demand side (i.e., firms and employers more generally), older individuals' willingness to stay in paid employment may be seriously compromised by rampant age discrimination in hiring (Neumark 2018), or by an employability handicap rooted into a higher unit labor cost (i.e., a high labor cost to productivity ratio) relative to their young or prime-age

colleagues (Dostie 2011; Vandenberghe 2011; Vandenberghe et al. 2013; van Ours and Stoeldraijer 2011).

Labor Supply and Age

Wealth and Preference for Leisure

Humpert and Pfeifer (2013) remind us that both the standard textbook model of labor supply and the job search theory assume that individuals choose employment over nonemployment if the offered wage is larger than their reservation wage. The later wage reflects the rate at which people are willing to substitute leisure for consumption. The point is that older people generally have higher reservation wages because of their wealth or accrued pension benefits. After a long and well-remunerated working life – for many prospective retirees, the past decades were synonymous with solid growth of wages and uninterrupted careers (Martin 2018) – they have accumulated entitlements, i.e., savings, real estate or financial assets, legacies, and pension benefit entitlements.

Join Retirement, Obligation to Care

A preference for retirement may also stem from a demand for joint leisure. If an individual has already retired from work, his/her partner might want to move out of work faster. Several economists have investigated the idea of joint retirement among dual-workers couples. Around 18% of these couples in the USA and 17% in the UK retire in the same calendar year. This points at the existence of leisure complementarities in retirement (Gustman and Steinmeier 2004; Stancanelli and Van Soest 2016). Also, as documented in Kydland and Pretnar (2018), the need to care for older relatives (e.g., parents aged 80-plus) might be an important contributor to (singularly older women's) withdrawal from the labor market around the age of 50.

Labor Demand: The (Un)willingness of Firms to Employ or Recruit Older Workers

Studies on older workers by economists often focus on the financial incentives to retire. There will be more on this in section “Policy-Induced Barriers.” They regularly stress the role of health problems (see section “Age and Work Capacity”), or the role of the preference for (joint) leisure. However, properly understanding older workers' labor outcomes also requires considering the role of employers, their employment, and hiring strategies. Until recently, many European firms “shed” older workers. Dorn and Sousa-Poza (2010) show that, in the early 1990s, involuntary early retirement, sometimes backed by state-sponsored buyout schemes, was common practice across several continental European countries. This has generated an interest for the demand side of the labor market. Many barriers to employment after 50 could originate more on that side. That assumption has been studied by, e.g., Hutchens (1986), Skirbekk (2004), Dorn and Sousa-Poza (2010), Dostie (2011), van

Ours and Stoeldraijer (2011), Vandenberghe et al. (2013), Delmez and Vandenberghe (2018), or Bello and Galasso (2020).

Discrimination Ageism

Do employers discriminate against older workers? Neumark (2008) explains that, overall, it is no straightforward matter to establish the existence of age discrimination, except for rare cases of overt expressions of discriminatory intent. Detecting age discrimination is more complex than race or gender discrimination because economic factors with an age component may affect individuals' success on the labor market. Chief among them are predictions derived from human capital theory: older workers may suffer from a productivity handicap, partially driven by a lower propensity to invest in education and training in reason of a shorter career horizon.

One well-documented phenomenon is age discrimination in *hiring*. Using correspondence field experiments – a randomized experiment where fictitious resumes which vary only in terms of a specific characteristic of interest are sent to actual job openings – research has found considerable evidence of age discrimination in the USA (Neumark 2018) and the European Union (Carlsson and Eriksson 2019). Hiring discrimination pushes older individuals, especially those who are unemployed or unsatisfied with their current job out of the labor market, enticing many to anticipate their full retirement from the labor force.

Recent work by Van Borm et al. (2021) associates hiring discrimination in OECD countries to *statistical* discrimination, whereby ill-informed recruiters use age as a proxy for (lower) productivity. The authors find that older age *signals* to prospective employers the applicant's lower technological skills, flexibility, and trainability levels. They consider that, together, age-related perceptions explain about 40% of the impact of age on the probability of being contacted for a job interview.

The Age, Skills, Productivity, and Wages Nexus

But if hiring discrimination points at (perceived) lower technological skills or less flexibility, one should raise the question of the very existence of an age-related decline of productivity, possibly driven by skill obsolescence and an overall loss of adaptability. That topic has received much attention from economists. The point is that it goes against the view that the only possible problem on the demand side of the labor market for older workers amounts to *pure* discrimination/ageism.

Physical and cognitive decline. Physical or muscular strength declines past the age of 35. There is also solid evidence that cognitive abilities decline from some stage in adulthood (Skirbekk 2004). Descriptive data from the OECD Program for the International Assessment of Adult Competencies (PIAAC) from 2011 to 2012 covering over 20 countries show that the age-cognitive skills profile peaks typically around the age of 30 before declining slowly among older cohorts (Martin 2018).

But the impact of age seems to vary with the dimension of cognition considered (Skirbekk 2004). Some cognitive skills, such as perceptual speed, start to decline quite early in life (i.e., from the age of 30), while others, like verbal and negotiation abilities, remain quasi-intact. Older individuals are generally better endowed in terms of job-related experience, but they learn slower and lose some of their memory

abilities. Adaptability also seems to be negatively affected by age: Senior workers are relatively less at ease when asked to adjust to new ways of working or new technologies. That said, despite the seemingly unavoidable reductions in some cognitive abilities, Skirbekk (2004) argues that training programs are effective in softening or even halting the age-related decline.

Productivity by age profiles. But physical strength or cognition and labor productivity should not be equated. Workers and employers can compensate some forms of physical or cognitive decline. Job content and work environment can be adapted to fit the conditions of older workers better, although this might come at a certain cost. Ultimately, the question of the shape of age productivity profile is an empirical one. The point exposed hereafter is that it is surprisingly difficult to estimate that shape, even when mobilizing state-of-the-art econometric methods. Allen (2019) lists four challenges:

- Objective measures of individual productivity are rarely available.
- Age is inevitably closely related to labor market experience or job tenure. And both have a direct and conceptually distinct impact on labor productivity.
- Simple cross-sectional comparisons by age or age group involve (and confound) different cohorts with different educational endowments. It is thus difficult to disentangle the potentially negative impact of age on productivity from a (generally) lower educational attainment.
- And even when good labor productivity data are available over multiple years (as is now the case with firm-level panels), there are selection and other endogeneity hurdles. In particular, as a cohort of workers ages, retirement does not occur at random. Individuals who keep toiling are likely to have received promotions and their productivity might not entirely represent their cohort. Also, short-term productivity changes (due to final demand shocks) may cause reverse causality. For instance, the loss of big contracts may cause a temporary decline in labor productivity and simultaneously inflate the share of older workers due to a recruitment freeze.

Economists have studied the relationship between age and labor productivity using both macro- and microdata. More macrolevel studies generally find a negative relationship between cross-country or, in the USA, cross-state degrees of population aging and productivity growth (Feyrer 2007; Calvo-Sotomayor et al. 2019). An interesting study is that of Gabriele et al. (2018). It exploits a quasi-natural experiment that took place in Italy. The reform consisted of lifting the legal retirement age, which de facto extended older workers in employment by several years. Using province-level data (and the fact that different provinces were treated differently due to varying shares of workers affected by the reform), they identify a drop in labor productivity.

Microlevel studies come in four guises (Allen 2019). The first works (that are also the oldest ones) use wage and salary data, or employee assessments done by managers, as a measure of individual productivity (e.g., Kotlikoff and Gokhale 1992). Economic theory predicts that both measures should reflect productivity,

but significant limitations exist nonetheless. The frequent use of seniority-based wages (Lazear 1979) means that pay cannot go down with age, regardless of what happens with the underlying labor productivity. From a statistical point of view, this may positively distort the estimates of the relationship between age and wage-based estimates of productivity. Evaluations by managers may be distorted in the opposite direction if the average manager's assessment is influenced by the stereotypical belief that older workers are less productive (i.e., ageism). Moreover, work often has a team dimension that is generally ignored when using these data. Cross-age spillovers may exist with older employees mentoring their younger colleagues, so boosting their colleagues' productivity at the expense of their own.

The second type of study is based on direct productivity measures, like, in the case of university professors, the number of papers published in peer-reviewed international journals (e.g., van Ours 2009). Despite being accurate in quantifying individual productivity, these studies lack scalability. Not all professions and occupations can be assessed that way. Moreover, these studies typically focus on relatively high achievers, probably causing an upward measurement bias.

The third type of study uses country-level survey data and infer from wages (or labor market status transitions) the relative productivity of older workers. Of great interest are those exploring the relationship between older workers' productivity and technological change. Hudomiet and Willis (2021), using Current Population Survey (CPS) data from the USA, show that older workers started using computers later than their younger colleagues. The authors conclude to a temporary *knowledge gap*, which may be equated to a productivity gap, between younger and older workers across most occupations. Still, despite being transitory, that gap affected older workers' labor market outcomes, i.e., it caused lower wages and a significant increase in early exits from the labor market. Hudomiet and Willis (2021) argue that this is consistent with Schumpeterian creative destruction in which, for instance, computerization has made older workers' skills obsolete. Similar effects could soon be observed with the dissemination of artificial intelligence (AI) or other new technologies.

Starting with Hellerstein et al. (1999), the last type of studies has focused on plant-level productivity outcomes and how these relate to plants' age structure. Both dimensions are easily and accurately measured via readily available plant-level databases. The challenge faced by this stream of work is that the age structure of a plant is endogenous: It is a function of the plant's productivity level and business cycle fluctuations. Several authors have estimated production functions expanded by the specification of an à la Hellerstein-Neumark labor quality index, with different labor shares by age. Those that use cross-sectional plant-level data conclude that plant productivity and age form an inverted U-shaped relationship (Skirbekk 2004).

The use of panel data to address the problem of the endogeneity of the age structure of firm's workforce has become standard practice in this literature. However, so far, the accumulated evidence remains somewhat mixed. Göbel and Zwick (2012), using German panel data, conclude to no age-related productivity decline. Very recently, Börsch-Supan et al. (2021a), analyzing data from a big insurance company in Germany, found that the age productivity profile is at average over all

tasks. By contrast, Vandenberghe et al. (2013), using Belgian firm-level panel data, conclude that older workers are significantly less productive than their prime-age workmates. Cataldi et al. (2011) find this particularly true inside ICT-intensive firms located in Belgium.

Unit labor cost by age profiles. An interesting methodological distinction is between studies that exclusively consider labor productivity and those that simultaneously assess the role of wages or labor costs. A priori economists with a focus on labor demand should assess employability by examining older workers' (relative) unit labor cost: i.e., the ratio between their cost to employ and their productivity. However, the results delivered by this somehow more promising stream of the literature are also mixed. When replicating their seminal 1999 analysis, Hellerstein and Neumark (2007) estimate relative productivity of US workers aged 55 to be only 87% of that of the reference group (i.e., workers aged 35), whereas their relative wages is 12% higher. For Belgium, Cataldi et al. (2011) and Vandenberghe (2013) infer from within firms variation of the shares of older workers that their unit labor cost is higher than the one of prime-age or young workers. Aubert and Crépon (2003) observe for French workers a relatively stable unit labor cost up to the age of 55. Nevertheless, a handicap appears beyond that age. By contrast, in the Netherlands, van Ours and Stoeldraijer (2011) conclude to the absence of a handicap among workers in manufacturing.

Other Economic Features Affecting Older Workers

Although the unit labor cost is probably one of the key determinants the labor demand for older workers, ignoring other facets of their specific (imperfect in some respects) labor market would be misleading. One of them is the difficulty of being *recruited* into a new job. Unemployment rates are not necessarily high past the age of 50. However, for many years economists like Rones (1983) have stressed that older workers, once unemployed, are significantly less likely to find a new job and more inclined to exit the labor force in discouragement, and even more so if pensions or similar benefits are generous and easily accessible. In most OECD countries, the duration spent on unemployment among those aged 50–64 is at least double that of young or prime-age workers. To bring some historical context to this, the principal force underpinning the rising older worker employment rates (see Fig. 1) has been older workers spending more years with legacy employers. Increased hiring rates for older workers have played a lesser role if any.

So why is it more difficult for older workers to be recruited, even when representing a larger share of the total workforce? Economists have examined several factors: shorter employment horizons, seniority wages, quasi-fixed labor costs, or a mismatch between job expectations of older workers and those of the employers.

Short horizon. To grasp the idea Allen (2019) suggests imagining an employer interviewing two applicants for a vacant position. They are identical in every respect except one: their age. Applicant *A* is, say, 30 years old and applicant *B* is 64.5. From a purely economic perspective, age could become a determining factor in the hiring decision if age is believed to be highly correlated with the odds the worker will stay

with the firm and the firm has hiring and training costs. The return on recruitment efforts and human capital investments rises with job duration. So, if the expectation is that the 64.5 years old will retire relatively soon, the profitability of hiring him/her diminishes. On the other hand, Allen (2019) also stresses that younger workers have historically had a markedly higher turnover than other age groups, so this could push the decision in favor of the older applicant. Also, age should not weigh much on the hiring decision for jobs with no or limited hiring and training costs. Nevertheless, the evidence is that these jobs tend to pay less.

Quasi-fixed costs. Recruitment and training costs are part of what labor economists call quasi-fixed labor costs (Oi 1962). The notion deserves some clarification. Hamermesh (1993) explains that quasi-fixed labor costs reflect the propensity of total labor costs to be not strictly indexed on the hours of work delivered but on the number of employees. He distinguishes two types. First, the “recurring fixed costs”, associated with nonwage remuneration and fringe benefits: health insurance, company car, and paid sickness leave (and any other type of leave where the worker remains paid while not delivering any hour). Second, the “one-time fixed costs,” paid only once per worker like the recruitment and redundancy or training costs. The key take-home message is that in the presence of high “one-time fixed costs,” older workers (with a shorter work horizon) might be more expensive to recruit. And in the presence of high “recurring fixed costs,” lowering the number of hours worked (i.e., something the older workers generally aspire to) will increase their cost per hour *ceteris paribus*. Estimates, using firm-level Belgian data, are that quasi-fixed labor costs represent around 20–23% of total labor costs (Delmez and Vandenberghe 2018), a percentage that varies a lot from one industry to the other but correlates (positively) with the average duration of work, and (negatively) with the propensity to employ workers on a part-time basis.

Seniority wages. Lazear (1979) was the first to expose the rationale for firms to enforce deferred compensation under the form of implicit labor contracts, i.e., pay schemes where remuneration rises with seniority starting from a low point (inferior to productivity) to finish at a high predetermined point (superior to productivity) synonymous with mandatory retirement. Economists have for long argued theoretically and showed empirically that these arrangements translate into lower employment opportunities for older workers (Hutchens 1986). By design, the latter fosters long-term employment relationships and labor productivity. The fear of losing deferred compensation deters worker shirking, increases effort, and favors long-term employment relationships (Heywood and Siebert 2009). Hutchens (1986) asks: if a new 55 years old – with the same productivity as same-age workers already with the firm – applied for a job, would the firm hire him/her? The answer is it would not if it must pay the additional worker the same wage that it pays to the 55-year-old insider, e.g., due to internal or external wage equalizing rules. Since these previously hired older workers receive a wage that exceeds their productivity, a profit-maximizing firm would not pay an extra worker such a high wage. The firm could offer the new old recruit a different wage path. He could enter in a 10-year contract that perhaps underpays over the first 5 years and overpays over the last 5. Hutchens (1986) further argues that even in that case, the firm would prefer a more extended

implicit contract with a young recruit. But also, that configuration raises the question of the (un)willingness of older individuals to accept, at an advanced stage of their career, a wage that is lower than their productivity, often after having experienced just the opposite. They might prefer turning to firms that pay spot market wages or (early)retire altogether, and the more so if replacement earnings are high and readily available.

Expectation mismatches and the prevalence of bridge jobs. Another concern is that older workers insist on work schedules (including part-time work or flexitime arrangements), partial or gradual retirement, and work environment accommodations that make them more costly and/or less productive to employ. Surveys invariably reveal that older workers aspire to fewer hours and more flexitime. Meeting these expectations should be good for their willingness to stay in employment and their hourly productivity. However, with working time policies, firms' preferences matter too. As stated above, the success of reforms aimed at fostering flexitime arrangements could be compromised in the presence of high quasi-fixed labor costs. Employers might then be reluctant to implement the part-time/flexitime work arrangements older individuals aspire to (Delmez and Vandenberghe 2018).

A related question is the format of partial/gradual retirement options for older workers. Many observers implicitly consider flexitime (or partial retirement) as a systematic feature of so-called *career/legacy jobs*. But one cannot exclude that gradual/partial retirement takes the form of what is known in the USA as *bridge jobs* (Honig and Hanoch 1985; Ruhm 1990). The nuance is not benign as bridge jobs usually imply some form of redundancy followed by a more or less painful transition to new, often less paid, jobs. These may offer some amenities appreciated by older workers (flexitime, proximity to home. . .), probably partly because the firms offering them are characterized by no or low fixed labor costs.

Policy-Induced Barriers

This last section focuses on the policy-related barriers to employment opportunities for those aged 50 or more. Discussed issues comprise the role of (early)pensions and related social security schemes, or of laws explicitly aimed at protecting older workers.

Generous (Early)Retirement Benefits, Implicit Tax on Continuing Work

Economists have extensively documented the potent role of (early)pension schemes and other welfare regimes in enticing people to early exit from the labor force (Blöndal and Scarpetta 1999; Duval 2003). From the 1970s to the mid-1990s, the most common policy in Europe and other regions of the world was to encourage – sometimes impose – early retirement by older workers, hoping this would make way for unemployed youth (Martin 2018). Economists have shown that these hopes have

rarely materialized: The departing “young old” have generally not made way for youth (Gruber et al. 2009). Economists have also quantified the *implicit taxes* on continued work present in many public pension regimes, and demonstrated these created substantial work disincentives (Blöndal and Scarpetta 1999). However, this is (almost) history as most countries have, from the early 1990s, made their pension systems more actuarially neutral. Actuarial neutrality is a marginal concept relating to the present (or the absence of) financial incentives – embedded in the calculus of pension benefits – of working an additional year. The relationship between age and the benefits should equalize the present discounted value of pension benefits across all permissible claiming ages to achieve neutrality. Depending on the age and life expectancy, actuarial adjustment rates achieving neutrality are between (+) 6.5% and 8% per extra year of work/contribution and vice versa (Duval 2003; Börsch-Supan et al. 2018).

The push for longer careers has also come from other reforms (Martin 2018). In many OECD countries, early retirement schemes have been discontinued. And there has been an overall rise in the statutory retirement age in public pension systems. More generous retirement age provisions for women have been abandoned. As mentioned above, there is now a growing trend in OECD countries to automatically link the statutory retirement age to life expectancy to ensure the financial sustainability of PAYG public pensions in the future (OECD 2012).

No Remunerated Work When Drawing Pensions, Age Discrimination Laws

Another policy-related hindrance to prolonged employment are those rules preventing working (even part time) and simultaneously receiving public or occupational pension benefits. Nevertheless, more and more countries have dropped these restrictions. In the UK, since the late 1990s, it is possible to combine work with the state pension. A similar decision was enacted in 2000 in the USA. Many other countries have since raised or completely abolished the earnings limits for people working past pension age.

The case of (anti)age discrimination laws is special. *Prima facie*, such a policy is quintessentially for pro-older workers. But economists' views on it are mixed. A first issue they raise is the difficulty implementing these laws and the legal uncertainty this creates. Heywood and Siebert (2009) argues that older workers differ from their young or prime-age peers, so some differentiation of economic treatment by age is part of normal business life. For instance, a worker's age can negatively impact the rate of return of any human capital (training) investment he/she benefits from. Dissociating economically normal “differentiation” from unfair age “discrimination” is tricky. It is thus no surprise that antidiscrimination regulations usually come with many exceptions when age differentiation is allowed (e.g., for seniority or severance/termination pay, for the benefit of, e.g., aviation security, etc.). Second, and more matter-of-factly, is age discrimination legislation a boon or a bane for older workers' employment performance? Empirical evaluation of that question mostly comes from

the USA (Button 2019). Results vary depending on data or method or even the period covered. But the main take-home message is that age discrimination laws seem to foster employment for the older individuals via an extension of career jobs, but tend to negatively impact their (already lower) chances of being hired in a new job.

What Could Policy Do to Help Older Individuals?

Population aging will most likely translate into reinforced pushes to increase the *supply* of labor beyond the age of 50. But, if the ultimate goal is to boost the employment rate, it is equally important to foster a stronger *demand* from employers. Strategies that consider only the supply side induce a double risk: (i) that a significant portion of seniors no longer entitled to a (pre)retirement, and not finding jobs, simply swell the ranks of the unemployed, or massively apply for disability benefits, and (ii) that of widening inequalities between those of the elderly individuals who are unable to prolong their activity and those (e.g., executives) who would easily benefit financially from longer careers. Certainly, the macroeconomic perspective of thousands of jobs left vacant by retiring baby boomers is reassuring. However, a policy that intelligently fosters old-age employment requires assembling the micro-economic conditions greasing the wheels of the eponymous labor market. This probably calls for a multipronged strategy.

Company-based training. To foster retention of older workers as workforces age, to minimize the risk of skill obsolescence, and combat the risk of productivity handicap, it would be desirable to boost investment in lifelong learning, and even more so in industries exposed to (or during periods of) rapid technological change (Hudomiet and Willis 2021). Longer horizons (a mechanical outcome when retirement age goes up) and the gradual increase of the 50-plus employment rate should help. Simply, if the new normal is that careers last until the age of 70, someone looking for a job, or applying for a company-based training scheme at the age of 50, could credibly argue that he/she has a professional horizon of 20 years. This is more than enough to amortize recruitment and training costs. Still, OECD data for the early 2020s show that participation rates in training are still relatively low for older workers in many countries. Few seem to see significant benefits to investing much in training to upgrade skills.

Economic theory has long presented company-based training as one of the archetypal examples of market failure. The risk of outbound mobility (reinforced by poaching) or the impossibility to mortgage skills and competencies may lead to no or limited financing by firms despite potentially very significant productivity gains or profits. Thus, some form of state intervention to finance and foster training is probably needed. Interesting real-life initiatives comprise *portable* and tripartite-sponsored individual training account schemes, i.e., cofinanced by the workers, their successive employers, and the state.

Publicizing the benefits of age-diverse workforces, promote the use of AI in hiring. That said, older individuals' biggest problem remains to be hired. As stated

by Martin (2018), one might hope that as populations age and workforces shrink, age discrimination in hiring decisions might recede as employers face smaller cohorts of youth and prime-age jobseekers. An example worth advertising is an experiment designed and set up by BMW. In anticipation of the rapid aging of its workforce, the automobile company staffed one of its assembly lines with workers of an age likely to be common in the future. At first, the pensioners' assembly line was less productive. But the firm succeeded in lifting labor productivity and aligning it with the rest of the group by introducing 70 changes such as new chairs, comfier shoes, magnifying lenses, or adjustable tables. However, the combined cost of these improvements has not been communicated by BMW.

Then there is this idea that search algorithms could help counter some of the biases characterizing human recruiters. The consequences of the (expanding) use of data analytics and machine learning to automate hiring procedures have been investigated, e.g., by Li et al. (2020) who conclude that these innovations translate into less ageism in hiring.

Reducing the size of seniority pay. Another recommendation would be to reconsider the use of seniority pay and foster performance pay systems beyond a certain level of tenure. This will not be easy to achieve, singularly in Europe, as seniority pay is a quasi-institutionalized feature of the wage-setting process. Workers and unions are firmly attached to this principle. In addition, mainstream economic theory teaches that seniority pay matters for efficiency: It serves as an incentive for new recruits to work hard and invest in firm-specific skills while reducing monitoring costs, as it seeks to minimize shirking (Shapiro and Stiglitz 1984) and outbound mobility.

Promote part-time work, flexitime. Albanese et al. (2020) explain that labor economists often posit that a worker can flexibly choose his/her work hours to maximize his or her utility. Reducing the working time at the end of the career has indeed been proposed as a tool to prolong the working career, something that could increase the activity rates of older workers. The enforcement of so-called flexitime arrangements could improve the work-life balance (and help take up care obligations) or reduce the risk of dropping out of the labor force due to mildly limiting health conditions. Two complications have been identified, however.

The first one is simply the lack of enthusiasm of (some) employers. Kuroda and Yamamoto (2013) show that, often, private sector workers cannot choose hours freely. Also, a reduction of hours requires that people change from jobs and may cause a significant reduction in hourly wages. Again, this stresses the role of employers in determining hours (Pencavel 2016), and the possibility they fear inflating their average labor cost per hour due to quasi-fixed labor costs. A closer scrutiny of firms' (dis)incentives to change working hours should help policymakers and social partners design sustainable flexitime schemes. For example, to promote part-time employment for older workers, decision-makers should perhaps prioritize industries and occupations with low quasi-fixed labor costs, or in the same vein, foster tax, insurance, and compensation policies ensuring that employers' costs remain proportional to the hours delivered.

The other problem seems to be rooted in the labor supply response to flexitime opportunities. The main findings can be summarized as follows. Either there is a positive effect on the survival in employment in the short run, but a negative one in the longer run (Albanese et al. 2020), as part-time work erodes labor market attachment and fosters the transition to early retirement as soon as the latter becomes accessible. Alternatively, there is a positive effect on the duration of careers, but the impact on total hours of work is negative as many substitute part-time work for full-time work (Graf et al. 2011).

ALMP. Active labor market policies (ALMPs) and labor market matchmaking mechanisms are also part of the standard toolbox to help older workers find a new job. The question is: What do we know about the effectiveness of ALMPs? There is no straightforward answer. The meta-analysis by Card et al. (2017) does not distinguish older workers from the other beneficiaries of ALMPs. The evaluation literature delivers a mixed picture regarding the success of such measures in lifting older workers' chances of being recruited. However, training tied to local labor market needs and subsidies for entrepreneurship and self-employment can prove beneficial for the older unemployed (Martin 2018). Another problem identified by Martin (2018) is simply the modesty of these programs. In 2015, the typical OECD country has spent just over 0.5% of its GDP on all ALMPs. More should be done. Also, it seems necessary to increase the degree of targeting on the older unemployed or exposed to a risk of job displacement. But this goes against the entrenched tendency since the 1970s to see training and other ALMPs primarily as a way to combat youth unemployment.

Lower taxes on old labor. More in the European context, on condition that the social partners agree on enacting most of the above-listed policies, it might make sense to selectively lower the cost of employing (in priority less-educated) older workers without reducing take-home salary by reducing social security contributions or income taxes. Early retirement generates two types of costs for the public purse: (i) the end of the payment of work-related contributions and taxes and (ii) the emergence of net financial transfers to the benefit of early retirees. Fostering the older employment rate by reducing or eliminating labor taxes or social security contributions amounts to endorsing all or part of the first cost but eliminating the second. Notwithstanding the inevitable deadweight and substitution effects, there is probably a possibility of a (small) net gain for the public budget (Albanese and Cockx 2019).

Summary

Labor economists interested in old labor will have much work in the coming decades. This is simply because the functioning of economies will depend on steadily rising shares of individuals aged 50–70. Push factors explaining that trend comprise the demography (i.e., aging) and structural trends like the rise of the share of older individuals with high educational attainment, the generalization of career paths among women, and, perhaps, a continued improvement of health. Another

significant contributor will be stricter retirement policies. There is a widespread consensus among pension economists and policymakers that the best way to combat the risk of secular stagnation induced by demographic aging is to prolong careers and lift the old employment rate. But the overall propensity to stay longer in paid employment will also remain a matter of decentralized decisions about how much to demand/supply labor, in which form, and for what level of monetary compensation. The capacity of individuals and employers to adapt and embrace aging-driven organizational or technological changes will probably prove crucial. And those are questions that economists should study in the coming years, using international but also firm- or individual-level data, documenting and explaining how and why some succeed, but also fail, to adapt.

More factually, it is worth stressing that almost all advanced economies have recorded increases in older worker employment rates over the past two and a half decades. And in some countries (e.g., Germany), the increases have been very significant indeed. What is more, they have not been confined to the “young-old”; the “old-old” aged 65–69 or 70–74 have also recorded rising employment rates, although from a much lower starting point (Martin 2018).

The somehow puzzling observation is that the rise of the older worker employment rate has not been induced by employers hiring more older workers. And this points, for many countries, at the absence of fully-fledged and well-functioning (external) labor markets for older individuals. The works reviewed in this chapter show that a broad-based rise of the old employment rate is primarily to be ascribed to a higher retention rate within firms or organizations: i.e., older workers staying on longer with their legacy employer. This sounds like a renewed confirmation of the relevance of Hutchens (1986) seminal work on the low propensity employers to fill their vacancies with older individuals.

There are probably still many barriers to hiring older workers. Moreover, these are insufficiently documented and understood by economists. Discrimination and negative stereotypes about age, shorter employment horizons, seniority pay no longer in line with career productivity profiles, underestimated quasi-fixed labor costs, and relatively low digital skills may all comprise older workers’ chance to easily move from one job to the next one.

Cross-References

- ▶ [Aging and Social Insurance](#)
- ▶ [Correspondence Studies](#)
- ▶ [Decent Work and the Quality of Work and Employment](#)
- ▶ [Education and Longevity](#)
- ▶ [Fair and Unfair Income Inequality](#)
- ▶ [Household Labor Supply](#)
- ▶ [Social Norms and the Labor Market](#)

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