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Labor-Force Participation, Policies & Practices in an Aging America: Adaptation Essential for a Healthy and Resilient Population

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Abstract

Population aging in the United States poses challenges to societal institutions while simultaneously creating opportunities to build a more resilient, successful, and cohesive society. Work organization and labor-force participation are central to both the opportunities and challenges posed by our aging society. We argue that expectations about old age have not sufficiently adapted to the reality of aging today. Our institutions need more adaptation in order to successfully face the consequences of demographic change. Although this adaptation needs to focus especially on work patterns among the "younger elderly," our society has to change its general attitudes toward work organization and labor-force participation, which will have implications for education and health care. We also show that work's beneficial effects on well-being in older ages are often neglected, while the idea that older workers displace younger workers is a misconception emerging from the "lump of labor" fallacy. We conclude, therefore, that working at older ages can lead to better quality of life for older people and to a more productive and resilient society overall.

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Population aging in the United States, as in most countries around the world, poses many challenges to our major private, public, and societal institutions. At the same time, however, it creates great opportunities for building a more resilient, successful, and cohesive society. For several reasons, work organization and labor-force participation are central to both opportunities and challenges posed by an aging population. First, for all but a very few, working remains the main source of income for consumption and for savings. Work also has an anchoring function in society, bringing multiple benefits to our physical, social, and emotional well-being. Given the continuing increase in life expectancy in aging societies, it is more necessary than ever before to revisit the role of work in older ages and the opportunities that longer working lives can bring to aging societies. We argue in this essay that individual expectations about old age have not sufficiently adjusted to the new reality of an aging society. Reflecting this, our private, public, and societal institutions suffer from the same disconnect and now need to adapt considerably to face the challenges and embrace the opportunities of demographic change. Although this adaptation must focus especially on work patterns among the "younger elderly," our entire society has to adapt its attitudes toward work organization and labor-force participation, and in the process rethink its education and health care policies and expectations.

In this essay, we will describe some of the often understated benefits that working and remaining active may have for health and well-being in older populations.

Furthermore, it is often claimed that an older workforce has negative implications on general productivity and displaces younger workers from positions they would otherwise occupy. We will show that this is a misconception emerging from the "lump of labor" fallacy: the idea that the amount of work available to laborers is fixed. We maintain that it is not demographic transitions per se that will shape our future, but instead how our institutions and policies respond and adapt to them. It is our choice.

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Individual expectations about old age tend to be formed by looking to history. Our intuition about health and workability at older ages stems to a large extent from the experiences of our parents and grandparents. Our expectations about what Social Security should deliver to us stem from what Social Security delivered to previous generations. We have a hard time imagining, however, what our lives will look like in twenty-five or fifty years: how long we will live, how healthy we will be by then, and under how much pressure Social Security will be. We will address all of these issues, beginning with the salient points about Social Security (a more detailed discussion of which may be found in S. Jay Olshansky, Dana P. Goldman, and John W. Rowe's essay in this volume.)

At the time Social Security was established in 1935, sixty-five was commonly the age U.S. citizens received other government benefits. (It is important to recall that life expectancy for American men from 1935 to 1940 was about sixty years.) Table 1 shows the dramatic changes in life expectancy that have taken place since then–changes that have been reported in many articles and studies, but that appear not to have entered our

collective wealth of self-evident facts on which individual actions and general policy are based.

Table 1: Life Expectancy for Social Security

Year Cohort Turned 65	Percentage of Population Surviving from Age 21 to Age 65		Average Remaining Life Expectancy for Those Surviving to Age 65	
	Male	Female	Male	Female
1940	53.9	60.6	12.7	14.7
1950	56.2	65.5	13.1	16.2
1960	60.1	71.3	13.2	17.4
1970	63.7	76.9	13.8	18.6
1980	67.8	80.9	14.6	19.1
1990	72.3	83.6	15.3	19.6

Source: Social Security Administration, "Life Expectancy for Social Security," http://www.ssa.gov/history/lifeexpect.html.

In the mid-twentieth century, just over half of all Americans who reached the age of twenty-one could expect to reach sixty-five. Many workers paying into Social Security would never live long enough to receive benefits, especially African Americans, whose life expectancy was just over fifty in 1935. Today, however, men who retire at age sixty-five can expect to live for an additional seventeen years; women live even longer. [1] Average life expectancies have risen so sharply since 1935 that it is no surprise that Social Security–and our expectations about what old age looks like–have been unable to keep up.

Significantly, there is also evidence for a substantial increase in healthy and

disability-free life expectancy; that is, the number of years men and women can expect to live without major functional limitations. Despite some controversy, the general trend appears clear: over the past decades, as life expectancy has improved in the United States, so too has healthy or disability-free life expectancy. When life expectancy improves and morbidity and disability decease, this, leads to "compression of morbidity," or a longer part of life spent in good health and a shorter number of years lived in ill health. Most studies show that a significant compression of morbidity has occurred over the last decades in the United States, making it clear that many–although not all–Americans are able to work until after current retirement ages or eligibility for Social Security.[2]

Yet some evidence suggests that compression of morbidity has stagnated in recent years. Even more concerning are current hints that middle-aged and the "young old" are showing increases in morbidity and functional limitations not evident in earlier cohorts that grew old between 1990 and the present. A closer look at the evidence shows that good health at older ages is strongly predicted by educational attainment and other indicators of socioeconomic status. In a recent study, public health researcher David Rehkopf and colleagues projected the future employment potential for the near-elderly workforce based on demographic trends and trends in mobility and functional status from the 1982–2004 National Long Term Care Study and the 1992–2010 Health and Retirement Study.[3] Rehkopf's projections through 2050 focus specific attention on educational differences. His group concludes–based on multiple scenarios of population trends in disability–that those with a high school diploma have generally a high and consistent potential to work productively between the ages of fifty-five and seventy-four. The estimates suggest that under most scenarios, about 70 percent of those with at least a

high school diploma will be able to work in this age range. These findings are generally in line with studies done by economist David M. Cutler and others, who assume no huge upward turns in disability prevalence, even with modest or no improvements in active life expectancy.[4]

But the same is not true for those with low levels of education. Rehkopf's team suggests that if less favorable trends continue for men and women without a high school diploma, this group could have depressed levels of ability to work at older ages.[5] These estimates vary much more depending on different assumptions about trends, but they range from just over 0 percent to 60 percent in the most optimistic circumstances. Of course, new medical technologies could alter these trends by providing more support to those with limitations. Furthermore, patterns of immigration bringing in more or less educated young and middle-aged adults could also change these estimates. But, assuming that less dramatic changes take place, we can anticipate seeing a divided workforce: one group of men and women with a high potential to work in their sixties and seventies, and another whose more substantial disabilities limit their potential for long-term labor-force participation. This division in potential future ability to work makes it even more difficult to form expectations about the type of support an aging society will need. Political discussions tend to focus on one or the other group, stressing either the disadvantaged group's need to retire early or the healthier group's need (or at least ability) to work longer. Adapting work organization and labor-force participation to an aging world, however, requires recognition of U.S. society's deep split between the many for whom healthy life expectancy has dramatically increased, and those who have not enjoyed such improvements in health.

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The dramatic demographic changes depicted in Table 1 imply that most men, and even more women, will now survive early childhood and mid-adulthood to reach older ages, meaning that larger and larger numbers of older men and women will reach eligibility for Social Security. When most retirement and other age-related policies were established, they made sense in terms of the current life expectancy. Today they do not. These demographic changes point to the necessity of institutional adaptation.

Among industrialized nations, the United States does not have the largest disparity between life expectancy and retirement age. France and Italy, for example, set the age of early retirement earlier than the United States' (often between fifty-five and sixty), even though they enjoy greater life expectancy than the United States does. Thus, the time from retirement to death is decades long in France and Italy, creating a large imbalance between work patterns and demographic reality. In response, France and Italy have joined the growing number of European countries adapting their statutory retirement ages, although only for future cohorts and with many exceptions. Germany, for instance, has confronted this challenge through a variety of policy adjustments: First, it introduced penalties for early retirement that were gradually phased in between 2000 and 2010. Second, it abolished some special tracks for early retirement, including the differential treatment of men and women (who previously could retire earlier despite their longer life expectancy). Third, the statutory retirement age began gradually shifting in 2013 by about a month per year to reach a target of age sixty-seven by 2029–roughly in line with the expected increase in the length of life. These adaptations have met much resistance.

Accommodating popular opinion, the German government reintroduced a pathway to early retirement at age sixty-three. France and Italy have seen similar policy reversals, backtracking from modest increases in statutory retirement ages to early retirement options. Public anxiety about increased retirement age clearly shows the need to overcome popular misconceptions about actual and future life expectancy and health in older ages.

The United States has done part of its homework and is ahead of Europe. The Social Security Amendments of 1983 legislated a gradual shift in the eligibility age for normal Social Security benefits. It will not be sufficient, however, to bring the U.S. Social Security system back into actuarial balance. Thus, a steeper path to changing the average worker's eligibility ages is still necessary.

In addition, given the reality of a divide in the health of America's older population, it is critical to create differentiated paths to retirement and labor-force exits depending upon health (which in turn often depends on economic and social experiences earlier in life). This life-course fork in long-term trajectories suggests that options for early retirement based on work disability are critical to maintain intra-generational justice between those who can work longer and those who cannot. A one-size-fits-all Social Security reform will not do; only a differentiated approach will avoid the political backlashes observed in Europe. This may mean the implementation of both a general retirement age that is indexed in some way to life expectancy and an early-retirement option based on the ability to work. For older workers in poor health, it is obviously better for their health and well-being not to have to work. This may mean that certain groups within the population–such as the less educated and those with very physically

demanding jobs–may need the option to take an early path to retirement. Current Social Security policies enabling people to start collecting benefits around age sixty-two may be a good model for workers in this group. Those with better functioning or with limitations that do not interfere with their performance could have longer working lives and continue to make substantial contributions to productivity in U.S. society.

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Adapting the retirement age to a longer life has many implications. We note, as others in this volume have, that these do not exclusively affect the elderly. First, the ability of future generations to work longer hinges on their education and health throughout life. Additionally, since the United States will have a larger number of retirees in the future than ever before, the younger and middle-aged will have to be better-educated and in better health than they are today in order to carry this additional actuarial burden (regardless of how many older people keep working). To optimize our chances of providing a healthier workforce at older ages, we must adopt a life-course approach that focuses on the social experiences and behaviors of men and women across all ages. For example, the men and women who will be in their sixties and seventies in 2030 to 2050 are in early to mid-adulthood now. Their current health and social conditions are therefore shaping their capacity and the opportunities for employment options they will have at age sixty, seventy, or eighty. The point is even stronger for education because of the many implications a poor education has on opportunities over the entire course of life. We have no time to lose if we hope to change trajectories of work and retirement.

Debates about our aging society too quickly end up foundering on the issue of Social Security reform and the well-being of the elderly, while tending to ignore the necessity of creating better starting positions for the young. Macroeconomic analyses show that education and health care reform have more leverage in shaping our society's ability to create new jobs, foster better working conditions, and encourage labor-force participation (and thus, indirectly, improve the financial position of Social Security) than an adapted retirement age and disability insurance reform.[6] Other studies suggest that recessions have differential impacts on long-run health, with disadvantages accruing to particularly vulnerable age groups.[7]

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In any argument about retirement, it is important to discuss the implications of working at older ages. In general, being employed is positively associated with health. There are many reasons for this relationship, the most obvious being health selection; that is, healthy people are more likely to be able to work. However, there is growing evidence that employment itself actively yields both physical and mental health benefits. Here, we will explore findings suggesting that employment may improve health and well-being by increasing social engagement; developing and maintaining intellectual and interpersonal skills; and, importantly, continuing to earn and delaying the use of savings, pensions, and other benefits. This phenomenon has obvious implications for retirement, since negative effects of retirement are often ignored in the cost-benefit analysis that is done when a state attempts to determine the optimal retirement age.

Retirement introduces large changes to an individual's life. While there is little doubt that poorer health is associated with early retirement, studies on the health impact of retirement have so far reached no consensus on whether retirement promotes or harms health. Differentiation is essential in conducting these studies: physically and psychologically strenuous work conditions are unlikely to be good for a person's health, while working in a rewarding and healthy environment may be better for mental and physical health than leaving the work force. Many of the existing studies have faced methodological problems: they do not distinguish the effects of aging from those of retirement and they often do not distinguish the effects of retirement from those of previous life experiences or conditions which themselves influence retirement decisions. Many of the descriptive studies lack an adequate control or comparison group; this is important because the decision to retire is not random (there is a self-selection issue). For instance, those who are ill are more likely to retire early, and those with great wealth may also retire early. Illness, however, maybe caused by environmental conditions and wealth by education. Thus in both cases, retirement is not causally linked to health or wealth but by previous life experiences and conditions. In addition, the effects of retirement on health may depend on many contextual factors, including the adequacy of retirement benefits, as well as individual factors such as occupation, socioeconomic status, and marital status. Retirement may also have different effects on physical and mental health, requiring the need for further differentiation in the methodology of studies on retirement.

The literature on this question has focused on understanding how reforms on the age of retirement–namely, the age of compulsory retirement or the minimum age of retirement–might impact health. These laws have a strong effect on retirement decisions:

while a substantial proportion of workers retire before the statutory age of retirement, a higher statutory retirement age encourages individuals to work longer. Here we focus on a small (but growing) set of studies that have attempted to establish causality between the statutory retirement age and retirement's effects on health. We will examine two pieces of evidence that are important in this respect: First, we discuss some of the studies using longitudinal data to assess how retirement influences health, taking into account the complex set of factors that lead individuals into retiring early. Second, we discuss the evidence of the health impact of retirement age–related policy reforms.

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Longitudinal studies follow the health of workers during the years prior, during, and after retirement and compare it to the health trajectories of workers who continue to work. Using data from employees from the French companies Électricité de France and Gaz de France (EDF-GDF; also called the GAZEL cohort), epidemiologist and gerontologist Hugo Westerlund and colleagues found that between the year before and the year after retirement, the prevalence of poor self-rated health fell from 19 percent to 14 percent.[8] These health improvements were stronger for workers with a poor work environment before retirement. Using data from the Whitehall II study of British civil servants, epidemiologist Gill Mein and colleagues found that although mental health improved after retirement, physical functioning did not appear to change.[9] Mental health improvements, however, were confined to high-grade employees. In a reexamination of the data, epidemiologist and social scientist Markus Jokela and colleagues found that

compulsory retirement at age sixty and early voluntary retirement were associated with improvements in mental health and physical functioning.[10] In contrast, retirement due to ill health was associated with poorer mental health *and* physical functioning. Their findings highlight the important role of health-related selection as a potential explanation of the negative association between retirement and health.

The impact of retirement on cognitive function is of particular interest in view of the 'use it or lose it' hypothesis, which suggests that age-related cognitive decline can be lessened by engaging in cognitively demanding activities[14]. This would suggest that to the extent that work is cognitively demanding, retiring later may bring benefits to cognitive function. Using data from the Whitehall II study, Roberts and colleagues[15] found that workers that retired experienced smaller improvements in mean cognitive test scores than continuously employed workers, though these differences varied by cognitive domains.

Many of the studies referenced above, which are confined to European populations, cast doubt on the notion that retirement is bad for health overall: the prevailing finding appears to be that in the short term, retirement is associated with an improvement in mental health and little or no change (but no clear evidence of harm) to physical health; though there is no doubt that the effect of retirement depends on the nature of the worker's occupation and health prior to retirement.

More recently, studies have used differences across cohorts in eligibility for retirement benefits (based on legislation on statutory retirement or pensionable ages) to isolate the effects of retirement on health. Economist Kerwin Kofi Charles has used policy variation in mandatory retirement and Social Security benefits that influence

retirement incentives by age and cohort in the United States to examine the impact of retirement on depression.[11] He found that retirement leads to better mental health and well-being. Other studies exploit variations across countries in the age of eligibility for early and full retirement benefits. Based on these variations, economists Norma B. Coe and Gema Zamarro found that retirement leads to a short-term decrease in the probability of reporting poor health, and a long-lasting improvement in the overall health index.[12]

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It is nonetheless important to distinguish general health from cognitive abilities, which appear to benefit from working at older ages. The impact of retirement on cognitive function is of particular interest in view of the "use it or lose it" hypothesis, which suggests that age-related cognitive decline can be lessened through engagement in cognitively demanding activities.[13] This suggests that individuals whose work is cognitively demanding may benefit from later retirement. Using data from the Whitehall II study, B. A. Roberts and colleagues found that workers who retired experienced smaller improvements in mean cognitive test scores than continuously employed workers, although these differences were not significant for most cognitive test scores.[14] A seminal paper by psychologist Stéphane Adam and colleagues, based on the Study of Health, Aging, and Retirement in Europe (SHARE), found that cognition–measured mainly by memory abilities such as delayed word recall–declined during retirement.[15] This finding has given rise to an entire literature. Economists Susann Rohwedder and Robert J. Willis compared studies of retirement from Europe, the United States, and

Britain and found that early retirement has a negative effect on cognitive ability.[16] Their findings, however, are not corroborated by other studies. Based on data from the U.S. Health and Retirement Study (HRS), Coe and colleagues examined employers that offered early retirement windows and found that time in retirement was unrelated to cognitive function among white-collar workers, but may have a positive effect on cognitive function among blue-collar workers.[17] More recent studies based on European data, however, show that early retirees suffer from faster cognitive decline than later retirees.[18] Based on the HRS, sociologist Esteban Calvo and colleagues found that the effect of retirement depends on the timing: those retiring before age sixty-two seem to fare worse than those who continue to work; yet, retirement at age sixty-two or older is not associated with worse physical and mental health. [19] Again, these studies have generally not found any negative effects of retirement on physical or mental health. Other studies have also found that retirement has no impact on mortality.[20]

The studies discussed above reflect the variety of approaches to determining the health effects of retirement. What do these results tell us about the potential impact of recently enacted policies to increase retirement age for future generations across many countries? On the one hand, there seems to be little evidence that retirement harms physical health or increases the risk of dying. Although some studies do suggest that retirement may be beneficial to mental health, distinguishing between different cohorts is again paramount: several studies suggest that the mental health consequences of retirement depend on the working environment and type of job the retiree had. While retirement does appear to benefit the mental health of many working in strenuous conditions and performing manual labor, this is less clear for workers in white-collar

positions and with healthy work environments. Finally, the more recent evidence tends to find some support for the hypothesis that retiring later helps individuals maintain better cognitive functioning.

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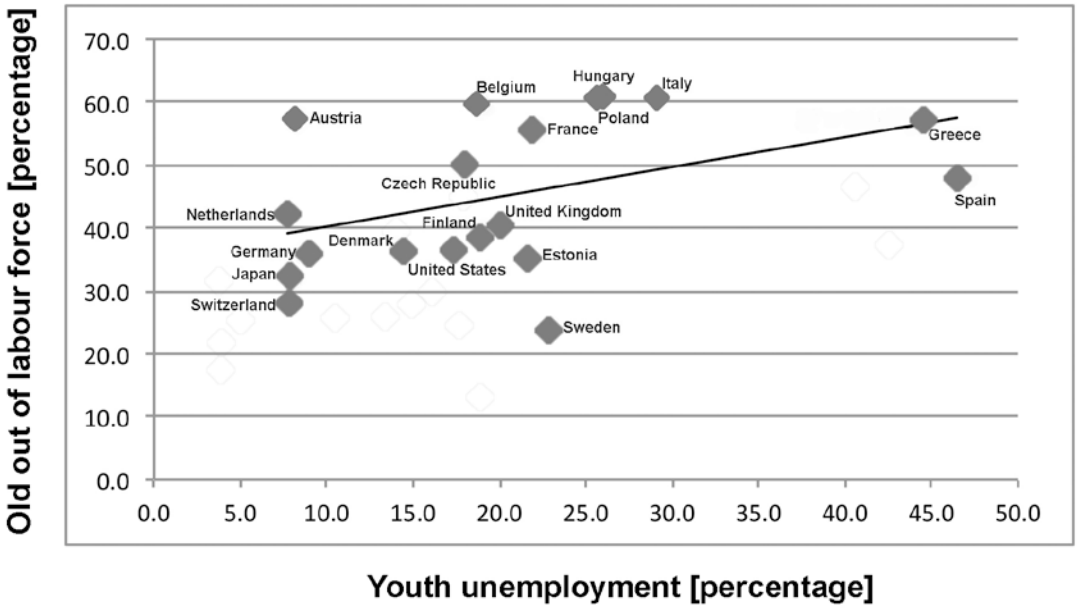
What effects will delayed retirement have on the greater population and the young in particular? Higher rates of labor-force participation in older individuals is often said to have negative side effects for the economy as a whole. For many years, common sense suggested that the number of jobs in the economy is finite, and that a new population entering the labor force would therefore push other workers out. This so-called "lump of labor" fallacy has been invoked at moments in history when women's labor-force participation increased, because it was thought that they would take "good jobs" away from men. Immigrants to the United States continue to be accused of stealing jobs from other, native lower-wage workers. Likewise, many older people who wish to continue working today are accused of taking jobs from younger workers, creating intergenerational conflict. The "lump-of-labor" fallacy is one of the most damaging myths in economics.[21] It is deeply rooted in the belief that the economy resembles a small enterprise with a small, fixed number of clients and a fixed demand for its product. Such an enterprise has a set amount of output based on demand, and therefore can only use a certain amount of labor. This is a poor analogy to a sufficiently large and complex economy. This is shown most clearly in the United States, where the sharp increase in female labor-force participation not only did *not* cause mass unemployment for men, but

actually correlated with a rise in male employment rates. More specifically, recent findings from cross-national comparisons show that higher employment of older individuals is actually positively correlated with higher employment of the young; that is, countries with a high prevalence of early retirement tend to have higher unemployment rates and lower employment of the young.[22]

Figure 1: Early Retirement and Unemployment in the OECD



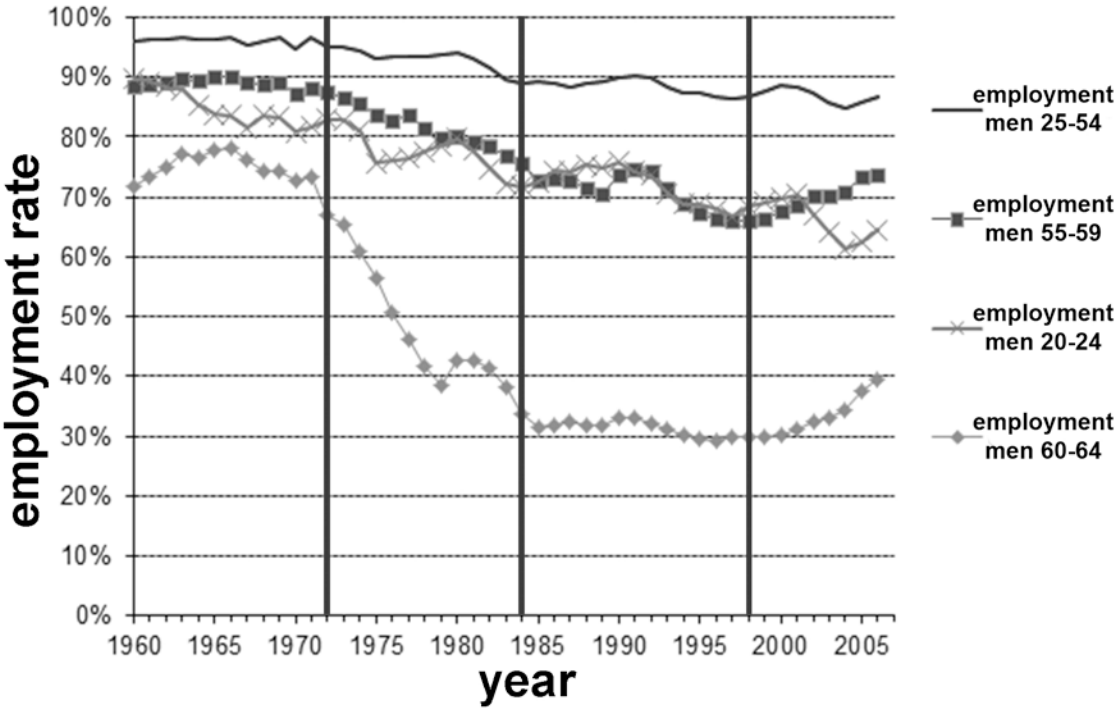
Source: Figure prepared by authors using calculations based on the 2012 Organisation for Economic Co-operation and Development, *Employment Outlook 2012* (Paris: OECD Publishing, 2012). The R-squared of the correlation (a measure of statistical tightness) is 18 percent. This is not driven by the outliers (Greece and Spain). If these crisis-affected economies are omitted, the positive correlation is actually stronger (with an R-squared of 21 percent).

Figure 1 shows a correlation between early retirement and youth unemployment in OECD countries. These findings may be challenged, however, as many confounding factors operate at the same time in the aggregate data. Strong and isolated reforms are

more suitable for empirically identifying the effects of pension policies on labor-market outcomes for the young. It is therefore instructive to examine the impact of specific pension reforms on employment rates at different ages.

Germany provides a particularly neat case, since strong and isolated reforms in the years 1972, 1984, and 1998 dramatically changed retirement incentives.[23] Figure 2 depicts the labor-force participation rates for four age groups in Germany, and Figure 3 presents the corresponding unemployment rates.

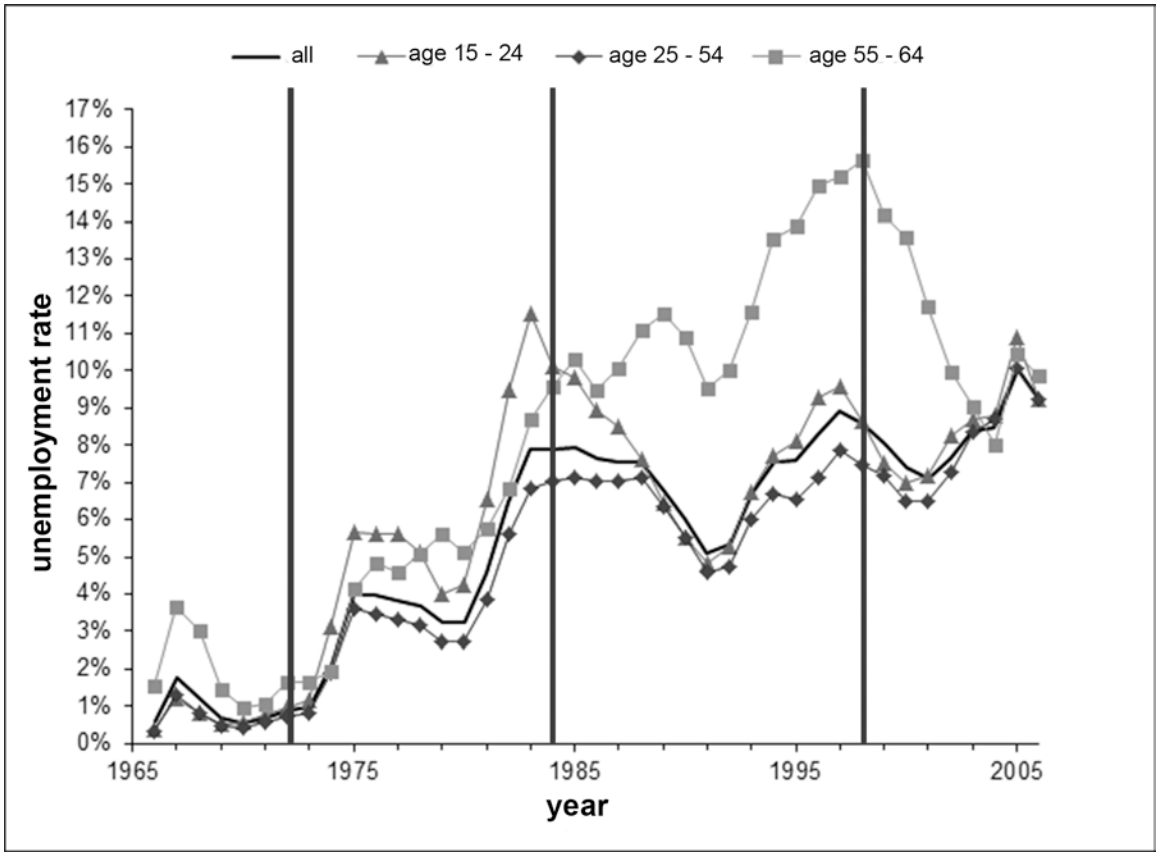
Figure 2: Labor-Force Participation of Young and Elderly Males in Germany



Source: German Mikrozensus. Each line represents a different age group.

https://www.destatis.de/DE/Methoden/SUFMikrozensus.html

Figure 3: Unemployment Rates in West Germany by Age Group, 1966–2006



Source: Bundesagentur für Arbeit.

http://statistik.arbeitsagentur.de/Navigation/Startseite/Startseite-Nav.html

These figures reveal three important facts. First, the 1972 reform dramatically reduced retirement age, labor-force participation, and employment of older individuals. In spite of this, youth employment did not increase. Second, the "bridge to retirement" legislation introduced in 1984 substantially increased the unemployment rate of those aged fifty-five to fifty-nine, as unemployment insurance benefits were used as substitutes for early retirement pensions. Yet youth employment did not rise in response. The phasing-in of "actuarial" adjustments after 1998 reversed the trend of early retirement.

Employment increased from 30 percent to 40 percent in those aged sixty to sixty-four. There is a very slight concurrent decrease in employment of the young.

The first two cases are clear-cut: employment of the young and the old moved in tandem. But the third case may appear to contradict this relationship. The paper by Boersch-Supan and Schnabel, however, has shown in their regression analysis of the third case that the slight decrease in employment of the young is in fact a reflection of the business cycle and not a response to the introduction of actuarial adjustments. [24]

The German analysis is part of the work by an international team who used pension design changes in eleven countries to identify how changes in the employment of older individuals have affected the employment of the young. The results vary considerably across specifications, but in these studies there are many more cases that refute the "lump of labor" hypothesis than cases that support it. As economist Jonathan Gruber has written: "The overwhelming weight of the evidence, as well as the evidence from each of the several different methods of estimation, is contrary to the 'boxed economy' proposition. We find no evidence that increasing the employment of older persons will reduce the employment opportunities of youth and no evidence that increasing the employment of older persons will increase the unemployment of youth."

Countries have large multifaceted economies that cannot be likened to small companies with fixed, "boxed" labor needs. National economies can grow, increasing the demand for all goods and services and therefore also the demand for labor. As with women and immigrants, the increasing entry of older workers into the work force contributes to a vital and productive economy. Moreover, unless a pension system is fully funded, there is a tax cost for retirement–whether early or not–that must be spread over

the entire economy. This raises the total labor compensation employers must pay for all workers, including the young. The greater the number of older workers that leave the workforce, therefore, the more likely it is that the employment prospects of the young will worsen.

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Increases in life expectancy and compression of morbidity, funding deficits in Social Security, possible cognitive benefits to working at older ages, and the potential for economic vitalization are some of the factors that support increasing the number of individuals who work past today's statutory retirement age. It would be naive to expect that this will occur only through social security reform and legislation encouraging workers to work longer; we also need structural policy changes that generate a healthier and more productive America. These include policies that invest in human capital throughout individuals' lives, thus enabling them to work longer; such as policies on early childhood, education, employment protection, work flexibility, income support, poverty reduction, and health care access.[25] Most individuals should not experience deterioration of mental and physical health from working longer; rather, the goal is to support healthy aging in such a way that working will be more feasible and potentially flexible for older cohorts. Only through policies that promote life trajectories leading to healthy aging will we be able to create a work force able to work longer, and only then will we be able to accrue the true societal benefits of social security reform.

How we adapt the major U.S. institutions related to work organization and labor-force participation will shape our future as we move through this demographic transition. Although shaping public and private policies is of paramount importance, this adaptation must take place on all levels, such as with more informal workplace practices. These policies and practices shape patterns of labor-force participation for older men and women and determine how they will pursue retirement. These policies must also take into account that each older generation is a diverse set of men and women with different life-course patterns of education, skills, family constellations, and health conditions, and that this in turn affects the employment opportunities they will have at older ages. Also determining outcomes of labor policy changes are the social, economic, and health capital of Americans in the labor force, currently and in the future. These two sets of conditions–one at the labor-policy level and the other at the population level (related to the capacity of individuals)–will determine whether we remain a resilient and successful society as we experience the aging of our population.

NOTES:

[1] Social Security Administration, "Actuarial Life Table" (2010), http://www.ssa.gov/oact/STATS/table4c6.html.

[2] Vicki A. Freedman, Eileen Crimmins, Robert F. Schoeni, et al., "Resolving Inconsistencies in Trends in Old-Age Disability: Report from a Technical Working Group," *Demography* 41 (3) (2004): 417–441.

[3] David H. Rehkopf, Nancy E. Adler, and John W. Rowe, *The Impact of Health and Education on Future Labor Force Participation of the Near Elderly in the United States*, The MacArthur Foundation Research Network on an Aging Society, forthcoming.

[4] David M. Cutler, Ellen R. Meara, and Seth Richards-Shubik, "Healthy Life Expectancy: Estimates and Implications for Retirement Age Policy," NBER Working Paper 2011, 10–11.

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