Longer, Healthier, Happier:
How Working Longer Improves Almost Everything

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We are all living longer, everywhere in the world, and the change is dramatic and relatively recent. Yet we work for only 30 to 40 years of what can easily be a century-long life. For the first time in human history, people are trying to stretch the income from a relatively short working life over a much longer period, potentially 60 to 80 years of adulthood – no wonder people are having trouble saving enough money to retire! The key to solving this problem is working longer.

Much of the current retirement "crisis" is thus completely predictable, and has nothing to do with low market returns or pension fund mismanagement.[1] It is simply an artifact of increased longevity. Working for 30 or 40 years of adulthood, to pay for 60 or 80 years of adult living, is not a sustainable strategy. (This ignores the first 20 years, paid for by parents.) Most people just don't produce enough in 30 years to finance the better part of a century's consumption.

The implications are straightforward: As longevity increases, we must save more, consume less in retirement, or work longer. Forcing people to save more is tough, and is antithetical to the principles that underpin a liberal democracy. Consuming less is an option, but not an attractive or easy one. But changing the institutional constraints and incentives so that people voluntarily work longer and benefit from that work is both doable and consistent with liberal ideals.

We realize that some people cannot work for health reasons, and some hate their work. But a very large number of people facing retirement would like to work longer, especially if the work were easier or less time-consuming; they would settle for lower pay, which is much better than no pay. Plus, there is evidence that work brings connections, purpose, and challenge, and these can bring better health and happiness.

It's clear that the chief reasons people do not work beyond the conventional retirement age are the legal, regulatory, cultural, and behavioral constraints that have been erected. If we can remove some of these, allowing people better access tot their own human capital, they can achieve a fully funded retirement that can be longer, happier, and healthier.

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[1] Or low liability discount rates, the flip side of low market (especially fixed-income market) returns.

[2] Medicare is a tougher nut to crack because you can collect it at age 65 whether you're a worker or a retiree; the additional tax revenue from people working longer is a minor benefit.

Roadmap

We frame the problem by noting that most people would rather be rich, healthy, and happy than poor, sick, and tired in their later years. In the first section, entitled *How We Got Here*, we lay out some basics of lifecycle economics and note that the relative shortage of older workers in the economy can be traced to a set of generally well-meaning laws, regulations, and practices.

The section called *Poor, Sick, and Tired* documents the need that many older people have for more money and addresses two common objections to working longer: poor health (*Sick*) and the desire for leisure (*Tired*). These latter concerns are longstanding and real, and they merit being acknowledged and discussed. We note that "health span" is likely to improve just as life span has already improved, and that work is getting easier. Another objection is *The French Problem*, the mistaken idea that there is a shortage of work or that the supply of jobs is fixed, so that employing an older person means denying a job to a younger one.

We then connect working longer to richer, healthier, and happier outcomes. *Richer (private)* shows the improvement in retirement preparedness that comes from additional years of work, and includes a simulation that quantifies this improvement. *Richer (public)* illustrates the corresponding improvement in public finance, particularly as it affects Social Security.[2] *Healthier* presents evidence that working people enjoy better health. *Happier*, more speculative because no one really knows how to measure happiness, proposes that working people also enjoy life more.

As economists, when we observe a market price that we do not understand, in this case *zero* for the labor of a large group of individuals, we are trained to look for the non-market forces – laws, regulations, taxes, and traditions – that explain the price. In the present case, these can easily be identified, and with some effort they can be changed. We conclude with three straightforward changes that have low costs and can lead to richer, happier, and healthier retirements. These changes are:

- Safe harbors in the labor laws, making it possible to negotiate flexible employment for workers over 65 who want to work;
- Federal (as contrasted with state) insurance charters for the sale of annuities and health insurance; and,

[2] Medicare is a tougher nut to crack because you can collect it at age 65 whether you're a worker or a retiree; the additional tax revenue from people working longer is a minor benefit.

- Expanding the current web-based Social Security Calculator to include the annuity calculations in this paper so that people have the tools to plan to convert their retirement savings into retirement income.[3]

We think the challenge of getting people to work longer is largely a legal and regulatory problem. For example, in our employment system, adding a worker often involves such high fixed costs (because of search costs, mandated benefits, the difficulty of terminating workers, and so forth) that employers minimize the number of workers and expect each worker to work very hard.

This result is suboptimal for many people, especially older ones. Lucile Biondi is quoted in a *New York Times* article as saying, "I like to work. If a job was open, I would go back right now and apply for a job. At 93, I would ask to work 3 hours a day."[4]

Along with the gains to the individual from working longer, there are large gains to the public. There are no losers. Let's make the needed changes, not only for the sake of older people who would like to work, but for the benefit of all of society.

How we got here

<u>Some basic lifecycle economics</u>

Lifecycle economics, which owes its origin to the Nobel Prize-winning University of Chicago economist Gary Becker, observes that *human capital* is an asset owned by every human being independent of any other physical or financial assets they may have.[5] Human capital is the ability to produce useful goods or services and is proxied numerically by the present value of a person's future labor income.

Exhibit 1 shows the evolution of a hypothetical U.S. college graduate's stock of human capital over her lifetime, along with her current (annual) earnings. The stock is the present value of expected future earnings. For such an individual, human capital is built up early in life through education and experience, grows for a while longer, then begins to depreciate in middle age – even though annual income continues to rise – and disappears at death.[6]

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[3] The details of these calculations can be found in Waring and Siegel [2016], Sexauer and Siegel [2013], and Sexauer, Peskin, Cassidy [2012}.

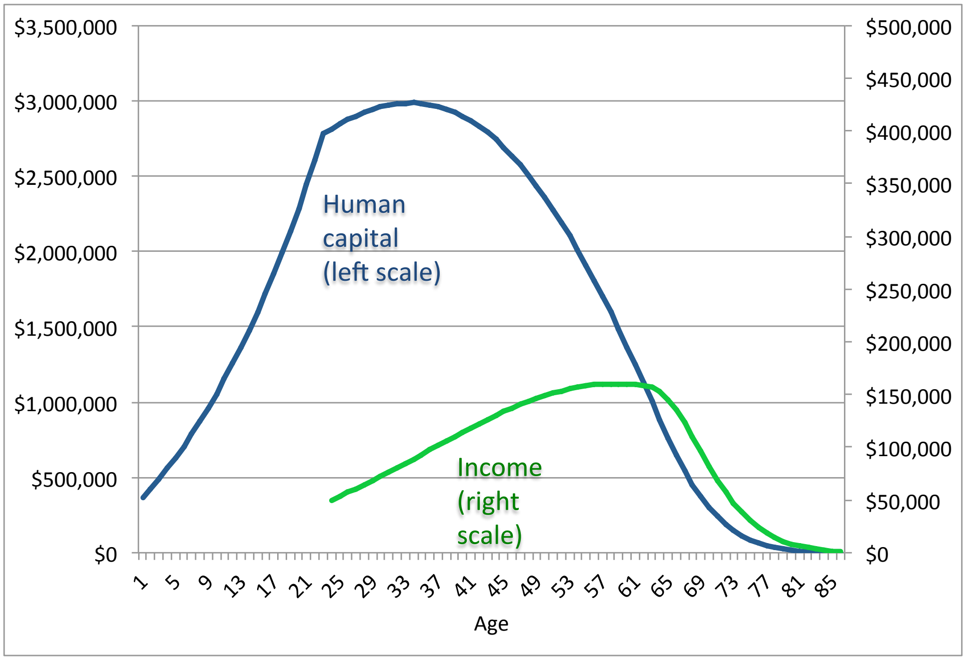
[4] "From the Elders: Can You Hear Me Now?" *New York Times,* Sunday Times. March 5, 2017, https://www.nytimes.com/2017/03/03/business/retirement/millennials-ask-elders-about-retirement.html

[5] Becker, Gary S. 1993. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education.* Third edition. Chicago: University of Chicago Press. Jacob Mincer (the first author that I know of to use the phrase "human capital") and Theodore Schultz were among Becker's influences.

[6] The curve is different for an unskilled worker, whose income is likely to peak much younger.

Exhibit 1

Stylized income and human capital curves for a U.S. college graduate, constant dollars, 3% real discount rate



Note: In this simulation, one-quarter of peak human capital is present at birth and the rest is acquired evenly over the first 22 years of life. Workers begin to withdraw from labor force at age 62, but do so gradually. Late-age incomes reflect lower probability of being alive as well as lower incomes conditional on being alive.
Source: Constructed by the authors.

Human capital is a wasting asset, one that gradually disappears simply by virtue of the passage of time. If a worker stops working for pay at, say, age 62, the human capital that she owns at that age is lost and cannot be recovered (or can only be partly recovered by starting work again at a later age). There are many worthwhile unpaid pursuits, but they do not add to one's possibly inadequate retirement balance, nor do they contribute to tax receipts. Most people need to get as much access to their human capital as they can.

Our simulations of the improvement in post-retirement living standards enabled by working longer, presented later in this article, are based on a similar – but not identical – human capital model. To tie in with our previous work, the prototype worker in our simulations is a Columbus, Ohio public school teacher, who has a little less earning potential than the generic college graduate in Figure 1. But the same principles apply.

Working longer because we're living longer: All of us, everywhere

The most basic reason for working longer is that we are living longer. Exhibit 2 shows life expectancy over a long slice of U.S. history, and Exhibit 3 shows life expectancy by continent, at a rougher level of approximation, over an even longer period.

Exhibit 2

U.S. life expectancy, both sexes, 1900-2011

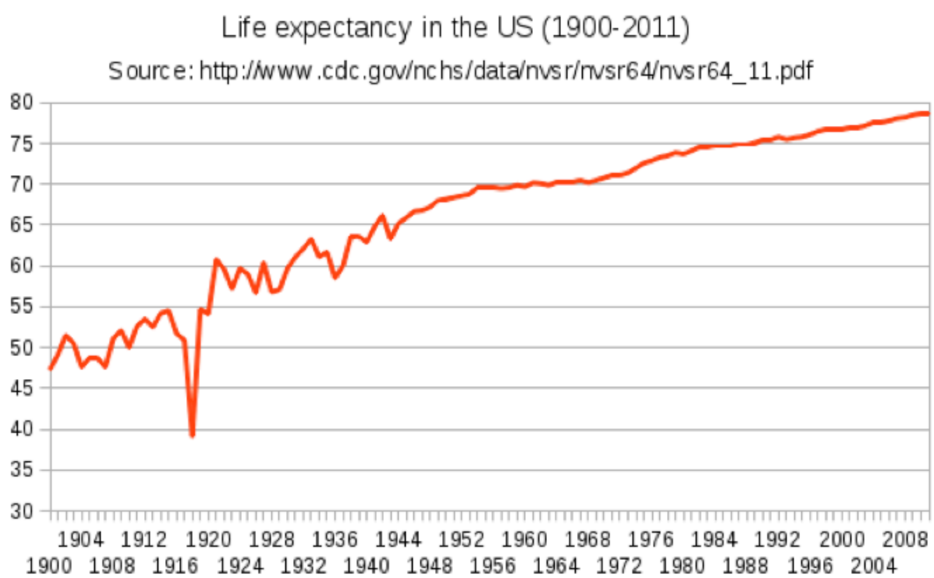
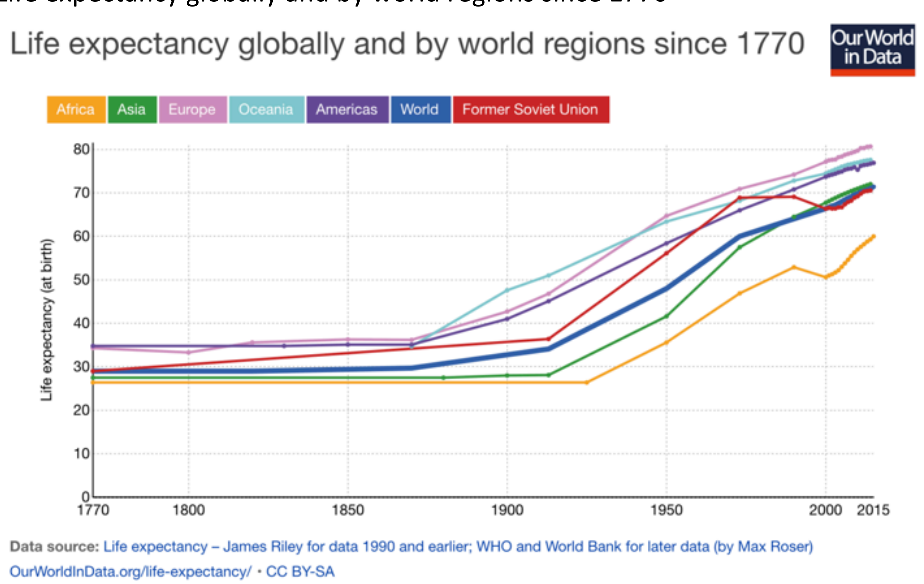


Exhibit 3

Life expectancy globally and by world regions since 1770



Source: OurWorldInData.org

Add vertical lines for: Bismarck, AXP, and Social Security, and in a separate color for the first and second Industrial revolution and antibiotics.

Balancing lifetime production and consumption

We need to save, not just up to our life expectancy, but to provide for the "long tail" – the longest time period we can reasonably expect to live. Otherwise we'll run out of money in the event (which has a 50% probability) that we live longer than expected. This risk can be mitigated through longevity-risk sharing, that is, by purchasing annuities, but today most people don't annuitize, although there are great gains to doing so. They try to finance 80 years of adult life, roughly age 20 through 100, with 35 or 40 years of work. As we said at the outset, no wonder they are having difficulty retiring! They need to work longer to balance their own production and consumption.

Our ancestors, if they were lucky enough to live long enough to retire, didn't face such a daunting picture. For example, in 1935, when the Social Security Act was passed, U.S. life expectancy was only 62. This didn't mean that when you retired at 65 you were already dead; life expectancy *conditional on being alive at 65* was 12 years in the 1930s, and now it's 17 years.[7] This increase is less than many people naively guess, but it's still large enough to upset the balance between Social Security taxes collected and benefits paid out, and it's large enough to defeat the expectation of an early and prosperous retirement for a great many people.

Robert Arnott and Anne Cascells, a pair of financial economists and investment managers, have calculated that, to get the same ratio of retirees to active workers today that we had in 1935, we would need a retirement age of 73.[8] This is a little counterintuitive because, conditional on reaching 65, we are only living five years longer on average than we did back then.

There are several reasons we need eight additional years of work, instead of five, to make Social Security actuarially sound. First, unlike in 1935, almost everyone is living long enough to collect Social Security; few people are paying into the system and then dying before collecting. Second, the oldest people are living far longer than they used to, giving the Social Security liability its own long tail. Third, at the other end of the age spectrum, Americans (and others around the world) are having fewer children. Finally, there are more women in the work force, and women live longer.

Why people don't work longer [Steve to write]

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[7] https://www.ssa.gov/history/lifeexpect.html

[8] Arnott, Robert D., and Anne Casscells. 2003. "Demographics and Capital Markets Returns," *Financial Analysts Journal*, Vol. 59, No. 2 (March/April).

So why haven't workers already figured this out and arranged for themselves to work longer into what is traditionally retirement age?

Laws, regulations, taxes, traditions [include some stories]

Poor, sick, and tired

Poor: "I will never be able to retire"

Are Americans financially prepared for retirement?

According to the Employee Benefit Research Institute, 52% of workers say they are "very confident" or "somewhat confident" that they will have enough money to live comfortably in their retirement years.[9] (Self-reported confidence is not an accurate measure of retirement preparedness, but it's a hint, and retirees report more confidence than working-age survey respondents, suggesting that the confidence is not entirely misplaced.) While that's a healthy chunk of the population, the survey results mean that about half the population is either unnecessarily worried or, more likely, they know full well that they won't be financially prepared.

Measures of actual financial position show a worse picture, with workers aged 56 to 61 having an average savings balance of $163,577 according to the Economic Policy Institute.[10] That's enough to buy (at age 65) a monthly annuity of $913,[11] a little more than beer money but not enough to rent a respectable apartment.

Yet if this datum is not bad enough, it masks huge variation around the average. A great many people have saved nothing or almost nothing; the average is pulled up by the millionaires. (About 13 million Americans, many of them close to retirement age or already retired, live in millionaire households.) The median retirement account savings balance, for those aged 56-61, is a stunningly low $17,000. This buys a monthly annuity of $95. Beer money.

Exhibit 4 shows the full distribution of retirement savings levels at ages close to retirement, based on a Government Accountability Office analysis of Survey of Consumer Finances data. Some 61% of the population at that age has less than $50,000 saved – and they are about to retire! Fortunately almost all of them

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[9] https://www.ebri.org/pdf/surveys/rcs/2012/fs-01-rcs-12-fs1-conf.pdf

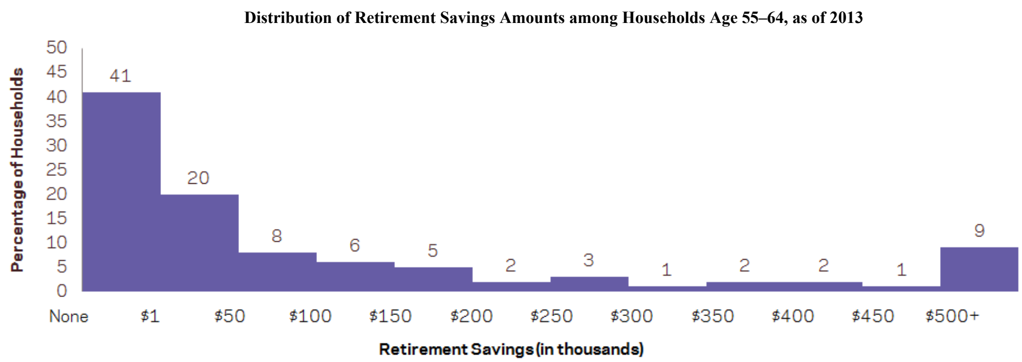
[10] https://www.cnbc.com/2017/04/07/how-much-the-average-family-has-saved-for-retirement-at-every-age.html, data as of 2013; the market is up since then, so the number is a higher now, but still likely to be woefully inadequate considering the way that average savings balances are always dominated by a few super-savers.

[11] http://www.immediateannuities.com, for principal value of $163,577, male age 65 in Illinois, single beneficiary with no period certain, quoted as of January 30, 2017.

will collect Social Security, which pays a survivable income to most beneficiaries. If you've paid in the maximum or close to it (not just the maximum number of years but also the maximum annual amount), the benefit will be much better. But most would-be retirees can't live on their Social Security benefit, don't have a defined-benefit pension plan, and will depend on their own individual savings – including defined contribution-type retirement accounts such as IRAs and 401k's – for income. If they've only saved $17,000, or even $163,577, they're relatively poor.

Exhibit 4

Exhibit 4 – Retirement Savings Levels in U.S. Are Disturbingly Low



Source: Ilmanen, Kabiller, Siegel, and Sullivan [2017]

These people need to work longer because they need the money. And they need to save a large fraction of what they earn.

Is this a crisis? Experts differ on this question. A discussion between Andrew Biggs, resident scholar at the nonprofit American Enterprise Institute, and Alicia Munnell, professor at Boston College and director of its Center for Retirement Research, reveals the rift.[12] Munnell says… Biggs says…

Whether those with little or no savings can retire depends on the circumstances of each household. Some take part-time jobs. Some move in with their kids (or have their income-generating kids move in with them). Some live in – or move to – low-cost areas where Social Security provides a livable income. Some can sell their houses and bank a nice profit. Others may be in deep trouble.

At any rate, people do retire, and not all of them are millionaires or defined-benefit pension beneficiaries. They make adjustments, some of them uncomfortable. A few people say they will have to work until they die; fewer actually do.

[12] Tergesen, Anne. 2017. "Is There Really a Retirement-Savings Crisis?" *The Wall Street Journal* (April 23).

Despite these meliorating circumstances, we're inclined to believe that, when something close to 50% of the population will have difficulty retiring at anything like their pre-retirement standard of living, it's a crisis. It is not the worst catastrophe imaginable, by and large it can be fixed, and previous generations of poorly prepared retirees have found ways to manage. But action is needed.

As we said earlier, we've built a wall of laws, regulations, taxes, and traditions that keep them from working after their mid-sixties, or at least from working under reasonable conditions at acceptable levels of after-tax pay. For the doctors, accountants, salesmen, and hardware store owners who've already figured out how to work longer, it may be a luxury, a way of staving off boredom, or an exercise in self-fulfillment; but for people in many other walks of life it's a necessity. Let's begin to tear down the wall. In the last section of this essay, we make some specific suggestions for doing so.

<u>Sick: "I can't work"</u>

One of the chief reasons for retiring is poor health. Michael Insler, a U.S. Naval Academy professor, writes, "Young retirees (ages 50–60) generally have exceptionally poor health, suggesting that their early exits from the labor force may be due to severe illnesses or injuries."[13] Other researchers have confirmed a strong connection between poor health and the decision to retire early.

Show some data on morbidity and disability. [Larry to write]

<u>Health span</u>

While we are living longer than ever before, our lives are not uniformly healthier. Some health indicators, such as blood pressure and cholesterol, have improved greatly, while others, including obesity and physical and mental disabilities, have not and may actually be deteriorating.

This situation may improve. Public health researchers have coined the term "health span" to denote the part of life during which one feels good and is able to be productive, and, aware of the cost and pain of decrepitude, are trying to bend the discussion from maximizing life span to maximizing health span. Eileen Crimmins, a gerontologist and demographer, writes,[14] "There are a number of signs in the population data that we may be at the beginning of the century of improving healthspan, not just lifespan" (p. 909). If that is the case, it augurs well for longer

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[13] Insler, Michael. 2014. "The Health Consequences of Retirement." *Journal of Human Resources,* Volume 49, Number 1 (Winter), pp. 195-233.

[14] Crimmins, Eileen M. 2015. "Lifespan and Healthspan: Past, Present, and Promise." *The Gerontologist*, Vol. 55, No. 6, pp. 901–911.

and more productive work lives, and bolsters the argument for removing obstacles to such employment.

Tired: "I hate my work"

According to a Gallup poll, "an alarming 70% of those surveyed…either hate their jobs or are completely disengaged."[15]

That makes a good headline, and maybe it's true. But there's a difference between hating your job and hating your *work*. Valuable, interesting work can be made odious by a bad boss, unfair labor practices, too-long hours, or a mismatch between employee skills and job demands.

Fortunately, by the time workers get to retirement age, the match between skills and job requirements is probably better than it is at younger ages. The really bad matches have been weeded out, and we'd like to think most people have found something they're good at. Still, we're very much aware that some people go to work because they have to and live for the day they can afford to retire.

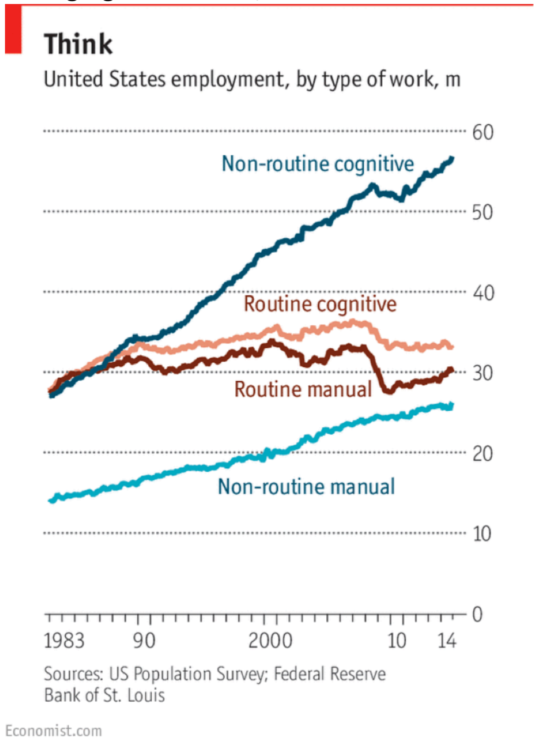
If you hate your work, don't do it. If, on the other hand, your work is (actually or potentially) satisfying but the job is structured poorly, it can be restructured. There are probably other employers in the same field; too many employees have become convinced that they can never get another job when that is not the case. Or you can change careers, probably lowering your pay but keeping you in the workforce, producing and saving.

Work is getting easier

If it's any consolation, work is getting easier. Exhibit 5 shows the changing mix of jobs since 1983, classified by "cognitive" versus "manual" and routine versus non-routine.

[15] http://www.nydailynews.com/news/national/70-u-s-workers-hate-job-poll-article-1.1381297

Exhibit 5
Changing Mix of Jobs, 1983-2014



Source: http://www.economist.com/news/special-report/21700758-will-smarter-machines-cause-mass-unemployment-automation-and-anxiety

Agriculture and basic industries involve a great deal of routine manual labor, often requiring backbreaking work that people over 50 can rarely do. These employment categories have dramatically decreased in market share, as has manufacturing, which can be physically demanding. Professional, managerial, financial, technical, and health care jobs, mostly cognitive and mostly non-routine, have largely replaced the old-fashioned tough job categories. Work has also gotten easier *within* industrial categories.

This is good news if you're smart, and if you cannot or would prefer not to lift heavy objects or face physical danger. Older workers who have high cognitive ability should thrive in this new, more automated environment; those with less cognitive ability may struggle.

This trend will not only continue but accelerate. Robotics and other forms of automation will eliminate the worst jobs first. While we are concerned about the effects of this trend on the unskilled, eliminating tough jobs is a salutary change if we want people to work longer.

The French problem

One of the most commonly heard objections to people working longer is that it will deprive the young of a chance to get started in a career. In France, young people are said to be waiting for an older worker to die so they can take his place.[16]

This view regards the supply of jobs as fixed, which it's not. We'll get to this misconception in a moment. For now, we'd point out that if a society produces more, it can consume more. The only question is how the funds from the production are distributed.

Even if current tax policy doesn't change, part of the gain from employing older workers will be redistributed to the young. This is because the young bear the burden of the Social Security and Medicare shortfall, which will be made up by future taxes. If the young receive a tax cut, relative to what they would otherwise have to pay to support their elders, they have benefited.

Moreover, the young may be able to sell more goods and services to older workers once those workers have more money. This is the direct effect of producing more.

Now, let's address the supposedly fixed supply of jobs. In a provocative article called "Why Are There Still So Many Jobs?" the MIT professor David Autor argues:

> Tasks that cannot be substituted by automation are generally complemented by it. Most work processes draw upon a multifaceted set of inputs: labor and capital; brains and brawn; creativity and rote repetition; technical mastery and intuitive judgment; perspiration and inspiration; adherence to rules and judicious application of discretion. Typically, these inputs *each* play essential roles; that is, improvements in one do not obviate the need for the other. If so, productivity improvements in one set of tasks almost necessarily increase the economic value of the remaining tasks.[17]

In other words, technological advances create demand for new types of human capital. Take bank tellers for example. The ATM appeared to reduce the need for bank tellers, but, as Autor points out, ATMs also made it cheap to expand the number of branch banks. So the introduction of the ATM actually increased the number of bank-teller jobs, which evolved from the routine task of counting cash to something more like a sales position. In the 30-year period after ATMs were first

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[16] The chief reason for this is probably the rigidity of the French labor market. Since a company who hires a permanent, full-time employee will probably have to pay him a salary or pension for the rest of his or her life, they don't hire him.

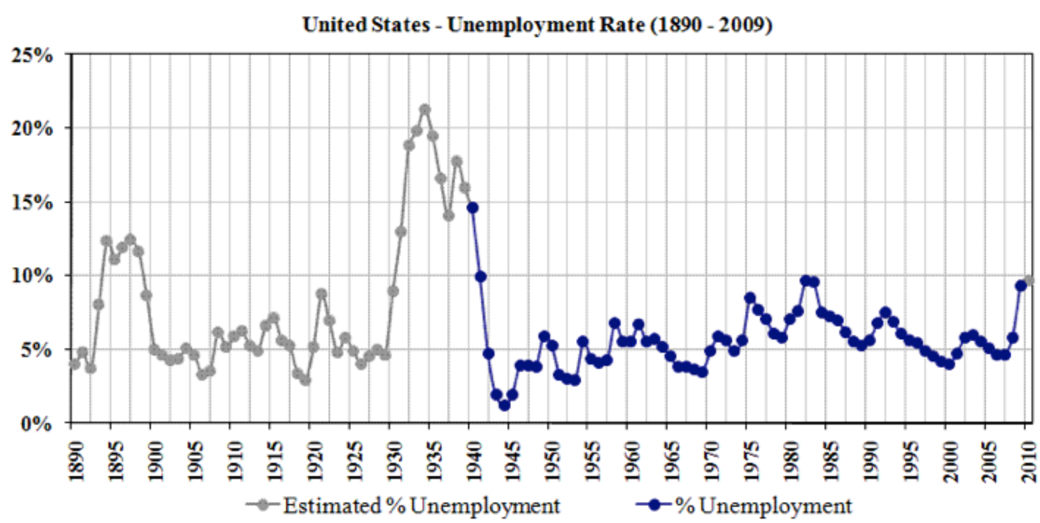
[17] Autor, David H. 2015. "Why Are There Still So Many Jobs? The History and Future of Workplace Automation." *Journal of Economic Perspectives*, Vol. 29, no. 3 (Summer), pp. 3–30.

installed, and with the stock of ATMs rising from zero to 400,000, the U.S. economy *added* 50,000 bank teller jobs.

Autor, the associate head of the MIT economics department, is not way out there on the fringe of economic thinking. He is about as mainstream as you can get, and many other economists corroborate his view. The supply of jobs is not fixed and technology need not either create or destroy jobs; it depends on circumstances, but over long periods of time many more jobs have been created than destroyed.

Every technological change since the Industrial Revolution has been accompanied by forecasts of mass unemployment. It all started with the legendary Ned Ludd, who smashed weaving machines in England because they were putting hand weavers out of work. It continues with today's call for universal basic income, grounded in the fear of further automation (we have already had plenty). Exhibit 6 shows what has happened, starting in 1890 because we don't have great data for earlier years:

Exhibit 6
U.S. Unemployment Rates, 1890-2009 [update to 2017]



Source: Wikimedia Commons, https://commons.wikimedia.org/wiki/File:US_Unemployment_1890-2009.gif.

In just about every economic expansion, unemployment bottomed out around 4%—and this occurred while the population was growing tremendously.[18] The U.S. population grew fivefold, from 63 million to 320 million, between 1890 and 2015.

[18] Admittedly, the labor force participation rate varies, so that true employment (including those who have given up looking for work or made the long-term choice to work in the unpaid sector, for example as homemakers) may not always converge to 4%.

So, with all the disruption that has occurred in the last 125 years, the number of jobs has expanded by roughly a factor of five. Ned Ludd was a terrible forecaster!

Richer – the private sphere

Using the lifecycle income/wealth simulation set up earlier, show the impact of an extra 5 years of work at half pay on retirement income replacement ratio. Factor in benefit from waiting to age 70 to take SS. Calculate the "beta," or change in retirement income per unit of change in years worked.

There are four financial benefits from working longer:

1. Increased SS payout (to age 70). This is supposed to be an actuarially fair tradeoff, more money per year in exchange for fewer years, but it's not. It works in favor of retiring later, because the tradeoff does not reflect recent increases in life expectancy, and because those who work to age 70 are more likely to survive to the older ages where the larger SS check really pays off, for self-selection reasons and (more speculatively) because working enhances longevity.
2. New savings from the additional paychecks
3. More years for existing savings to compound in the market
4. Fewer years of retirement to pay for

This last point is often overlooked. If you expect to live to age 86, that's 24 years of retirement if you retire at age 62 but only 16 years if you retire at age 70. Ignoring any additional money you save over those eight years and also ignoring investment return, that's a 50% boost in your post-retirement standard of living. (Reality is more complicated than that because you need to hedge mortality risk, but we're trying to separate all the effects cleanly.)

In addition, there's potentially a higher standard of living from working longer than you would enjoy if you spent the same years retired. [Larry to finish]

Richer – the public sphere

Show impact of extra work on SS, Medicare, and pension system solvency
Mention low labor participation rate, especially among men and among the late middle-aged. (Larry or Steve)

Healthier

[Larry will write this]

Happier

[Larry will *try* to write this]

Tearing down the wall of laws, regulations, taxes, and traditions

..to help create a more productive, prosperous, and pleasant society.

[Steve to write; safe harbor/Barbara's comments]

Conclusion: The Face-Off

Human capital is the world's most valuable asset, difficult to acquire and challenging to preserve. Yet we are wasting a lot of it because many capable older people don't work for pay. While some people cannot work, more often it's a matter of not being able to find suitable work – part-time, seasonal, physically easier, or in an activity different from one's mid-career trade or profession.

Meanwhile, we have a retirement preparedness crisis. The average American is retiring, or trying to, with a savings balance – including defined contribution plans – of something like $163,000; and that's the average, which includes the well-off. The median is around $17,000, and half are below even that miserly number. A great many people will retire on Social Security and nothing, or almost nothing, more.

It isn't often that two related problems stare each other in the face like this. The obvious solution, with large potential gains on all sides, is to trade. The trade is between older workers, who may want to work longer to improve their own situations, the employers who want the work done, and the rest of society, which gets part of the benefit. As one might expect with a voluntary trade, each party wins.

If a goodly number of people work longer, then, they will not only reap personal benefits; because they pay more in taxes and have fewer needs, the retirement crisis will begin to fade. And there is yet another benefit: older workers contribute wisdom, accumulated knowledge, and institutional memory to their employers and to their employers' customers. This contributes to economic growth.

The chief reason that older workers remove themselves from the workforce, or are removed involuntarily, is the wall of barriers that have been erected, mostly out of good intentions but with little vision regarding the consequences, to working longer. For the sake of both the workers and of society more broadly, let's begin to tear down this wall.