LONGER, HEALTHIER, HAPPIER: WHY WORKING LONGER IMPROVES ALMOST EVERYTHING

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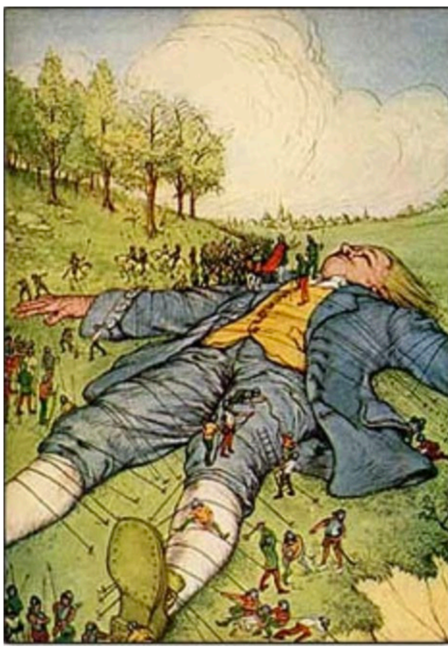

Gulliver: Skill pinned down

The Craftsman: Skill endures

INTRODUCTION

Why do most people stop working for pay somewhere between age 62 and 67? Is this optimal? Would people benefit from arrangements that provide more flexibility, allowing those who want to work longer to do so more easily? We believe they would.

Relative to our history as human beings, life has gotten unimaginably long. It is not uncommon to live to 100 or more. Spreading the income from one's working life over one's whole life — for that is what retirement involves — is logistically and financially difficult. William Sharpe, the great Nobel Prize-winning economist, calls it the most challenging problem in finance.

This article makes the case for working beyond traditional retirement age — if you want to, or if you need the money, or for any reason. We show how working longer enhances one's standard of living in retirement. We put some numbers to this benefit, in the hope that its large size will motivate workers, regulators, and lawmakers to make the needed changes so we can all prosper more. We also show how working longer helps almost every element in society, not just the worker herself.

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A little more speculatively, we also believe that working longer promotes health and happiness — not in every single case, but people should have that choice.

Why people don't work longer

So why don't most people work beyond conventional retirement age? One reason is plainly obvious: *outmoded rules.* Such rules were put in place largely with good intentions but are too inflexible for today's society. Thus, after discussing the problem in general economic terms, we identify the costliest and least sensible rules so that they can be changed, with the result that older workers can participate more fully in the economy and their own lives.

Working longer solves a complex optimization problem. It brings everyone closer to the efficient frontier:

- the worker, who gets paid instead of having to draw down savings, and also benefits in health and happiness
- the employer, who gets a more flexible workforce at what is potentially a bargain price
- governments, which get additional tax money and also have to pay out less in retirement-related benefits, a double bonus;
- and society, which gets the older workers' additional production.[1]

Working longer responds to the pending crisis of too many people retiring with too little money. This crisis has been carefully documented, but the proposed remedies are all financial: more saving, higher taxes, better investing practices, and so forth. We're trying everything but the obvious because we're thinking that the retirement crisis is a financial problem when it's not. It's in the real economy — and you can't financially engineer your way out of a nonfinancial problem.

The obvious remedy that nobody is discussing — working longer — is also likely to be the most effective one. It avoids terrible costs (high taxes on the young, more government debt, depreciation of the currency) and produces the positive side effects of better physical and psychological health.[2]

Some people hate their work, or can't physically do it, or simply have other plans for their later years. These are serious matters and we address them. Not everyone should work beyond conventional retirement age. But for those who choose to work longer, the benefits are large to the worker and the economy.

Changing outmoded rules is our single best policy prescription, but we discuss it last. The reason is that the setup — a somewhat detailed description of the retirement crisis, simulations of income under different retirement age scenarios, and so forth — is long, and the

[1] The worker also gets a double bonus: (1) more money at retirement, and (2) fewer years of remaining life to pay for. It seems little heartless to point out the latter, but it's true.

[2] Working longer at the beginning of adult life would also be an improvement: we waste much of the energy and drive of the young by endlessly delaying entry into the world of work. But that is a topic for another paper.

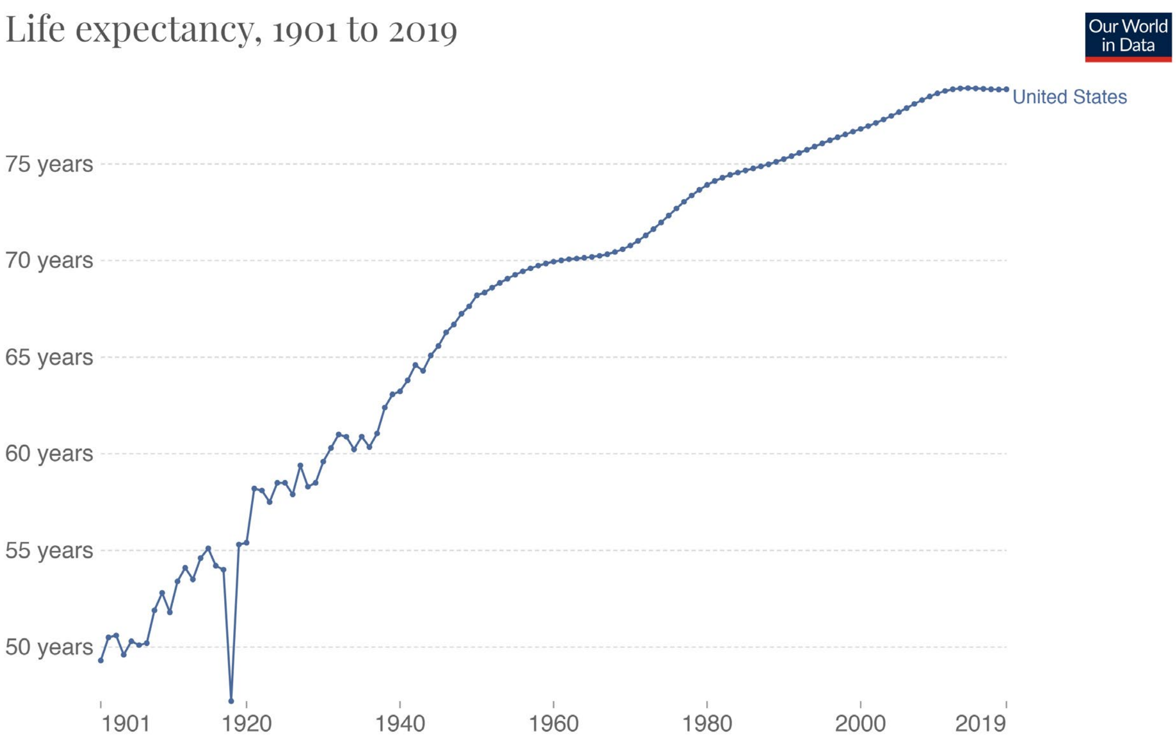
discussion of changing outmoded rules is short. In addition, saving the best part for last is one way to keep your attention. If you don't have the patience to get there linearly, skip to the section called "The Dénouement."

The Retirement Crisis: How Can You Live for 100 Years on the Pay from 30 or 40 Years of Work?

The title of this section frames the retirement problem so that you'll say, "Forget it — it's not possible." That is exactly the point. As we noted at the outset, the aim of retirement planning and policy is to spread the productivity from one's working life over one's whole life.

To make things more complicated, we don't have any experience in doing so. No society has needed to, because they didn't live very long. Exhibit 1 shows the growth of life expectancy in the U.S. over the last 120 years, and Exhibit 2 does the same for the world, by continent, over the last 250.[3]

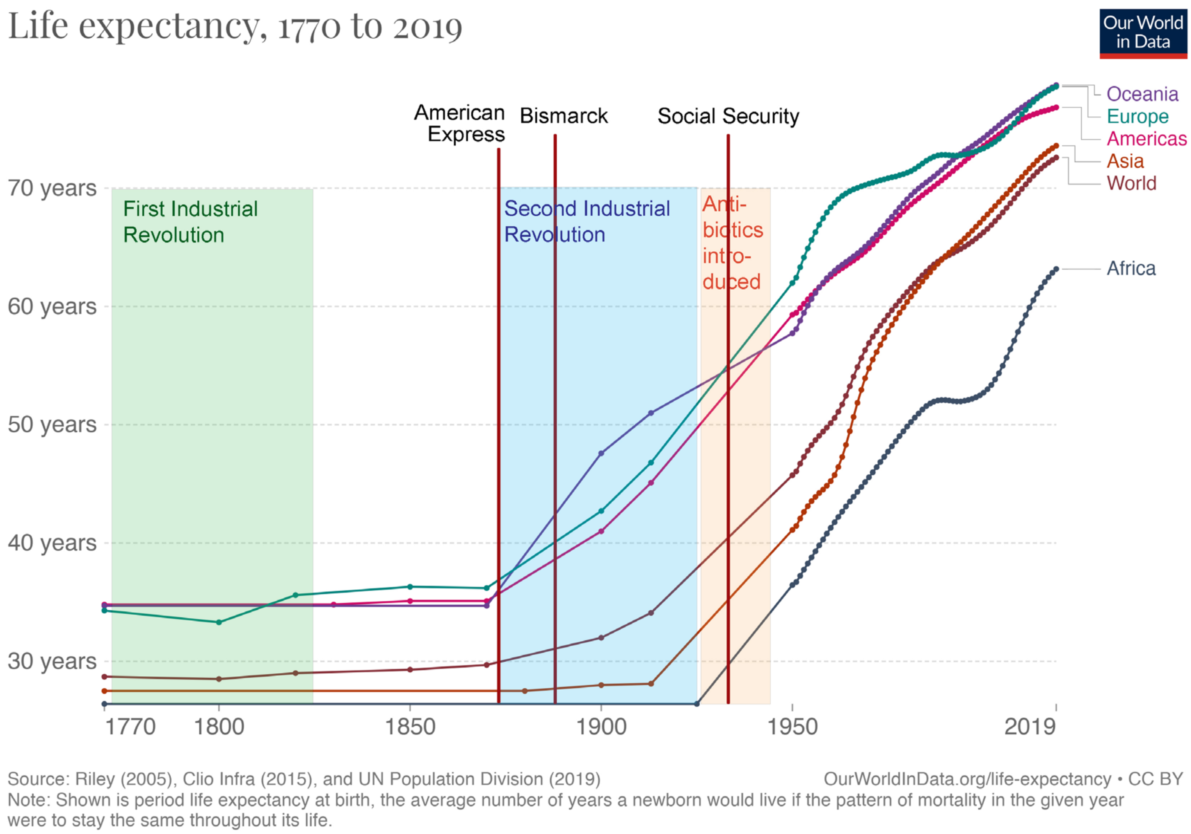
Exhibit 1
Life Expectancy in the United States since 1901



Source: Riley (2005), Clio Infra (2015), and UN Population Division (2019) OurWorldInData.org/life-expectancy • CC BY
Note: Shown is period life expectancy at birth, the average number of years a newborn would live if the pattern of mortality in the given year were to stay the same throughout its life.

[3] Both charts show life expectancy at birth, not at some older age when infant and child mortality are no longer a factor. The mortality rates of young people were astronomically high until the last century, exaggerating somewhat the impact of increasing life expectancy on retirement planning.

Exhibit 2
Life expectancy globally and by world regions since 1770



Source: OurWorldInData.org; Dave Stanwick

We see that *expecting* to live beyond age 65, the now-traditional retirement age, is an astonishingly recent phenomenon. No wonder Social Security and other old-age benefit programs, such as the German program introduced by Otto von Bismarck in 1889, seemed actuarially sound at the time! You were more likely to die before receiving benefits than survive to collect them. And, if you did collect them, it was not for very long (on average).

These averages don't mean that everybody died young. Far from it. The Irish poet and stonemason Colm de Bhailis lived in three different centuries, none of them the current one: born in 1796 when life expectancy in Ireland was around 35 years, he lived until 1906. He saw a lot of change in his life! While that's an extreme case, even in antiquity many people lived into their eighties and nineties. The life expectancy numbers were radically skewed downward by infant and child mortality.

Yet, after about 1950, when child mortality was reduced to near-modern levels in advanced countries, life expectancy expanded further by more than a decade. This meant that people really were dying at much more advanced ages. So, no wonder there is a retirement crisis! The idea of paying for decades of retirement *on average across the population*, not just in a few exceptional cases, is new.

Given all this demographic change in a short period, we need new institutions, practices, and laws to deal with the retirement income challenge.

THE PROBLEM WITH EXISTING RETIREMENT ARRANGEMENTS

The institutions that initially showed the greatest promise were government pensions (like Social Security) and private pensions. Yet, in both cases, the funds accumulated for these purposes proved to be too tempting a target for rent-seekers. While Social Security and traditional defined benefit pensions survive, almost all of them face a day of reckoning when they'll run out of money without major surgery.

Savings plans, known as defined-contribution plans if sponsored by a corporation or government agency, are a good substitute for people who can save aggressively and manage the savings skillfully; for everybody else, they're not so great. The median American at retirement age has about $266,070 to live on for the rest of their lives,[4] plus the gains (or losses) from investing that amount, plus Social Security. You won't starve on that amount, but you'd hate to be below the median, much less in the bottom decile (which we think has a zero or negative median net worth).

YET PEOPLE DO RETIRE

Despite this apparently dire state of affairs, *people do retire*. Not all of them are millionaires or defined-benefit pension beneficiaries. Instead, they make adjustments, some of them uncomfortable. 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 sell their houses and bank a nice profit. Some say they will have to work until they die; a few actually do. A tiny number (in this rich country) are in deep trouble.

THE (MISSING) FRUITS OF SEVENTY YEARS OF RESEARCH

Solving the retirement problem *given existing levels of productivity* has consumed the efforts of some the most talented minds in economics and finance, including Nobel Prize winners William Sharpe and Robert Merton, among many others. Yet, as one of us (Siegel 2015) asked in the 70th anniversary edition of the *Financial Analysts Journal,* which was a special issue on retirement,

> After 70 years of fruitful research, why is there still a retirement crisis? ...[M]ore than two centuries [after Jane Austen described the pleasures of living on an annuity, and the pains of having to pay one] and despite thousands of scholarly and practical articles ... and much earnest effort by researchers, financial product designers, pension plan sponsors, advisers, legislators, regulators, and individual investors—we still ... struggle with the same challenge as in Austen's time: funding lifetime income. How can this be?

[4] https://www.fool.com/research/average-net-worth-americans/. The average (mean) is much higher because there are a lot of rich people (not just the top 1%!).

The reason is that, while we've increased productivity in myriad ways and have grown rich as a society, we have not turned the dial on the one variable that could solve the problem: the ratio of the length of one's working life to one's whole life.

The implications are straightforward: As longevity increases, there are three possibilities: we must (1) save more, (2) consume less in retirement, or (3) work longer.[5] Getting people to save more is a challenge, and forcing them to do so 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.

SOME BASIC LIFECYCLE ECONOMICS AND WORKING LONGER

This section uses a very simple retirement model, developed in our earlier collaborations, to show the improvement in retirement preparedness that comes from additional years of work.[6] The model relies on changes in the stock of an individual's human capital over time.

Human capital is an asset owned by every human being, independent of any other physical or financial assets they may have.[7] The asset consists of the ability to produce useful goods or services and is proxied numerically by the present value of a person's future labor income. The concept was developed (although not originated) by the great University of Chicago economist Gary Becker, who built the discipline of *lifecycle economics* around it.[8]

One's stock of human capital is the present value of his or her expected future earnings.[9] For an individual, human capital is built up early in life through education and experience, grows for a while longer, and then (because it is the present value of a shrinking series of future paychecks) begins to depreciate in middle age — even though annual income continues to rise — and disappears at death.

The gains to working longer are higher human capital, which creates higher retirement income, increased wealth, and greater well-being. Exhibits 3, 4, and 5 illustrate this. The exhibits show an update of a stylized calculation for a career school teacher in Columbus, Ohio, based on the work in Sexauer and Siegel (2013) and updated with 2022 salaries, interest rates, and Social Security tables:[10]

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[5] Earning more is one path to saving more; the shorthand expression "save more" captures that possibility by including all possible ways of increasing your savings balance.

[6] The earlier collaborations include Sexauer, Peskin, and Cassidy (2012) and Sexauer and Siegel (2013).

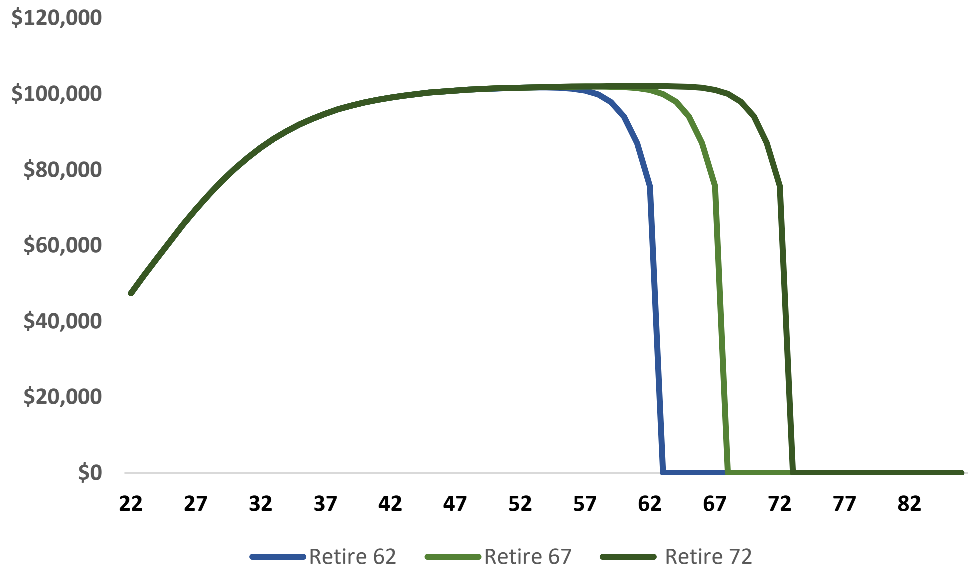
[7] See Becker (1993). Jacob Mincer (the first author that I know of to use the phrase "human capital") and Theodore Schultz were among Becker's influences.

[8] Milton Friedman and Franco Modigliani might object to this characterization because they had much to say about savings and consumption over the lifecycle, but their work is a little off topic for the present discussion and Becker's is spot on.

[9] Becker (1993), Appendix B, Mathematical Discussion of Relation between Age, Earnings, and Wealth.

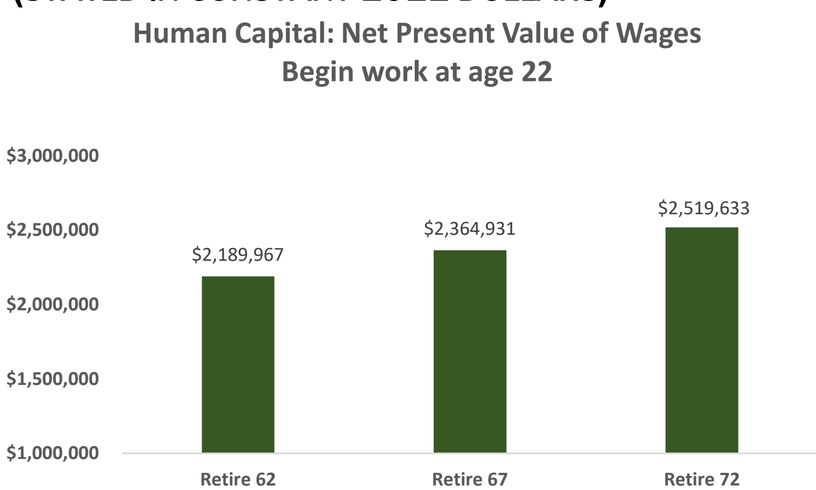
[10] In Columbus, Ohio, a new teacher at 22 years old and having no experience will earn $47,424 per year in the 2022-23 school year. In the same year, a teacher who had attained a master's degree and had already worked 40 years had a salary of $107,217, a real growth rate in wages of 1.94% per year. All numbers are in constant (2022) dollars. See Exhibit 4 for the source. Columbus is a medium-sized, medium-priced city for which teacher salary data happened to be available.

EXHIBIT 3
ANNUAL INCOME FROM WORK, CONSTANT (2022) DOLLARS: A COLUMBUS, OHIO, SCHOOL TEACHER



Source: Drawn by the authors. Curves are modified logistic curves based on Columbus teacher salaries in Sexauer and Siegel (2013), updated to 2022; and a salary constant-dollar growth path derived from Guvenen, Kaplan, Song, and Weidner (2021).[11]

EXHIBIT 4
PRESENT VALUE OF LIFETIME EARNINGS DISCOUNTED AT 2.5% PER YEAR (STATED IN CONSTANT 2022 DOLLARS)



Source: Teacher Salary Schedule 2022-23 school year, Columbus City Schools, Columbus, Ohio. https://www.ccsoh.us/cms/lib/OH01913306/Centricity/Domain/223/Teacher%20Salary%20Schedules%20SY2022%202023.pdf. Calculations by the authors.

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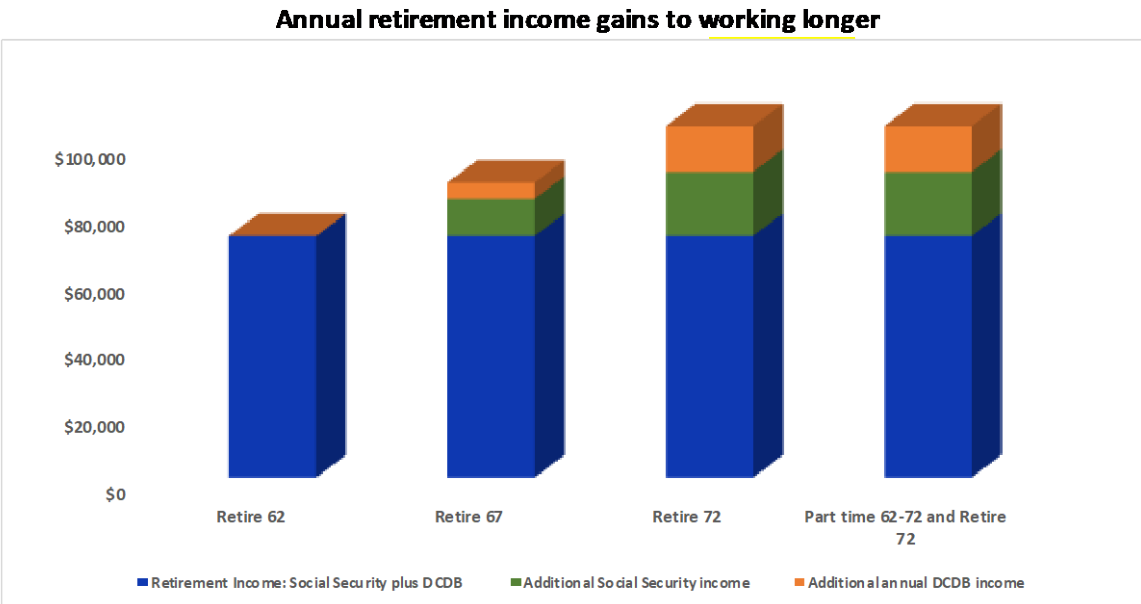
[11] Guvenen *et al.* (2021).

EXHIBIT 5: GAINS IN ANNUAL RETIREMENT INCOME FROM WORKING LONGER (STATED IN CONSTANT 2022 DOLLARS)



	Retire 62	Retire 67	Retire 72	Part time 62-72 and Retire 72
Retirement Income: Social Security plus DCDB	71,552	71,552	71,552	71,552
Additional Social Security income	0	11,028	19,596	19,596
Additional annual DCDB income	0	4,812	13,552	13,552
Total Retirement Income	71,552	87,392	104,700	104,700
Total Increase in Retirement Income	0	15,840	32,608	32,608
Saving Balances at Retirement	67,421	438,631	835,456	581,301

Note: Based on converting savings to DCDB income at 65 and taking Social Security at retirement age. Return on savings is 2.00%

The post-retirement wealth (human capital) and income gains are dramatic, especially considering that our retirement model is for a schoolteacher earning $102,217 at the age of 62 with 40 years of experience.

FLEXIBLE WORK

We've argued for more flexibility in work after traditional retirement age, particularly with respect to hours and difficulty. Let's incorporate this informally into the model.

As we get older, strength and stamina diminish and our productivity declines, while the utility value of leisure rises. These factors make part-time work an important and valued option. Let's say a worker is able to contract with her employer to reduce work to 60% from age 62 to 67 and then to 25% from 67 to 72; and, reflecting decreased productivity, the pattern of wage declines is on the same downward path as if her work had continued full time. The result is also shown in Exhibit 5.

The gain in retirement income in this simulation is the same as from working full time to 72. How can this be? The answer is that working part time provides the flexibility to use the higher savings balances to (1) purchase, at age 65, the "DCDB" retirement income portfolio — the blend of TIPS and deferred life income annuities described in Sexauer, Peskin, and Cassidy (2012) and Sexauer and Siegel (2013), and (2) postpone taking Social Security until age 70.[12]

These numbers are, of course, the lower and upper bounds of the outcomes from the decision to cut back work at age 62. Where you wind up within the retirement income-savings balance range depends on how much you cut back after age 62.

RICHER: WHO BENEFITS FROM A LONGER WORK LIFE?

THE WORKER IS RICHER

There are four benefits *to the worker* from working longer (#2 and #3 are obvious and require no explanation).

1. Increased Social Security payout (from waiting until age 70 to claim benefits).[13] This is supposed to be an actuarially fair tradeoff, more money per year in exchange for fewer years. Originally it was, but it isn't anymore. Changes in life expectancy have caused the balance to tip in favor of retiring later to get the larger payout. In addition, those who work to age 72 are more likely to survive to the older ages where the larger Social Security check really pays off, for self-selection reasons and (more speculatively) because working enhances longevity.

2. More labor income, both for current consumption and for new savings (if any)

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.

[12] DCDB stands for "defined contribution to defined benefit," reflecting Sexauer, Peskin, and Cassidy's (2012) and Sexauer and Siegel's (2013) view that the method they propose converts (in economic impact, although not in institutional structure) a defined contribution plan balance to a defined pension benefit.

[13] Under current law, "the Social Security Administration (SSA) will pay you retroactively for benefits accrued up to six months after your 70th birthday, but that's it. If you wait any longer, benefits you would have received are permanently forfeited." (Source: http://www.elderlawanswers.com.) Therefore, even though our worker is working to age 72, she claims the benefits at 70.

The employer is richer

Employers don't hire employees unless they think they can make a profit off of them. The additional productivity from working longer is shared, at least in expectation, between the wages and benefits to the worker and the additional profits to the employer.

The government is richer (or taxes are lower)

In the United States, our national government faces a seemingly endless stream of future budget deficits, causing depreciation of the currency (inflation). Increasing tax rates, the usual remedy, can be self-defeating and is, at any rate, unpleasant — but increasing the tax *base*, the amount of income that can be taxed, is the opposite. That's what economic growth *is*. We want the tax base to be as big as possible and the rate of taxation of that base to be as small as possible.

Society is richer

The additional work done by older workers is, by definition, beneficial to others — or they wouldn't be getting paid for doing it. Personal services provided, widgets manufactured, classes taught, and so on, are the reason for working in the first place. Money is just the incentive to get people to produce these real economic goods. And greater health and happiness are side benefits.

Obstacles to working longer, and some ways of overcoming them

Too sick to work?

This is the big one. 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" (Insler 2014). Other researchers have confirmed a strong connection between poor health and the decision to retire early.

While we are living longer than ever before, then, our lives are not uniformly healthier, with the result that not all of us are more productive. 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 last concern has attracted the attention of public health researchers, who have coined the term "healthspan" to denote the part of life during which one feels good and is able to be productive. Aware of the cost and pain of decrepitude, these doctors and scientists are trying to bend their efforts in the opposite direction. Eileen Crimmins, a gerontologist and demographer, writes, "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."[14] If that forecast proves accurate, it augurs well for longer and more productive work lives, and bolsters the argument for removing obstacles to such employment.

[14] Crimmins (2015) at p. 909.

Frustration: "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, poor working conditions, a miserable commute, or a mismatch between employee skills and job demands. A bad boss is the most common complaint.

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. Find something else. The popular slogan, YOLO — you only live once — also applies to work choices. (People who work at a job they hate for health insurance reasons, or to vest in a pension, are in a tough situation; "Obamacare" and portable DC plans go part of the way to solving this problem.)

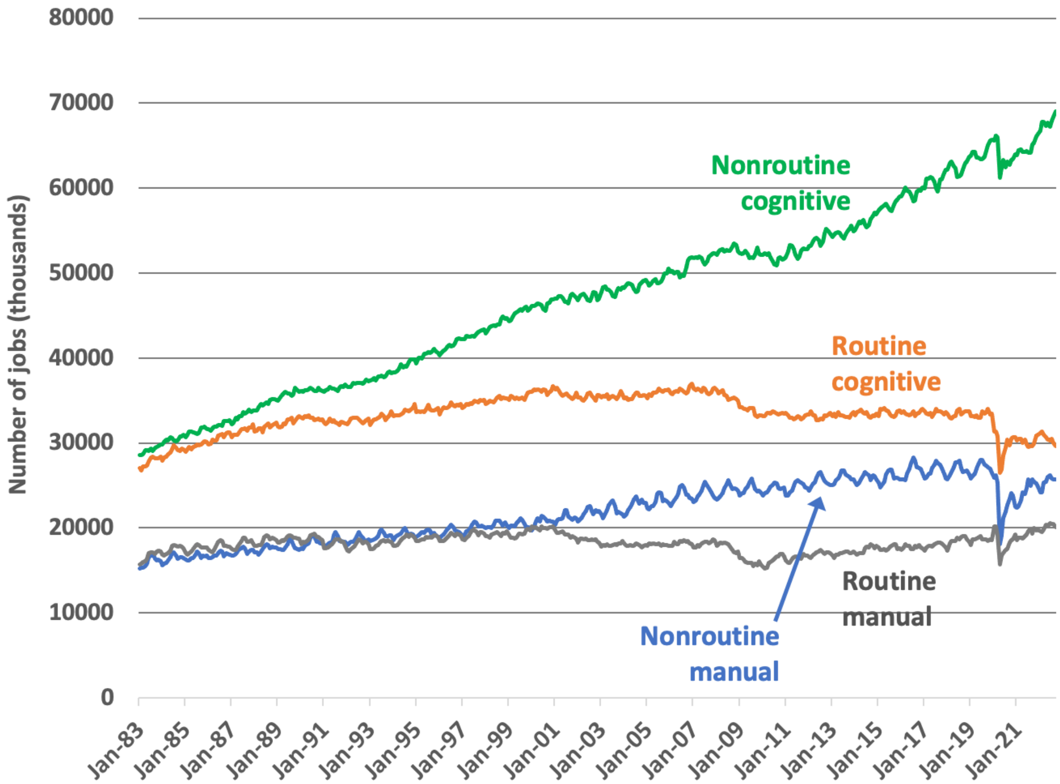
If, on the other hand, your work is (actually or potentially) satisfying but the job is structured poorly, it can be restructured. There are probably other employers in the same field; too many employees have become convinced that they can never get another job when that is not the case. Or you can change 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 6 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 6
EVOLUTION OF JOB QUALITY IN THE U.S., 1983-2014



Source: FRED, Federal Reserve Bank of Saint Louis. Drawn by the authors.

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, technology, and health care jobs, mostly non-routine cognitive, 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.[16]

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.

[16] The "war against the stupid" (see https://www.theatlantic.com/magazine/archive/2016/07/the-war-on-stupid-people/485618/), and the fact that the smart won it, is a problem we ignore at our peril. But that is a topic for another paper

One good way to make your work easier and more enduring

As a side observation, one of the reasons people pursue higher education, or advanced skills training, is to make their work physically easier. There's nothing quite like a summer job doing heavy labor to motivate a college dropout to return to school. Because non-routine cognitive work is by definition mostly mental, not physical, you can work at such a job much longer than you could in a job requiring physical stamina and exertion.

That is the downside of today's trend toward encouraging young people to pursue a trade instead of going to college. What will they do after they're 55? The world of things doesn't need that many supervisors. And I don't want an 85-year-old roofer working on my roof.

The dénouement: Tearing down the wall of laws, regulations, taxes, and traditions

So, what can we do to facilitate this longer, healthier, happier work life? Here are some suggestions, rooted in our belief that the obstacles are mostly legal and institutional.

Create an unprotected class of workers

Current employment laws are a maze of "protected classes of workers" under federal and state laws. These laws were generally well-intentioned and were designed to protect the members of the class from age and wage discrimination. Older workers, at or past the Social Security eligibility age of 62, are one such class and are the group with which we are concerned in this article.

Creating an "unprotected class" option that workers can voluntarily opt into can bring innovation and flexibility for setting pay, benefits, and working hours that meet the needs of the older worker and the employer.[17]

For example, if I suggest to an older worker that he cut back his hours and accept lower pay, I can get in serious legal trouble even if the proposed arrangement is exactly what the worker wants. Even if I don't get in trouble, the worker is unlikely under current law to get that deal. This is crazy! Employers and workers should have much more freedom in contracting with each other to their mutual benefit.

The benefits of an opt-in unprotected class of older workers

Individuals, and society, face a welfare loss when workers are stopped from fully enjoying the returns to their extensive human capital accumulated over decades. Worse, it's possible that, knowing this, we make poor human capital investment decisions. We are reminded of the iconic image of Gulliver pinned to the beach by the people of Lilliput using hundreds of ropes: existing labor laws, regulations, and traditions — even if well intentioned — do not provide the

[17] There is precedent for designating a specifically unprotected class of employees. "Exempt" employees, considered by labor laws to be in management, do not have to be paid (and are not paid) overtime. Non-exempt employees do have to be paid overtime, based on work-hours rules established by legislatures. Anyone accepting an exempt management position agrees to abide by this designation.

flexibility needed to meet workers' demands for lower hours, lower wages, and continued access to benefits so they can continue contributing to society and to their own bottom line.

Allowing an employer to "discriminate" by negotiating with an employee to work fewer hours of work, earn benefits — especially medical benefits purchased wholesale — and receive lower pay to offset the employer's higher costs and the employee's reduced productivity as she ages, and is a rational win-win for all parties.[18] Not everyone will want to, or be able to, arrive at such a result — and, in the essentially voluntary society that we live in, they don't have to. Such a negotiation must be entirely free of coercion and pressure, and ideally begins with the employee herself.

So, let's create the unprotected class. It's a simple step. It leaves existing rules and regulations in place for those who want the protection. And it will help create a more productive, prosperous, and pleasant society.

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. As we showed, the median American at the conventional age of retirement has a woefully inadequate savings or DC-plan balance. Below the median, it's an abyss: 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 at a potentially lower cost, 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; they will help solve the retirement crisis because they will be paying more in taxes and collecting less in benefits. Older workers, moreover, 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 tear down this wall.

[18] Because of diminished productivity, the worker might have to work more than 60%/25% of final hours to get the 60%/25% of final pay. This nevertheless seems to us like a good trade.

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