

A New Map of Life: Work

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I Introduction

Longevity is not a synonym of old age. The increase in life expectancy shapes lives from childhood to old age across different domains. Among those, the nature of work will undergo profound changes from skill development and the role of retirement to the intrinsic meaning of *work*. To put the striking potential of a 100 year life into a historical prospective it is useful to start from how the technological and demographic development shaped the organization and the definition of work in the past. This longer view can more thoughtfully explore how different the nature of work has been, from working hours to the parallelism between work, employment and task-assignment.

Throughout history the role of work has been intertwined with social and technological change. Societies developed from hunter-gather to sedentary farmers and they transitioned from the agricultural to the industrial revolution. The latter transformed a millennial long practice of self-employed farmers and artisans, working mostly for self-subsistence, without official working hours, relying on daylight and seasonality at an unchosen job from childhood until death, into employees working 10-16 hours per day for 311 days a year, mostly indoors from youth to retirement. This drastic transformation ignited fast shifts of work organization not only in the pursue of higher productivity and technological advancement, but also of social wellbeing.

Among the first changes there was the abandonment of unsustainable working conditions, such as day working hours, which sharply converged toward the eight hours day tendency between the 1910s and the 1940s, see Figure 1 (Huberman and Minns 2007; Feenstra, Inklaar, and Timmer 2015; Charlie Giattino and Roser 2013). Although beneficial for the workers, this reduction was worrying intellectuals, like the economist John Maynard Keynes, who wrote: “How will we all keep busy when we only have to work 15 hours a week?” (Keynes 1930). Keynes predicted people’s work to become barely necessary given the level of productivity the economy would reach over the next century: “permanent problem would be how to occupy the leisure, which science and compound interest will have won for him. [...] A fearful problem for the ordinary person” (p. 328). For a while, Keynes seemed right since the average workweek dropped from 47 hours in 1930 to slightly less than 39 by 1970. However, after declining for more than a century, the average U.S work week has been stagnant for four decades, at approximately eight hours per day.¹

¹ Despite the settling, differences in the number of hours worked between the low and the high skilled widened in the last fifty years. Men without a high school degree experienced an average reduction of eight working hours a week, while college graduates faced an

Technological change did not make work obsolete, but changed the tasks and the proportion of labor force involved in a particular job. In the last seventy years, for example, the number of people employed in the agricultural sector dropped by one third (from almost 6 million to 2 million), while the productivity tripled. Feeding or delivering calves is still part of ranchers' days, but activities like racking and analyzing genetic traits of livestock and estimating crop yields are a big part of managing and sustaining the ranch operations. In addition, the business and administration activity like bookkeeping, logistics, market pricing, employee supervision became part of the job due to the increase in average farm size from 200 to 450 acres. Another example is the effect of the automated teller machine (ATM) on bank tellers, whose number grew from about a quarter of a million to a half a million in the 45 years since the introduction of ATMs, see Figure (Bessen 2016). ATM allowed banks to operate branch offices at lower cost, which prompted them to open many more branches² and develop specific client-focused skills.

Many of the great inventions were designed to replace human labor. The mechanical power of tractors substituted human physical toil, the machine precision of assembly lines replaced human shoddy craftsmanship and the computational perfection of computers wiped out error-prone human calculation (D. Autor 2015). Yet, the fraction of U.S adults employed in the labor market rose in every decade in the last one hundred years. If machines increasingly do work for us, without making labor redundant and skills obsolete is because automation typically replaces some tasks while creating others. Said differently, automation is not playing a substitutionary role, but rather a complementary one, enhancing human labor. In fact, of the 270 detailed occupations listed in the 1950 Census only elevator operators were completely eliminated, while many others were only partially automated (Arntz, Gregory, and Zierahn 2016).

Technology changed the form of *work*, but not its substance. Mechanization and automation modified the task performed within jobs, but they left the definition of *work* anchored to *formal employment*, *specialized jobs* and *task-assignment*. The latter represented an effective coordination strategy in the past, which allowed societies to achieved efficiency and wealth. Nonetheless, if some features of task-assignment are still crucial, such the containment of employer-employee matching costs, some others just seems to hinder work and life satisfaction, such as repetitive duties. The longevity revolution which, in contrast to the past technological advancements is not a direct spin-off of the work domain, can more drastically challenge the outdated and counterproductive inheritances of the parallel between job and task-assignment. In fact, longer lives are not

increase of six hours a week. Similarly, female graduates work 11 hours a week more than those who did not complete high school (Dolton 2017). Overall, American full-time employees work on average 41.5 hours per week, and about 11.1% of employees work over 50 hours per week, which is much higher than countries with a comparable level of productivity like Switzerland, where 0.4% of employees work over 50 hours per week (Feenstra, Inklaar, and Timmer 2015) and part time work is commonplace.

² Their demand was elastic.

just extending traditional life-cycle phases, like pre-reproductive, reproductive, post-reproductive. Instead, they are adding new developmental stages, like teenagers experiencing the extension of youth, new life trajectories, like the “boomerang generation” moving back home after college, new intergenerational duties, like the “sandwich generation” facing care giving obligations, and new time horizons, like Baby Boomers moving away from the retirement cliff.

Within these recent developmental and generational changes the social role of work seems either not well defined or misplaced. Opinions about the role of work for teenagers are still debated since, on the one hand, jobs can create a value added to the learning experiences, on the other they might obstacle educational attainments. The two effects result in inconclusive views on the benefits of alternate school and work or the value of vocational schools. The “boomerang generation” includes younger adults who enters the work force later, co-resides with their parents after college, and delay parenthood. This generation feels the pressure of a “cannon-ball” career trajectory stressing early professional choices whose optimal timing overlaps with the peak of fertility because of extensive educational achievements. The “sandwich generation” comprehends older adults, who are, at the same time, at the top of their careers’ duties, parents of children living at home, and eldercare providers for their relatives. Buried in a lot of personal chores, this generation is often trapped in unstable working hours and a threadbare social safety net, with cascade detrimental effects on the physical and mental health of them and of their relatives. Baby-Boomers are inverting secular trends by wanting or needing to stay engaged in the labor market longer. However, they are often not offered any formal midway between full-time retirement or full-time work making them turning to volunteer work, which offers them an appealing compromise.

All these generations, with their different needs and peculiarities, experience a misalignment between their job conditions, their family duties and their biological timing. This often results in a trade-off between health, family and careers, which do not only erodes work-life satisfaction, but it also leaves individuals with the feeling of a societal jet-lag. An anecdotal evidence about frustrations related to individual professional lives comes from Google search (geolocated in San Francisco, California) about *work* and *job*, where the first results show many negative connotations.

- Why is work...stressful? so stressful? important? so boring? negative? so hard? work-life balance important? work ethic important?
- Why job...is important? satisfaction is important? security is important? is bad? training is important? costing is important?
- When is work... negative? positive?
- Why employees...engagement matters? engagement is important? leave? resist change? referrals are important? surveys are important? recognition is important? stay? development is important? benefits are important?

Although these outcomes might result from a negative selection bias of predominately unsatisfied workers running work-related Google searches, the overall job satisfaction is

stagnant or falling across many occupations in many countries. For the US, the National Longitudinal Survey Cohort 1997 shows for 2015 that of the 2,381 observations, approximately 28 percent of employees (659) either felt their job was just okay or disliked their job. This result may sound unexpected since it does not seem to reflect the latter improvements in working conditions. However, job satisfaction currently surpasses the old measures related to wages, working hours and strenuous physical work, to confront with a more holistic view. The more recent measures of job satisfaction include the mismatch between actual and desired hours, opportunities of personal growth, job security, mental stress, job ethics, job engagement, autonomy, flexibility and interpersonal relationships (Clark 2015). These newer measures are decreasingly bound to their exclusive capacity to assess the quality of a job, but they are more related to assess the work-life quality in general. In fact, the same parameters can apply to non-remunerative activities, such as volunteering and playing, which score very high values of satisfaction. It is, therefore, interesting to understand which are the divergent characteristics between *work* and *volunteering & play* driving different levels of satisfaction.

“Tom said to himself that it was not such a hollow world, after all. He had discovered a great law of human action, without knowing it—namely, that in order to make a man or a boy covet a thing, it is only necessary to make the thing difficult to attain. If he had been a great and wise philosopher, like the writer of this book, he would now have comprehended that Work consists of whatever a body is obliged to do, and that Play consists of whatever a body is not obliged to do.” *Mark Twain, The Adventures of Tom Sawyer (1876, Chapter 2)*.

Mark Twain quote highlights how the minimization of each person’s experience of free choice in the assignment of tasks peculiar of the spirit of work contrasts with the maximization of each person’s experience of free choice peculiar of the spirit of play. Nevertheless, there are few rare cases where work coincides with play. Examples are the hunter-gatherer cultures (Gray 2009) and childhood (Montessori 2013), where work/play activity: (1) is varied and requires much skill and intelligence; (2) does not take too much time; (3) is mostly done in a social context and, (4) is, for any given person at any given time, optional (Gray 2009).

The divergence between work and play both reflects the societal evolution, from the hunter-gather to contemporaneous societies, as well as the personal development from childhood to adulthood. The changing meaning and role of work through the different phases of life is particularly interesting in the prospective of a new map of life. The new developmental stages, life trajectories, intergenerational dynamics and time horizons, triggered by longer lives, can represent part of the striking force that longevity can play in freeing the concept of *work* from its old connotations and in reconciliation the meanings and role of *work* and *play*.

The striking potential of longer lives surpasses a societal jet-lag, which results from a lack of societal adaptation to longevity, to question the future meaning of work. While a perfect re-alignment between *work* and *play* seems unlikely in contemporaneous adult societies, the new life phases drawn by longer lives are spontaneously bringing some characteristics of play into working lives. The application of the notion of play to workplaces enhances job satisfaction (Abramis 1990), increases task involvement and creativity (Hunter, Jemielniak,

and Postula 2010), and contributes to individual ability to deal with stress (Sørensen and Spoelstra 2012). Maria Montessori wrote that “play is the work of the child” as if children play would be ennobled when compared to *work*. By the same token, recognizing that to some extent “work is the play of adults” can help smoothing the current societal jet-lag and framing new maps of life. Thanks to technological advancements concepts like activity freedom, flexibility, voluntarism, playful manipulation, once predominantly relegated to protected developmental phases, can be an integral part of mature stages and working lives.

II. Current State of the Domain

In the last one hundred years life expectancy rose from fifty to eighty years. Minor labor was restricted. Female labor participation more than doubled. Years of work declined from fifty-five to forty. Retirement age dropped from seventy-four to sixty-five. The rise of life expectancy expanded the resources to be redistributed across generations. Perhaps in the history of human existence there has never been such a rapid demographic shift along with changes in the nature of work. Universal education and minor labor regulations are the first legacies of this demographic transition. The resources’ transfer to children is a condensate of human evolution, where investing on an extended learning phase brings about long term health benefits and labor productivity (H. Kaplan 1996). Retirement is the second and most recent legacy. At their inception, pensions were driven forward by the imperatives of democratizing and preventing the spread of socialism in economically growing countries. Public and private pensions are the result of governments and employer wanting to win the trust of key voters and workers respectively. As a result, retirement shifted from being an unwelcome phase of the life-cycle since the late twentieth century to a taken-from-granted one for most people in high and middle income countries. Retirement started to occur at steadily earlier ages, such stat the labor force participation of men of 65+ years firstly dropped in history form 65 percent to 23 percent. Devoting adulthood to remunerative work resonates with profiting from the mature fruit of education, which insure productivity levels able to guarantee a steady living standard over the life time.

According to economic behavior theory, individuals balance their consumption by their current income as well as by their expected future income streams (i.e. permanent income hypothesis). As a result the amount of time a person decides to devote to work vs leisure (i.e. non-work) varies strongly over the life cycle. During childhood and old age, people consume more than they produce, while the opposite is true during adulthood. Public and private inter-generational transfers fill the gap by shifting resources across generations with no expectation of direct repayment. Private transfers occur when parents rear their children or when the offspring assist old parents. Public transfers include public education, publicly funded health care, public pensions, and the taxes paying these programs. From this point of view, an older person is economically dependent even if she has accumulated claims on output that more than offset her consumption, claims that could take the form of entitlements to transfers or ownership of assets.

Figure stylizes the behavior just described, known in economics as the Life-Cycle Hypothesis. According to the life-cycle model, people save when young to finance consumption during retirement. In theory, in the absence of a bequest motive, the spending

(i.e. dissaving) of the old should offset the saving of the young.

A naive interpretation of the life-cycle model might suggest that the optimal response to longer lives is a proportional increase in working life with similar savings patterns to keep the trade-off consumption-saving the same as in Figure (see black curve in Figure). Nevertheless, the rational response to longer lives is a less than proportional expansion of working life with a simultaneous tendency to increase savings (Hurd, McFadden, and Gan 1998; D. E. Bloom, Canning, and Graham 2003), as depicted by the red curve in Figure . Saving became less costly because of higher wage growth and compound interests³.

The fall of uncertainty around the date of death, driven by the rise of life expectancy, is another important reasons behind the rise of savings. For example, high school graduates live an average of 5 years longer than their less educated counterparts while lowering the uncertainty around their expected age of death by 2 years (Tuljapurkar 2010). With declining mortality it becomes increasingly optimal to plan, and save for, retirement while with high mortality it is optimal to work until death since the risk of dying before enjoying the planned leisure is too high. The compression of the uncertainty regarding the date of death more than outweighed the rising life expectancy, which would lead, instead, to later retirement (Kalemli-Ozcan and Weil 2010 ; Zhang, Zhang, and Lee 2003).

The Life-Cycle Hypothesis graph (Figure) not only shows how individuals tend to organize savings and consumption, but it also shows how income is bell-shaped over the lifetime. Such observation can in part reflect a “cannon-ball” trajectory earnings follow throughout a career. For example, the highest paid are people in their 50s across all levels of educational attainment (see Figure). Traditional explanations parallel the rise in earnings with the rise of productivity gained through the progressive development of experience and better job matching. However, the rise of wages with age and experience seems to have less to do with productivity (Medoff and Abraham 1980) and more with behavioral economic reasons. The human capital argument suggests that offering an increasing age-earnings profile encourages workers to stay in the firm long enough to payoff the formation investment the employer bore. Instead, the agency cost argument suggests that firms offer wages below marginal productivity for younger workers and above marginal productivity for older workers. This strategy will prevent workers from cheating and shirking since if caught workers risk to lose the present value of the difference between pay and productivity (Lazear 1979). Another explanation is the preference for an increasing income stream (Loewenstein and Sicherman 1991), which can be understood by using two concepts: loss aversion and self-control. On the one hand, loss aversion is the tendency, under uncertainty, to remain at the status quo. Leaving the status quo comes with the risk of the disadvantages to exceed the advantages, which can be particularly costly since the

³ The compound interest can be thought of as “interest on interest.” It is the interest on a loan or deposit calculated based on both the initial principal and the accumulated interest from previous periods and will make a sum grow at a faster rate than simple interest, which is calculated only on the principal amount.

utility of current consumption depends on previous consumption. On the other hand, costly self-control refers to the difficulties workers encounter in relying on themselves to save enough from a flat (or declining) income profile to finance the desired increasing consumption.

Both human capital accumulation and behavioral theories not only explain the rationale behind the pressure put on the first years of work, which is reflected in the steepness of the left part of the earning curve, but they also justify the importance of guaranteeing more early age education and old age retirement. Nevertheless, the efficiency of such model is now under pressure since both younger and older workers are developing the feeling of a societal jet-lag under this traditional maps of life.

In early careers job mobility is particularly important since it allows people to find better employment opportunities, to achieve higher wage gains and to develop new skills in order to establish the desired long run career paths (Gervais et al. 2016). Until recent years young workers experienced roughly one-third of wage growth and made more than two-thirds of their lifetime job changes during their first ten years of work experience (Topel and Ward 1992). Many transitions did not only involve hopping between similar jobs with different employers, but also concerned more radical career changes, especially among people without college degrees (Neal 1999). However, since the 1990s, young workers aged 16 to 24 dropped their labor market participation and they experienced a decline job-to-job transition rates (Bosler, Petrosky-Nadeau, and others 2016). The reasons behind this trend can either reflect a positive technological advancement or a negative social dynamic. On the one hand, it might result from an increasing ability to move directly into preferred career with less job experimentation either because more efficient training or information technologies, which enabled better careers matches (Kuhn and Skuterud 2000; Stevenson 2008; Kuhn and Mansour 2014). On the other, the decrease in job hopping might be due to the rising trend of young adults moving back with their parents after college or training experiences (G. Kaplan 2012).

The desirability of such “boomerang” dynamic is unclear. On one side, young adults can gain some insurance in the vulnerable early career stages when interruptions, caused for example by recessions, can have long lasting consequences on earnings, health insurance coverage, health effects, and family formation (see the “cannon-ball” earning trajectory in Figure) (Kahn 2010; Schwandt and Von Wachter 2019; Van Dijk, Dalen, and Hyde 2020). According to the U.S. Census the poverty rates for young adults aged 25 to 34 living in their parents’ households held steady at 5.3 percent with respect to the 10 percent for all young adults ages 25 to 34 (Creamer, Shrider, and Edwards 2020). Despite profiting of better human capital development, college educated young workers share many of the vulnerabilities of their less skilled counterpart. In fact, the detrimental outcomes of entering the labor market during a recession transverse different educational attainments although with different incidences. Low-educated entrants have immediate and important negative effects on wages and earnings, which persist approximately for two years. High-educated youth tend to get locked into lower-quality jobs, whose the penalties persist up to ten years (Genda, Kondo, and Ohta 2010; Cockx and Ghirelli 2016). For both low and high educated members of a cohort entering the labor market during a recession can create a

generational inequality of opportunities with respect to their peers graduating with a different timing.

Beyond the higher unemployment rates, the lower earnings and the reduction in net worth, economic downturns impact the residential choices of young adults, who have lower rates of home ownership and higher rates of co-residence with parents. During the current pandemic the number young adults living with parents grew from 46 percent in February 2020 to 52 percent (26.6 million) in July 2020, with the sharpest increase taking place among those aged 18 to 29, see Figure .⁴

The increasing tendency of young adults living with their parents, while functioning as a safety net, decreases job mobility, fosters sub-optimal job matches and it delays family choices. Millennials have started to realize the 30s are not the new 20s. They often financially rely on parents into their 30s despite many parents wanting their children to be financially independent by age 25. Today, many Millennials feel late in reaching their life milestones, such as marriage, parenthood and home ownership (Deevy and Streeter 2018), while facing more compelling time constraints in their reproductive opportunities. Younger generations increasingly experience the burden of a trade-off between optimal reproductive timing and the ideal career timing resorting to reproductive technologies and contraception to re-center biological needs within social norms.

Women across all races and educational attainments are delaying motherhood. At the same time, the biggest increases in motherhood took place among women with postgraduate degrees (Livingston (2018), see Figure 4), who are most often postponing pregnancy beyond the age of 35 years. This trend creates a clash between the optimal biological fertility period with educational attainment and career launch. Delayed childbearing is rarely a conscious choice and women are unaware that, at present, with the exception of egg donation, assisted reproductive technology has no answer yet to age-related decline of female fertility⁵. In fact, advancing both maternal and paternal age are not only relevant for the risk of natural and assisted conception, but also for the outcome of pregnancy. Although the absolute rate of poor pregnancy outcomes may be low from an individual standpoint, the impact of delaying childbearing from a public health perspective should be in the agenda of public health and socio-economic policies (Balasch and Gratacós 2012).

The choice to delay parenthood is partially related to co-residence settings, but most importantly to the increase of educational attainments and female labor participation. The priority given to education and job over parenthood resonates with the accumulation of human capital and faster wage rise in early careers. A year of delayed motherhood increases, on average, career earnings by 9 percent, work experience by 6 percent, and

⁴ The most important reasons of co-residence with parents were the closure of college campus and job loss or other financial reasons.

⁵ It is estimated that assisted reproductive technology compensates for only half of the births lost by postponing a first attempt of pregnancy from 30 to 35 years of age, and less than 30% after postponing from 35 to 40 years of age

average wage rates by 3 percent, with higher percentages for college graduates. Post-motherhood wages are also shown to vary with motherhood timing (Miller 2011). Nevertheless, delaying parenthood may also create an obstacle to realizing fertility plans since fertility sharply declines after the mid-twenties/early thirties. The progressive increase of age at first birth alarms experts for the risks of infertility, spontaneous abortions, birth defects, and complications during pregnancy (A.-M. N. Andersen et al. 2000). While delaying parenting created long-run social benefits in the past, the delays now typical in advanced economies go beyond the healthiest maternal age (Stein and Susser 2000). In fact, significant bio-medical and physical conditions attend bearing and caring for a child at both ends of the fertility period for mothers (Abel, Kruger, and Burd 2002; Callaghan and Berg 2003), but not for fathers (Mirowsky 2002).

Late parenthood and old age morbidity trapped many adult workers in the so called “sandwich generation,” being responsible, at the same time, of their children and their parents. This dynamics is escalating fast with the increase of the number of generations being alive at the same time. According to the [US Unpaid Eldercare Survey](#) almost one-half (48 percent) of eldercare providers who were parents of children living at home provided care for their own parent. Of these parents, about one-third (35 percent) had a child under age 6, and the remainder (65 percent) were parents whose youngest child was between the ages of 6 and 17. Most (82 percent) eldercare providers who were parents were employed, and 69 percent were employed full time. Eighty-nine percent of fathers were employed full time, compared with 55 percent of mothers. Most of the challenges faced by the “sandwich generation” will exacerbate, when it will expand into “double sandwich” or “triple-decker sandwich” individuals in their 60s helping to care for their grandchildren, which allows their adult children to work, as well as supporting their own parents in their 90s. Elderly dependents limit households college savings for the offspring as well as stockholding, with the potential consequences of decreasing the offspring long-term earnings (via decreased human capital accumulation), and of threatening retirement savings. The magnitude is estimated to be twice as much as poor personal health (Bogan 2015).

Reconciling housework and caregiving with job is becoming more difficult especially for low income Americans experiencing working hours outside the 9-to-5 standard daytime, or rotating schedule, or varying hours. The General Social Survey estimates about 10 percent of the workforce to be assigned to irregular and on-call work shift times and roughly 7 percent employed on split or rotating shifts. The International Social Survey Program reports that 45 percent of the worker surveyed about their work schedules declared their “employer decides” 15 percent perceived they were “free to decide” while the remaining 40 percent could “decide within limits” (Golden 2015). The work-life conflict created by routine uncertainty about work time is a dramatically stronger predictor of workers’ health and well-being than the economic constraints imposed by hourly wages (Schneider and Harknett 2019a).⁶ Moreover, work schedule instability is not only stressful for workers, but also for the members of their family, with consequent negative spillover health effects.

⁶ Work schedule instability is common among food-service and retail sectors, which employ 17% of American workers where Black and Latinx workers are over-represented.

Older adults reverse century long trends by remaining in the workforce (see Figure 6) because of economic constraints. An escalating phenomenon contributing to inadequate retirement savings are the 401(k) plans leakages. The latter consists in the cash out of retirement savings prior to the expected retirement age and it can deprive plan participants of a timely or comfortable retirement. Most of the leakages occurs because of termination of employment, however, over one-third (37 percent) are due to financial hardship, where a participant has an urgent need for funds (Government Accountability Office 2009). In 2014 alone, 20 percent, or \$65.5 billion, of withdrawals from defined-contribution (DC) plans and individual retirement accounts (IRA) went to pre-retirement-age people (L. Goodman et al. 2019).

However, the decision to delay retirement can also be related to the willingness of healthy seniors to remain physically, mentally and socially engaged. Full retirement can have a potential detrimental effect on physical and mental health (Behncke 2012; Bonsang, Adam, and Perelman 2012) leading to a 5-16 percent increase in difficulties associated with mobility and daily activities, a 5-6 percent increase in illness conditions, and 6-9 percent decline in mental health, over an average post-retirement period of six years (Dave, Rashad, and Spasojevic 2006). The effects tend to operate through lifestyle changes including reduced physical activity and social interactions. Marriage, social support, post-retirement physical activity and work part-time upon retirement can alleviate the adverse effects of retirement on health, involuntary retirement, may amplify them.

The necessity or willingness of seniors to pursue career opportunities sometimes face ageism. Older employees tend to be more expensive in terms of wages or benefits and they are perceived as less productive, less flexibility, and less trainable. When trying to launch their own company, older entrepreneurs are also discriminated. Quoting Paul Graham, venture capitalist and founder of Y Combinator: "The cutoff in investors' heads is 32...after 32, they start to be a little skeptical." Nevertheless, successful entrepreneurs are middle-aged, not young in the U.S. The mean age of the founders of the 1-in-1,000 fastest growing new ventures is 45 regardless sectors, entrepreneurial hubs, and successful firm exits. These data show how entrepreneurial success stems from prior experience in the specific industry rather than from age (Azoulay et al. 2020).

The difficulties experienced by the "boomerang," the "sandwich" and the older generations challenge the current organization of the U.S. labor market. The latter follows traditional economic prescriptions for a well-functioning flexible labor market, which promote participation, but, at the same time, it lacks of workers support (Economic Advisers 2015). Table 1 reports the position of the U.S. in terms of labor market flexibility and institutional labor market support with respect to the rest of the OECD countries (Black et al. 2016). The standard economic view expects a trade offs between flexibility and supportive labor policies. Therefore, it is puzzling to observe that despite its high rating in flexibility, the U.S.

Within these sectors substantial racial and ethnic inequality persists. For example, with respect to white workers, schedule instability is 18 percent higher among black women, 17 percent among Latinx and 12 percent among black men (Schneider and Harknett 2019b).

labor market has experienced declines in fluidity (Molloy et al. 2016) along with the rate of job-to-job transitions (Bjelland et al. 2011; Molloy, Smith, and Wozniak 2014), hires and separations (Hyatt and Spletzer 2013), the formation of new firms (S. J. Davis and Haltiwanger 2014), geographic movement (G. Kaplan and Schulhofer-Wohl 2017; Molloy, Smith, and Wozniak 2014), and the increase in occupational licensing requirements (Hermansen 2019).

Since the mid-1900s, working lives have followed a very similar path: a period of education, followed by a long period of employment, ending with a few years of retirement, paid for by an employer funded pension plan. Today's careers are different. Young adults more often enter the work force later prolonging their co-residence with their parents. Working women continue to bear most of the responsibility for family life especially when members of the "sandwich generation." The share of workers 55+ is increasing faster than any other age group. Workers require advanced training and often re-training and they are responsible for planning and financing their own retirements. These seismic shifts have blurred the lines between work, retirement, and family life as individuals and families struggle to find a work-life balance. While the demographic changes ignited by longer lives are not alone responsible of such puzzle, they cannot be neglected when designing the future labor market. Unfortunately, the structures and policies built to support workers throughout their career and into retirement have not changed at the same pace. Changes are needed, as traditional definitions of work, career and retirement – as well as the underlying infrastructure that supports the workforce – has been slow to keep up.

III. Evidence for Alternative Approaches

The previous section highlighted how the increase in life expectancy can question the optimal life-cycle choices observed within more traditional maps of life. The first aspect was how more years of life do not necessarily translate into a proportional increase in years of work. In fact, the combination of longer lives and decreasing uncertainty around the date of death boosts the desirability of more savings to finance more years of retirement. However, such scenario is unimaginable for a large share of Americans (approx. 35 percent) who have no or inadequate retirement savings. Moreover, reasons related to the functioning of financial markets and personal health question the rationality of increasing savings to finance more years of retirement. From the point of view of the financial markets, a sharp increase in plausible savings rates will make them less profitable by decreasing the interest rates. The increasing quantity of savings will reinforce the persistent downward trend of global real interest rates over the past five centuries resulting from the combination of capital accumulation and technological change (Schmelzing 2019). From a health-related standpoint, retirement is often associated with faster physical and cognitive decline. Therefore, the inability of securing even minimal retirement savings, the potential progressive reduction in real interests rates and the benefits of prolonged engagement either in paid or in volunteer work, will most likely re-align work and life expectancy.

The career extension will require social norms and labor markets to adjust to the new life-cycle. Among others, some signals observed across different generations should draw the attention. The youngest cohort of workers (age 16-25) are financially relying more on their

parents to buffer their exposure to economic recessions while experiencing a detrimental decrease in job participation rates and mobility. Adults (age 25-40) are confronted with the trade-offs between the optimal timing between educational, career and reproductive choices. The mid-aged workers (age 40-60) are trapped in caregiving duties, both to their children and their parents and/or grandparents, while increasingly experiencing work schedule insecurities. Older workers (age 60+), who are willing or obliged to work longer, face stereotypes about their productivity. By embracing a generational perspective, this section discusses the past and the present of labor market interventions at the intersection between demographic, social, economic and technological change.

Education is the backbone of economic and health prosperity. However, schooling does not have the monopoly of skill development and learning. Summer jobs, internships, apprenticeships can complement class instruction (Mincer 1974; Rosen 1972; Hotz et al. 2002; Häkkinen and Uusitalo 2003; Geel and Backes-Gellner 2012) and lead to additional returns on the labor market (Becker 2009; Heckman 2000). Alternating school and work can help developing both hard and soft skills, such as good work habits, maturity, responsibility and learning to deal with authority (Ruhm 1997; Light 1999; Hotz et al. 2002; Painter II 2010). At the same time it provides valuable market information, networking, better job matches (Granovetter 1973; Stiglitz 1975) while signaling the ability to successfully combine study and work. On the negative side, however, maintaining a substantial employment schemes during the school year may interfere with in class learning and performance by inducing fewer study-related activities, lower course marks, a higher degree completion duration and even more school drop-outs (Becker 1965; Häkkinen 2006; Derous and Ryan 2008; Dustmann and Van Soest 2008; Buscha et al. 2012; Charlene Marie Kalenkoski and Pablonia 2012). Moreover, work experience during the school year might signal liquidity constraints, especially if the job is unrelated to the field of study, or even disinterest in educational development (Spence 1978; Häkkinen 2006; Geel and Backes-Gellner 2012).

The effects of student employment on later labor market outcomes are mixed since they change according to the education level, the duration, the type of job, etc. To maximize the benefits and to smooth the negative by-product of in-school work experience, coordinating the transition from school to work is crucial. To ease the transition, educational programs should focus on providing young people the skills they need to succeed after graduation. Therefore, understanding which types of secondary education (vocational vs general) and school-to-work programs, are the most beneficial is crucial. For example, the School-to-Work Opportunities Act of 1994 is among the first nation wide publicly sponsored programs. It provided administrative and financial support to help build those connections by job shadowing, mentoring, cooperative education (combining academic and vocational studies), work in a school-sponsored enterprise, tech prep (a planned program of study with a defined career focus), and internships or apprenticeships (L. Davis and Pollack 1995; Stull and Sanders 2003). 64 percent of the American schools had at least one school-to-work program with employers, and 38 percent of students participated in school-to-work programs (Joyce and Neumark 2001) while 71 percent of for-profit establishments reported that they were involved in some school-to-work program with their local schools (Cappelli 2014). More widespread participation in the youth apprenticeship could not be

reached (R. I. Lerman and Rauner 2012) because of problems in coordinating long-term training plans, the federalist framework for the training systems, a general mistrust in the idea of imparting specific, highly depreciable human capital (Krueger and Kumar 2004), and a lack of interest on the part of employers. Despite a few implementation flaws, some of the programs reported some positive effects. For example, school enterprises boosted post-high school education by 0.05 relative to base probabilities of about 0.5, while cooperative education and internships/apprenticeships boost post-high school by 0.1 relative to base probabilities of about 0.6. Beneficial effects manifested across all racial and socio-economic conditions, although the programs delivering the benefits varied. For the most part, School-to-Work programs were not more beneficial for disadvantaged students, but they were a premium for males with respect to females. A modest exception are internship and apprenticeship, which increase college enrollment among those with the lowest test scores, and boost employment among blacks, participants with less-educated mothers and living in non-traditional arrangements (Neumark and Rothstein 2005).

Vocational training is increasingly gaining attention in response to the worsening outcomes of non-college educated workers (D. Autor 2019). Recent studies were able to estimate the causal impact of secondary-school curricula on labor-market outcomes by exploiting experimental and quasi-experimental settings. Results suggest that vocational education can improve on-time graduation and boost earnings after graduation in disadvantaged communities (Kemple and Willner 2008), but may have mixed effects on enrollment in higher education (Dougherty 2018; Hemelt, Lenard, and Paepflow 2019; Brunner et al. 2019). It is debated if a narrow vocational training is the best response to the constantly evolving nature of work (Krueger and Kumar 2004; Hanushek et al. 2017). Supporters sustain that rapid and unstandardized technological change challenges schools curricula creating skill gaps and skill mismatches and that preventing short-term unemployment can avoid long term unemployment. Opponents underline the high rate of skills depreciation, which create the trade-off between short term benefits and long term adverse impacts (Krueger and Kumar 2004; Hampf and Woessmann 2017; Hanushek et al. 2017). Overall, there is not a clear-cut agreement on the benefits of school-to-work programs and vocational training. Part of the programs' failures lies on implementation flaws, which should not question the role of institutions in structuring the transition from school to work. On the other side, success stories come especially from Central and Northern European systems (Silliman and Virtanen 2020), which are, however, hard to replicate on a large scale because of their well established institutional and cultural foundations. To have a major impact, vocational training needs to be actively supported by a sufficient number of employers, policymakers, but foremost families (Eichhorst 2015).

The need of a public promotion of vocational training reflects the belief that firms will not pay to develop occupational skills that workers could use in competing firms. However, new evidences in European OECD countries recognize that apprenticeship training is usually a profitable investment not only for workers, but also for firms, which recoup all or most of their costs within the apprenticeship period (Gambin, Haslück, and Hogarth 2010; R. Lerman 2019).

Vocational training and apprenticeships alone are not a panacea or a quick solution in particular for younger workers, who remain the most vulnerable to recessions and

unemployment (see the “cannon-ball” earning trajectories in Figure). The success of training programs can be undermined if not complemented by other measures. Minimum wages are particularly detrimental to young worker’s ability to gain experience. For example, the Fair Minimum Wage Act of 2007, which increased minimum wages to 7.25USD can account for a 2.8 percentage point increase in unemployment for 15–24 year old workers⁷ since 28.9% of young low skilled workers earned less than 7.25USD in 2006 (Gorry 2013). The consequent delayed entry into the labor market reduces the lifetime income stream of young low skilled workers while burdening the welfare system and their families (Charlene M. Kalenkoski and Lacombe 2008).

Unpredictable events, such as unemployment, recessions, are not the only causes of a reduction in lifetime earnings. Under the current conditions deliberate family choices can also lower income flows over the life-cycle reducing the monetary returns to schooling and work experience. To lessen the trade-off between career opportunities and fertility possibilities the implementation of family-friendly policies, such as incentives to the provision of public and private childcare services, the optimal length of maternity leave and promotion of paternal leave policies to improve the gender balance in child-caring, can be crucial. The access to paid parental leave proves to better the health of both children and parents. The effects range from short-term, such as increased breast-feeding (Pac et al. 2019) fewer low birthweight and small-for-gestational-age births (Rossin 2011; Stearns 2015), decreased infant hospitalizations and infant mortality rates (Tanaka 2005; Pihl and Basso 2019), to long-term, such as reduced likelihood of obesity, attention deficit hyperactivity disorder, hearing problems, and ear infections (Lichtman-Sadot and Bell 2017) and improved maternal mental health (Bullinger 2019). Despite the clear benefits of paid family leave legislation, the U.S federal Family and Medical Leave Act of 1993 exclusively enacts unpaid leaves. This act guarantees family leave to about 60 percent of private-sector workers, and among those, 46 percent financially struggles to afford unpaid time off (Rossin-Slater and Uniat 2019). Local policies are trying to fill this gap. Examples are the 2004 California’s Paid Family Leave policy, which provided up to 6 weeks of partial wage, and the San Francisco Paid Parental Leave Ordinance implemented in 2017, which is the first in the U.S to provide parental leave with full pay. The former improved self-rated health and psychological distress, weight control and alcohol consumption (Lee et al. 2020), while the latter, increased paternal leave uptake in San Francisco by 13 percent (J. M. Goodman, Elser, and Dow 2020). One of the main limitations of the San Francisco policy is the exclusion of small employers, which limited its reach among low-income workers.

Guaranteeing a paid parental leave has proved to be beneficial, but extending it beyond 6–12 months does not bring additional health gains (Baker and Milligan 2010) while it harms careers. Despite new-parents showing the lowest degree of job satisfaction when working full-time, continuous employment following a first birth is associated with significantly better maternal health across the life course after controlling for the unequal selection of more advantaged mothers (Frech and Damaske 2012). Parental leaves may also reinforce

⁷ The rise in minimum wages between 2007 and 2009 can account for 0.8 percentage point increase in the steady state unemployment rate.

gender norms and stereotypes, especially when women avail themselves of parental leave more frequently than men do. To buffer the side-effects of career interruptions associated with parental leave, the support of childcare programs becomes crucial. The expansions of universal formal childcare generate positive long-term cognitive effects especially on children from disadvantaged backgrounds. At the same time it increases maternal employment, providing revenue to offset program costs (Cascio 2015). However, maternal labor supply impacts are larger for programs that are less beneficial for children. An example is the pre-K programs in Georgia and Oklahoma, which had such large immediate impacts on cognitive test scores, did not draw any mothers into the labor force (Fitzpatrick 2010).

The lack of a supportive public safety net is not limited to family leave. As previously shown in Table 1, the U.S. institutional labor market support is ungenerous with respect to the rest of the OECD countries (Black et al. 2016). Such design arise from the belief of an irreconcilable trade-off between labor market flexibility and welfare state. However, a mid-way solution able to preserve employment flexibility while guaranteeing generous protection is the Danish “flexicurity” model. The latter stretches along three directions: flexible hiring and firing, a generous social safety net, and an extensive system of activation policies (T. M. Andersen and Svarer 2007). The low employment protection guarantee high job turnover rates and short unemployment spells, which prevents a rise in structural unemployment, but may also reduce the human capital accumulation. The safety net includes generous unemployment insurance and social assistance. Activation policies, such as from short counseling and assessment programs to job training and wage-subsidized jobs, are in place to counterweight the moral hazard of the unemployment benefit to maintain search incentives.

The structure of the Danish model collides with the cultural and social views of the welfare state in the U.S., where fiscal incentives for needy workers have found more bipartisan support than active labor market policies. A fiscal policy which has been defined as a wage supplement, a program to reduce tax burdens, an antipoverty tool, a welfare-to-work program, and a form of labor market insurance over the last forty years is the Earned Income Tax Credit (EITC), see Figure . The EITC was conceived to promote the labor participation of low-income single parents aged 25 to 65 with children under 19 if out of school or under 24 if full-time student. Each year, the EITC supplements low-income workers’ earnings, encouraging work and lifting millions of people out of poverty (Chetty, Friedman, and Saez 2013). In 2019, taxpayers received about US\$63 billion in credits through the federal EITC, making it the government’s largest cash safety net program for working families with children. The EITC has positive lasting effects for parents, who have shown longer-run earnings increases and better health outcomes (Evans and Garthwaite 2014). At the same time, their children exhibit better educational achievements, higher incomes in adulthood (Marr et al. 2015) and improved health (Strully, Rehkopf, and Xuan 2010; Hamad and Rehkopf 2015, 2016).

The age limit of the EITC make the policy ill-equipped to the new demographic trends experienced in particular by members of the “sandwich generation.” In fact, the number of adults over 24 living with their parents is rising fast. The U.S. Census estimates 17.8 percent of adults ages 25 to 34 lived in their parents’ household last year (Creamer,

Shrider, and Edwards 2020). In addition, middle aged individuals increasingly experience financial duties to support their aging parents, which are not covered by the EITC either. Women seems to be particularly impacted by these dynamics with an approximately 9 percent of 45- to 56-year-old women providing either co-residence, 1,000USD of financial aid, 500 hours of other assistance, or college support to other members of the family (Pierret 2006). Despite being declining, differences in housework and caregiving between men and women persists because of gender differences in opportunity costs, productivity or social norms. Women who spend more time on housework earn lower wages, inducing a vicious cycle, with wage differentials driving allocations to housework time and vice versa. Housework yields valuable services and constitutes an important sector of the economy and it contributes to economic well-being, but it is hard to objectively value its contributions. Income taxes distort incentives and lead individuals, especially women, to allocate more time than is socially optimal to household production. A policy-relevant concern is that different resources used in household production are taxed at different rates (Stratton 2020).

To reduce the housework gender norms, many OECD countries are increasing the number of job positions available part-time for all educational levels. A recent experiment implemented at Zurich Insurance UK showed that switching the default to job advertise from full-time to part-time working boosted female applications by 16 percent (Hacohen et al. 2020). However, in the U.S. working part-time tends to be stigmatized. Part-time workers are much less likely than full-time workers to have benefits such as health care or pension coverage, in part because part-time work evolved to attract married women into the labor market during the 1940s and 1950s, with the presumption that these “secondary” workers would have husbands whose jobs had fringe benefits (Shaefer 2009; Bianchi 2011). Moreover, opting for part-time jobs because of family responsibilities is considered voluntary, even though it may not be completely spontaneous.

Being in between two, or more, generations that require care increase the challenge to reconcile professional and private life. The problem amplifies when workers experience working hours outside the 9-to-5 standard daytime, rotating schedule and, varying hours. Problem awareness have been raised in the public debate, but measures to tackle these issues are still at their inception. In the public sector, a set of cities, including San Francisco, Seattle, New York City, Chicago, and Philadelphia, and the state of Oregon, have passed laws to increase the stability and predictability of work schedules. In the private sector only a small number of companies are voluntarily trying to offer more advance notice or announced abandoning on-call schedules. It will be therefore interesting to assess the efficacy of companies voluntary efforts vs public labor laws on reducing routine instability (Schneider and Harknett 2019a).

The strains caused by unstable work schedules can direct many workers towards the gig-economy, which offers them flexibility. By replacing job matching with pure task-assignment gig-platforms made workers free agents able to independently plan their working hours or weeks according to their family duties. The price to pay for this flexibility is the instability of transferring the risk of income fluctuations and insurances from employers to workers. However, at the same time, the gig-economy serves as an alternative safety net in times of economic downturn or while transitioning to the next job (Oyer

2020). Despite the current under-representation of Baby Boomers in these jobs, freelancing and gig work can also represent a good way to integrate limited pension savings while finding purpose during retirement and without experiencing ageism in the workplace (Oyer 2016; Cook, Diamond, and Oyer 2019).

Older workers suffer from discrimination because they are linked to higher monetary and non-monetary costs. Higher monetary costs reflect a seniority pay premium between 10 and 20 percent⁸. However, after the peak earnings in the mid 50s, hourly wages tend to decrease in the last years of the career. New trends show older workers, who have secured their life milestones, to value more the opportunity of relaunching their careers, experimenting with new tasks and pursuing social engagement over the related economic benefits. Higher non-monetary costs, instead, are associated with resistance to change and slow learning. The latter, however, are often just the result of fewer human capital investments and lower motivation among older workers, who are not offered clear career prospects beyond retirement age. In addition, many training methods target younger rather than older learners, who prefer active participation, modeling, and self-paced learning (Callahan, Kiker, and Cross 2003; Beier and Ackerman 2005; Picchio 2015). The most crucial points when designing training programs for older learners are: (1) motivation, as the learner should perceive the relevance of the training content and materials; (2) structure, as the information should be presented in a logical difficulty-graded sequence, i.e., from simple to complex; (3) familiarity, as the training should build on current knowledge and it should give the opportunity to master all the training tasks provided; (4) organization, as the memory building instruction should precede content instruction; and time, as the time provided should be sufficient to complete the training successfully (Lindeman 1984; Belbin and Belbin 1972; Sterns 1986; Callahan, Kiker, and Cross 2003).

Beyond age specificities also generational peculiarities plays a role in adult learning. Evidence comes from a study which compares the learning preferences of veterans born between 1922 and 1943 and Baby Boomers born between 1943 and 1960. Veterans learned best in traditional class-room settings, with lectures and presentations by topic experts, where information was organized, non-emotional, detailed and supported by large-prints (Zemke, Raines, and Filipczak 2000). Baby Boomers, instead, learned best in less structured or formal setting, with team-building activities, interactive format, videos, self-help guides, and audio-tapes (Zemke, Raines, and Filipczak 2000, 243). Despite acknowledging the priorities of learners of different ages and from different generations, a life-long learning approach, which help workers to upgrade skills and knowledge over the whole of working life, promises higher effectiveness and should be prioritized over retraining workers only near the end of their working careers (Marshall and Mueller 2002). The life-long learning approach will also outweigh the assumption that older trainees lack

⁸ Please notice that some of this data might reflect a selection process which keeps only the highest paid seniors in the labor market.

familiarity with the training content because they did little or no training for a number of years (Glass Jr 1996).

The belief that older workers are less productive is an inheritance of the past when old farmers or factory workers became unable to perform the most strenuous physical tasks or to keep the pace of the assembly lines. Nevertheless, the misconception of performance decreasing with age has been questioned by recent studies, which found age to be a productivity premium rather than vice versa since workers capitalize on experience (Feyrer 2008; Burtless 2013). Moreover, work performance correlates more with individual skills and health rather than age even in a work environment requiring substantial strength (McCann and Giles 2002).⁹ Physical decline related to age is compensated by characteristics that appear to increase with age and are harder to measure directly, such as team leading in tense situations which require prompt responses (Börsch-Supan and Weiss 2016). Overall, there are much greater differences in terms of job performance within age groups than between age groups (Hansson et al. 1997; Connor et al. 1978). In other words, it is the individual differences between people within age groups that matter most when predicting job performance (Baum 1984; Sparrow and Davies 1988).

Senior workers hindering job opportunities to the younger is another stereotype. In fact, older workers show complementary rather than substitute skills to younger workers in inter-generational teams. Because of time constraints in their career prospects, elder workers care more about improving the outcomes of the colleagues rather than their own, boosting the co-workers productivity. As teachers' productivity is measured by the students' achievements, older workers productivity should be weighted more on the team members achievements. Further evidence of the old-young workers complementary shows that higher employment for older workers coincides with higher employment for younger workers and increasing the retirement age increases younger workers' wages (Böheim and others 2019).

The rise of official early eligibility age and/or full retirement age is not only necessary to keep the Social Security solvent, but it can also provide positive spillover effects to the labor market and seniors health. However, increasing the retirement age can have heterogeneous effects across occupations and socio-economic conditions.¹⁰ In fact, if everyone equally contributes to government-run pension schemes, not everyone will spend the same number of years in retirement. For example, blue-collar workers have a different life expectancy and health status with respect to white-collar workers. Thus, individuals with shorter lives indirectly subsidize the many years of retirement of people who live longer and the effect is amplified when the retirement age is explicitly linked to average life expectancy. Between the 1930 and 1960 birth cohorts difference in average lifetime Social Security and Medicare benefits received by men in the highest and lowest income quintiles

⁹ For a more comprehensive review please refer to Posthuma and Campion (2009).

¹⁰ Under the current-law the earliest age at which retirement benefits can start is 62 while the full retirement age varies from age 65 to 67 depending on year of birth.

widened considerably advancing intra-generational inequities (Auerbach et al. 2017). In order to prevent Social Security insolvencies without discriminating already disadvantaged groups a proposed solution would be to give a lump sum at a certain age to workers, which they can then give to an occupational pension fund better informed about the life expectancy of its contributors. Moving from a federal fund towards an occupational one, should make the intra-member inequality within the pension system less than for the whole population, by decreasing the differences in life expectancy between contributors. The pension fund would then structure the monthly benefits for its members depending on their average life expectancy (Hougaard Jensen, Sveinsson, and Zoega 2019).

Beyond the specific challenges each generation faces when confronted with the new demographic trends, a long term agenda should identify the most compelling pan-generational priorities to protect workers'. The identification of risky practices withing jobs and workplaces, whose effects manifest not only in the short run, but also across the life-course, should stand at the core of the agenda. The performance of routine work is among the most salient long-term exposures. Low complexity jobs are particularly detrimental for cognitive functioning and regional gray matter (GM) volume (Oltmanns et al. 2017). For example, when comparing bus drivers, who follow a constrained set of routes, with taxi drivers, who navigate always changing routes, the latter had greater gray matter volume in mid-posterior hippocampi and less volume in anterior hippocampi (Maguire, Woollett, and Spiers 2006). Technology has contributed to progressively reduce low complexity and repetitive task for at least 60 years (D. H. Autor, Levy, and Murnane 2003) endorsing the need to shift from task-centered to individual-centered jobs.

This section highlights how the increase of life expectancy is not a phenomenon which only concerns older people, but it impacts all ages in different ways. To ensure that the benefits brought about by longer lives are more equally distributed across and withing generations the next section includes some idea which may smooth the transition to new maps of life without being trapped in a societal jet-lag.

IV. Opportunities/Recommendations for changes to the status quo that could be distributed broadly in the population

The increase in life expectancy is opening unprecedented career opportunities. However, the transition to longer lives risks to create inter-generational and intra-generational tensions within the traditional social norms and well-established labor markets structures. To be prepared to benefit from the additional time without experiencing a societal jet-lag, six areas of intervention are pivotal to re-think the position of work in a new map of life. Labor market dynamics would need to (1) prepare workers with fluid skills, (2) adjust to the new work-family dynamics without creating a misalignment between biological vs social timing (3) balance labor market flexibility vs security, (4) promote organizational practices to enhance workers' health and work-family balance (5) boost career opportunities for older workers, and (6) frame the beneficial role technology can take within these transformations.

1. Skills and Trainings

The unpredictability of the technological change raises questions about the optimal way to prepare individuals for the labor market of the future. The success of skill-driven programs is attenuated by the fast skills depreciation, but also by the difficult interactions between publicly sponsored programs and private sector needs. A way to obviate this sort of “loss in translation” can be the promotion of information sharing and communication between the public and private players, maybe via a mediator. Moreover, with modest expenditures, policymakers can promote the expansion of effective life-long career training and increase worker earnings by providing firms with information on economic returns. The role of the government will be particularly important during economic downturns, when the training and the recruitment of young workers drops, shifting the composition of employment towards older and more protected workers (Brunello 2009). From the employers’ side, bigger firms have a comparative advantage since they can access information more easily and offer more variegate training, mentoring, career paths, etc. Smaller firms can try to buffer the scale advantage by coordinating with each other. Nevertheless, coordination is costly and limitations in career opportunities may persist.

Beyond the interplay between public and private sectors, other features influence the implementation of vocational training programs. Among the major sources of failure there is the belief of low-ability students funneled into vocational coursework. However, such stereotype is falsified by new evidences, which find vocational courses to attract high-ability students too. Among them, those who attend more upper-level courses¹¹ on specific subject, rather than many introductory courses across different disciplines, tend to have a wage premium for each additional year of training, stressing the importance of depth over breadth (Kreisman and Stange 2020). At the same time, programs with varying levels of hard versus soft skills training tend to have different returns. Program emphasizing technical skills lead to a larger short-term employment, while soft skills training improves labor market dynamics in the long run (Barrera-Osorio, Kugler, and Silliman 2020).

Soft and social skills seems to better equip individuals to evolving situations and their importance spills over manual occupations as well as over cognitive-intense jobs. While there might be the impression that STEM occupation are still on the rise, developing exclusively technical skills is not enough any more. Between 1980 and 2012, math-intensive, but social-low jobs dropped by 3.3 percent, while employment and wage growth were particularly strong for jobs requiring high levels of both math skill and social skills. Social skills are becoming a crucial plus in the labor market since they allow teams to work together more efficiently. In fact workers with high social skills can better coordinate, assign or receive the tasks they would like to specialize in (Deming 2017). This tendency can represent a comparative advantage for senior workers since soft skills and emotional intelligence increases with age.

¹¹ Upper-level courses include courses beyond the introductory level, including: “2nd or later courses,” “Specialty course,” or “Co-op/Work Experience” in the transcripts.

Together with social skills, informal learning, i.e. learning from peers or supervisors in the workplace, is gaining more importance for workers' human capital development than formal training courses. Keeping workers' skills up-to-date through informal learning becomes more important when skills are less transferable and change frequently due to technological and organizational innovations and when mandatory retirement ages are raised (De Grip 2015).

The increasing fluidity in skill requirements mirror the rising specificity in technical skills employers demand. According to data from LinkedIn and the online learning platform Coursera, 94 percent of business leaders now expect employees to pick up new skills on the job compared to 65 percent in 2018. Estimates suggests that around 40 percent of workers will require reskilling of six months, but that number is higher for those in the consumer and in the healthcare industry. Up to date, healthcare services have been the most difficult to scale due to the significance played by emotional intelligence and its interaction with cognitive skills. Interesting is to understand the future skill mix this type of new jobs require and how it is going to evolve in light of technological developments.

2. Work-Family Dynamics

The devotion of the early years of life to learning and schooling brought about undeniable improvements to humankind, such as health benefits and labor productivity. However, hedging youth's education into reproductive maturity can create risks. In fact, if more years of life translated into more years of youth, they did not turn into more years of fertility. The result is often a trade-off between the maximization of human capital accumulation reproductive decisions. The new holistic view around job-life satisfaction, is asking to loosen this trade-off and to reconcile career trajectories with fertility choices. The realignment of biological and social timing is following two main paths: the assisted reproductive technology and a change in social norms.

Contraceptive methods and egg freezing, gives people the opportunity to overcome biological clock constraints and have children at the desired time. As a result, an increasing number of companies offer egg freezing benefits. Even though the main reason women cite for considering egg freezing is not for their careers, but because they have not found the right partner yet, this might result from an underlying reverse causality problem where women feel more time pressure in their job accomplishments than in their reproductive priorities. Therefore, in addition to these the benefits, companies should provide workshops and training not only on career advancements, but also about reproductive choices to better prepare their employees on the risks and opportunities of delaying pregnancy.

In addition to the technological improvement a collaborative effort between public and private sector is crucial to provide universal paid parental leave plans and child care to the whole population. Six states (California, Massachusetts, New Jersey, New York, Rhode Island and Washington) and the District of Columbia have already passed paid family leave policies, which is urging the debate both at state and federal levels. The provision of more affordable child care services, instead, is more involved because of the asymmetry of information and the licensing system in place. Today state governments impose standards

to guarantee the quality of child care services, such as the number of children per staff, minimal educational attainment and training requirements, etc. because parents can be unable to evaluate and/or monitor the quality of services their children receive (Blau and Hagy 1998). However, while the current regulation improves quality, there are also some unintended consequences. For example, requiring teachers to have college degrees may induce child care centers to hire less-skilled aides and fewer teachers (Blau 2007). Additional evidence shows that stringent regulations push lower quality child care services out of the market leaving parents and children from disadvantaged backgrounds with inadequate supplies of preschool centers. As a consequence low-income parents will turn to less- or unregulated options such as family day care homes or grandparents. Thus, strict child care regulation is creating a trade-off between higher quality care for high income families, but restricted supply in low income individuals (Hotz and Xiao 2011). Therefore, to increase the supply of quality pre-schools it seem advisable to lift some of the most stringent regulations which would keep decent quality formal childcare in the market, while crowding out the lowest quality level childcare falling outside the regulatory eye.

To expand the supply, universal preschool policies has been introduced in Georgia with a public voucher program and in Oklahoma with the public provision of child care services. Even though both programs increased the supply, the government subsidization in Georgia was more effective since it expanded the provision of childcare not only from the public sector, as in Oklahoma, but also from the private sector (Bassok, Fitzpatrick, and Loeb 2014). In addition to vouchers and public provision the government should set the incentives for larger companies to provide on-site childcare centers and for smaller firms to sponsor off- or near-site childcare centers co-financed by multiple companies. The stimulative measures could include tax relief for employers and parents. A fiscal provision targeting families, which knew a generous expansion under the American Rescue Plan Act of 2021, is the child tax credit. The latter guarantees a maximum annual tax credit of 3,000 dollars per child under 18 or 3,600 dollars per children under 6 to low- and middle-income families.

Longer lives are creating more variegated family needs beyond childcare. The new spectrum of responsibilities finds the government ill-equipped to support personalized family needs by making the traditional “one model fits all” policy design increasingly inadequate. To prevent people facing family duties to renounce to job opportunities because of the government inability to meet their specific needs, it may be preferable to support their active labor participation. Interventions can include the reduction of the effective tax penalty on secondary earners and less distorting sale taxes for goods and services substitutes to housework and care giving. In fact, income and sales taxes on specific goods motivate people to spend time on housework that would be better spent on other activities. Designing tax policies that focus on individual rather than household income would reduce people, especially women, tax-distorted incentive to increase their housework time once they are married with the potential of reducing the gender wage gap. Income taxes can also cause households to adopt more labor-intensive home production techniques instead of hiring maids, handy-persons, and gardeners. Similarly, households facing higher sales taxes on market substitutes for home production (e.g. ready-to-eat/delivery food, childcare, care giving, housekeeping, etc.) will use more household labor

and fewer goods and services in the production of household goods than is socially optimal (Stratton 2020). Such fiscal adjustments can benefit gender roles, work-family balance of parents with small kids and adults taking care of their old parents. However, individuals, not policymakers, should choose differences in housework times, which depend on their relative productivity and preferences (e.g. how households values home production with respect to the alternatives).

3. Flexibility vs Security

The U.S. labor market has desirable characteristics which promote employment flexibility, but, at the same time, it expose workers to high instability with its timid unemployment benefits and weak active labor market policies (see Table 1). The economic and social burden of this thin safety net is already evident across different generations. For example, young workers procrastinate the depart from the nest, parents financially help their kids into their adulthood and, adult children renounce to career opportunities for care giving duties. To cushion these tensions a number of measures, which expand the institutional labor market support, populate the public debate. In addition to increasing the access to paid family leave and providing more childcare assistance, as discussed in the previous sub-section, supplying better search assistance as part of the Unemployment Insurance system and, giving workers more flexibility to use Unemployment Insurance to integrate into a new job and, the rise of the minimum wage falls at the center of the public debate. While the co-existence of generous unemployment insurances and activation policies (e.g. counseling, assessment programs and job training, wage-subsidized jobs, etc.) and flexible hiring and firing, have proved its efficacy in the Denmark, the generosity of the safety net collides with the American cultural and social views of the welfare state. Therefore, a Danish “flexicurity” model has lacked of a bi-partisan political support.

A common ground, which negotiate a detente between competing political views, leans, instead, towards a combination of workfare and earned income tax credits. Fiscal incentives represent the foundation of a safety net, which do not expose beneficiaries to social stigma while marrying the idea of individuals earning their own bread. One of the most successful examples in place since 1975 is the Earned Income Tax Credit (EITC). The program was first conceived to support the labor participation of single mothers, but it expanded under both Republican and Democratic administrations to targets employed parents ages 25 to 65 with an yearly income below the range US\$ 41,094-55,952 depending on the household size. In 2019, taxpayers received about US\$ 63 billion in credits through the federal EITC, making it the government’s largest cash safety net program for working families with children. The benefits of the EITC went far beyond the increase in labor participation, by showing spillover health benefits to all the members of the eligible households. The 2021 American Rescue Plan Act reinforced the political support of the EITC by (1) lowering the minimum age from 25 to 19 except for certain full-time students, (2) eliminating the maximum age limit of 65, (3) lowering the salary cap and (4) increasing the credit of childless workers from US\$ 543 to US\$ 1,502. This temporary extension may translate into a permanent one, and it can lead the path to further expansions people not formally employed, like to caregivers.

4. Organisational Practices

Work schedules play a crucial role for workers and for their families. The effects of working hours are broad and range from physical and mental health to family choices and social life. Workers highly value a flexible arrangement of working hours. Flexibility is not only the most important factor to influence work satisfaction, work-family balance and social commitment, but it also increase the ability to do the same job when older (Costa et al. 2004). However, flexibility, as individual discretion and autonomy over working hours, should not be confused with variability, as company control and decision over working hours. In fact, if flexibility positively influence health and psycho-social well-being, variability increase the probability of experiencing trauma, overall fatigue, irritability, and headache as well as influencing heart disease, stomachache, anxiety, injury, and the perception of work-related health threats. One of the most common example of work schedule instability are shifts and night work.

Problems in managing work schedules are particularly relevant in industries where activities often run at odd hours or 24/7, like healthcare, hospitality, and retail. Asking workers to always be available for shifts, a strategy that supports just-in-time scheduling, allows employers to minimize labor costs by adjusting workers hours to timely and unpredictable business needs. Said differently just-in-time scheduling allows the management to call workers when the business is busy and to withhold or to send them home when it is slower. Nevertheless, a heavy reliance on on-call and clopening shifts is counterproductive since they decrease employee performance and induce burnouts. Research provides concrete support for the benefit of requiring at least 72 hours advance notice to workers (Schneider and Harknett 2019a). Therefore, companies should prioritize investments which target the forecast of fluctuating business needs and schedule control.

Healthier and happier workers should benefit the company, which should encounter smaller health care related costs and possibly higher productivity. Nevertheless, the happy-productive worker thesis, as well as the work-life-balance (WLB) vs productivity theory, has a long history of mixed findings. The potential of WLB to raise productivity seems often over-sold. Extensive international studies, find that U.S. companies preserve a very high productivity thanks to the best management practices (such as better shop-floor operations or performance-based promotion systems) and despite the worst WLB practices (such as limited childcare flexibility and subsidies). The positive relation between higher productivity and superior WLB policies seems to be spurious since the it disappears once adjusted for the overall quality of management (Nick Bloom and Van Reenen 2006; Nick Bloom, Kretschmer, and Van Reenen 2011).

The advent of new technologies, like faster internet connections and organizational software can represent a promising path to reconcile productivity with work-life-balance by fostering Working-from-Home (WFH) opportunities. If evidence of the effects of smart-work on productivity are not extensive yet, a circumscribed randomized experiment among Chinese call center employees, showed that WFH increased the performance by 13

percent¹², it improved work satisfaction, but it also dropped the promotion rate. However, WFH may not be suitable for everybody. More than a half of the employees involved in the experiment switched their initial choice of work location, mainly because their fear of loneliness. As a take-home message, WFH can increase performance, which was of 22 percent in this experiment, can only be preserved when workers are free to select their preferred workplace (Nicholas Bloom et al. 2015).

Telework can help work-life balance by giving people control over work schedules and place while reducing the time and, potentially, the carbon emissions caused by commuting. However, smartwork can also have negative effects, such as are the deprivation of information spillovers, the limited social interaction, the shift of office space costs from firms to employees, the potential exacerbation of gender roles within housework division and, the rise of health problems, such as weight gain and mental health. The pros and cons of remote working are not equally distributed across generations. The reduction in networking opportunities, the limits in developing emotional bonds through the workplace and the lack of adequate space to arrange a working station in their dwellings risk to disproportionately affect younger workers.

Another work arrangements which can promote flexibility is voluntary part-time. The latter is rather well established in many European countries, but it struggles in the U.S. where it is still stereotyped, unprotected and lower-paid. To beat the segregated forms of part-time jobs a cultural and demographic shift is necessary. The new challenges faced by delayed parenthood, caregiving and retirement postponement, can make part-time work a transferal opportunity across genders, age, skill-levels, education, etc. However, if voluntary part-time workers seems to have more life and job satisfaction as well as less stress than full-time workers, they also increase management costs for firms with no clear effect on productivity, resulting in under-investments in part-time workers. A midway solution advanced in the last decades by tech companies is to encouraged employees to devote 20 percent of their time to a company-related side projects. Side projects give employees time to experiment with their own ideas and to differentiate their careers, but their mitigating effects on personal duties is unclear.

Workplace flexibility seems to improve worker health, absenteeism or retention more than of workplace wellness programs designed to encourage preventive care and discourage unhealthy behaviors, such as inactivity or smoking. Randomized controlled trials aiming to assess the causal benefits of wellness programs in the U.S. found no impact on health care utilization, sick leave, job promotion, job termination, hours worked, and job satisfaction, but an increase in preventative health screenings among program participants. Moreover, the employees perception of the firm caring about workers health and safety was short termed. These results thus suggest that workplace wellness programs neither prevent

¹² The 13 percent increase in productivity is divided into a 9 percent from working more minutes per shift, attributed to fewer breaks and sick days, and 4 percent from more calls per minute, attributed to a quieter and more convenient working environment (Nicholas Bloom et al. 2015).

chronic health conditions nor improve worker outcomes that firms are likely to care about (Jones, Molitor, and Reif 2019; Song and Baicker 2019; Reif et al. 2020). Part of the programs failures might reflect the focus on health outcomes rather than building a journey towards healthier behaviors.

Past evidence shows how job and working hours flexibility improve personal and job satisfaction as well as health. Nevertheless, the effects on productivity are mixed, which hold back employers from sponsoring work-life-balance practices. However, the increasing generational tensions and the prospective of longer careers may re-align employers incentives to consider more suited arrangements for the workers life-cycle.

5. Older Workers

The technological advancements allowed people not only to enjoy longer lives, but also to move away from the idea of jobs as ways to make money, to the one of personal fulfillment. This transition leaned toward an increasing overlap between job and life satisfaction. Workplaces have become a source of stimulation which empower friendships that are hard to find in bingo halls, on beaches or in tennis courts. As a result, an increasing number of people will move away from the ideal of retirement and spontaneously pursue late careers opportunities. In addition to the personal job satisfaction, the rising health-care costs and Social Security shortfalls reinforce the tendency to remain employed at least until 70 years old, to accumulate adequate retirement savings.

Confronted with the trend of moving away from the retirement cliff, both policy makers and employers are advancing new measures to embrace a more age-diverse work environments and life-long careers. Policy makers are implementing anti-discrimination laws to beat surpassed age stereotypes. Nonetheless, the current regulations protect workers once hired, but not during the hiring process. Therefore, instead of tightening the norms on hiring practices, the most desirable strategy to beat ageism can be to increase the availability of information on candidates' individual productivity to employers (Valfort 2018).

More companies are providing a glide path for people nearing retirement who do not want to simply fall off a cliff. Adaptable working hours are among the measures preferred by workers to smooth the transition to retirement. In fact, about 40 percent of older American would be willing to take a 10 percent reduction in hourly wage, and about 20 percent would be willing to take a 20 percent reduction in hourly wage, to work part-time or under a flexible schedule (Ameriks et al. 2017). The reductions in working hours prior to final retirement can moderate the stress of full time employment. A study using the Health and Retirement Study shows that decreasing annual hours by 25 percent decreases on average the likelihood of health decline by 3 percent. This positive preservative health effects promote partial retirement schemes which encourage workers to continue working at some level, while they disincentive early retirement (Neuman 2008).

Flexible hours should be combined with clearer career paths for older workers, which are still largely lacking. Companies should allowed older workers to pause their day-to-day roles, while capitalizing on their emotional intelligence, experience and knowledge transfer interest to lead internal mentoring, informal learning and team building programs. In

practice this could translate into older workers joining teams of new parents, who show the lowest levels of job satisfaction, coordinating apprenticeships and training programs for the youngest in collaboration with public or private external partners, focusing of internal safety net strategies, supervising, introducing younger employees to the company structure and dynamics, passing down stories, lecturing on the company's culture just to mention, but a few.

The implementation of the glide path could be coupled with corporate and public incentives to postpone retirement. Companies should put no pressure on employees to retire and they should walk away from terms like "retirement-age" or concepts like "retire on time." Moreover, eliminating the incentives in public and private pension plans which discourage work beyond some point, and promoting age-neutral policies that prolong the retirement age¹³ can increase the investments in skill training, lead to higher productivity, postpone poor health outcomes, and reduce the utilization of health care services, particularly acute care.

Beyond formal employment the percentage of seniors who engage in volunteer work rose from 14.3 in 1974 to 24 in 2020. The benefits of volunteering on physical and mental health (Varma et al. 2016), well-being (Morrow-Howell et al. 2003), life satisfaction (Marchesano and Musella 2020) are evident across the whole life-cycle. However, the positive changes in perceived health and life satisfaction related to volunteer hours are greater for older than for younger adult volunteers (Van Willigen 2000). Volunteer work is particularly attractive to older people who seek social and personal engagement without financial constraints because it combines free will, purpose and the spirit of helping. Interestingly enough, these features match closely the ones observed in the work-play correspondence. The social contribution older people give through volunteer work should be encouraged. Companies can promote the participation of workers at the end of their careers in their philanthropic projects. Governments can support volunteering by alleviating the administrative burden and red tape of volunteer involving organizations. At a local level tax incentive for volunteering can also been implemented. Bellefonte Pennsylvania, for example, offered residents ages 60+ up to US\$ 500 off their property taxes in exchange for volunteering at area public schools. However, to preserve all the positive effects of volunteer work, the rewards should not undermine the intrinsic motivation of volunteers (Frey and Goette 1999).

6. Technology

Technology can take over some tasks, it can displace workers, but it will not replace people. The main role of technology is to enhance people productivity. Self-driving means of transportation can change the duties of drivers. 3D printing can demand construction workers to develop new abilities. Software may redirect the focus of skilled labor too, such as lawyers focusing more on legal knowledge engineering. Objective tasks can be easily

¹³ Abolishing early retirement incentives and ameliorating older workers' training may be more effective than wage subsidies (Boockmann 2015).

scalable and will be more likely be replaced by machines. It is hardly arguable that a person can better perform arithmetic calculations for a prolonged period of time than a calculator. However, the reason may surpass the sloppiness of human beings and reflect a form of self-preservation typical of human instinct. In fact, routine work is not only detrimental for physical and mental health, but it can hardly engage human brain, which is a fundamental part of job satisfaction. Economic development and technological advancements seems to shift the focus from objective tasks to highly specific and subjective individual abilities. Despite the evident challenges, this transition can provide more rewarding and healthier jobs better suited for longer lives. However, people experiencing job displacement should be able to see the many doors opening up beyond the few closing. In that regard a collaboration between the government and private partners can develop targeted advertisement or sponsor vouchers for training people at higher risk of unemployment. These courses will be increasingly individualized to surpass task instruction, to promote engagement and personal development as well as to beat the stereotype that only the lowest-ability workers are displaced. Despite the importance of tailoring the learning experience to individual needs, the core principles of the work-play symbiosis can help structuring courses that (1) are varied and requires much skill and intelligence; (2) do not take too much time; (3) are mostly done in a social context and, (4) have only optional modules.

Some major trends observed in the labor market today can already give insights about the transition to the occupations of the future. According to Census estimates, health care and social assistance sector is projected to account for nearly one-third of the total increase in jobs (3.1 million jobs) through 2029. The projected growth in the demand for health care services is driven only to a small extent by the aging population. The most important factors driving the rising trend are supply constrains, greater demand for a variety of increasingly specialized health care services and slow productivity growth. Moreover, these types of jobs require a fair combination of cognitive skills with a lot of emotional skills, a mix which is difficult to scale and to automate. From this prospective the advent of nurse robots may replicate the effect of automated teller machine (ATM), which allowed banks to operate at lower cost, to open many more branches and people to develop specific client-focus skills. By the same token, the automation of the most physically and mentally strenuous tasks, can open a new spectrum of personal skills and services.

The future variegation of individual skills brought to once categorized jobs can create challenges in job matching. The increasing availability of information and the ability of new technologies to process them, can help to overcome these challenges by reducing the asymmetry of information between employers and employees. The next frontier of individual-centered occupations can surpass the gig-economy paradigm of reducing the job matches to task assignment. Artificial Intelligence can create calibration profiles, which can enable employers to identify information beyond the core skills outlined within job descriptions and screen corollary candidates' abilities that may not have fit resumes.

V. Summary

Time is the ultimate scarce resource. The allowance of more time to live is one of the greatest opportunity to improve human well-being. In fact, having more time to develop

individual interests and learn across new life stages can spill benefits to society as a whole. However, what makes people hesitant in front of the opportunity of living longer is “(...) whether it simply involves adding years to life, or also involves adding life to years” (D. E. Bloom 2019). The fear that extending lives risks to slow them down dissolves as people discover how longevity has the ability to zoom-in rather than to dilate lives. Longevity is a *life-microscope* able to discover new variegated patterns rather than a stretcher pushing in one direction. Longer lives are not just expanding “old” archetypes, such as childhood, adulthood and senility, but they are designing new phases, such as adolescence, midlife, etc. These newer age-related categories may be practical to organize the society, but they sometimes overlook the biological development, which unfolds as a continuum. The consequent risk is a misalignment between social and biological timing, which manifest itself, for example, in delaying parenthood to prioritize education and early career steps. The result is different generations living with the feeling of a societal jet-lag.

The young labor force is praised for its dynamism, but sometimes overlooked in its vulnerabilities. On the one side, younger workers are less susceptible to sectoral shocks since their short experience limits their commitment to a specific profession. On the other, the earlier in the career an economic recession hits, the broader are the effects, which echo across a longer lifespan affecting earnings, civil status, family size, health, intergenerational outcomes etc. Increasing the lifespan under the traditional cannonball earning trajectories (Figure) stresses early careers by amplifying the (random) effects of entering the labor market at different points of the business cycle. To mitigate the exposure to the unpredictability of socio-economic shocks, young workers increasingly rely on their parents, earning the membership to the boomerang generation. However, since not all families are able to provide their adult children financial assistance, a formal safety net for young workers without children should be prioritized to avoid the propagation of inequality of opportunity across age-cohorts.

When escaping the boomerang trajectory younger workers see the social norms surrounding work as immutable, but their biology as tamable. They tend to be better prepared on maximizing the returns from their human capital investments, a.k.a. education, but less on their biological endowments. If the timing of the entrance in the labor market has cascade effects across the life-cycle, the same is true for parenthood timing. On average, a year of delayed motherhood brings a 9 percent earning premium for college educated women. The delay of motherhood could ease careers, but at the risk of infertility, spontaneous abortions, birth defects, and complications during pregnancy, creating a tension between the optimal biological fertility period versus educational attainment and career launch. Reproductive technologies, which promise to free individuals from biological constraints, can be an alternative, but not a panacea yet. An inclusive solution involves an alliance between public and private players, which promotes universal quality childcare. To help the achievement of this goal, regulators should relax the most stringent rules, which are creating a significant divide between high quality care for high income families and low access, low quality care for low income families.

Many adults are experiencing not only that being parents is a lifetime job, but also that being children is becoming one. The timing of senior parents death affect their adult children careers and retirement savings as well as their grandchildren opportunities. The

government should support the caregiving burdens families are facing, guarantee universal family leave and, fight the stigmatization around part-time work. Moreover, the government should also take appropriate measures to avoid the reinforcement of gender roles in caregiving duties. Women more often tend to renounce to their formal employment and to spend more time on housework because of the lower wages they earn with respect to their male partners. This induce a vicious cycle, with wage differentials driving allocations to housework time and vice versa. To prevent female to allocate more time than it is socially optimal to household production, the government should reduce the effective tax penalty on secondary earners and implement less distorting sales taxes for goods and services substitutes to housework and care giving. Companies can also facilitate employees' work-family balance by according flexible working schedules while avoiding on-call and clopening shifts, which have detrimental health and mental effects not only on the workers, but also on their family members.

The importance of the employment of workers age 65+ is not only contingent to the sustainability of public pension systems, but it also acknowledge the human capital value of experience, which can enrich the quality and the diversity of the labor force. While retirement as an insurance against age-related health problems and financial instability is unquestionable, the retirement cliff is becoming an obsolete concept for many. To capitalize on older workers companies should provide a glide path for people nearing retirement by allowing them to perform part-time work and flexible schedules, to pause day-to-day roles to engage in knowledge transfer and informal learning about the company structure and dynamics and, to lead internal mentoring and team building programs. Beyond formal employment the engagement of seniors in volunteer work should be promoted and cultivates since it does not only bring benefits to the recipients, but it also induce positive physical and mental health effects in the volunteers.

The new developmental stages, life trajectories and intergenerational duties highlight not only the limits of a traditional map of life, but also the inadequacy of a one-size model in meeting people's new distinctive needs. This trend challenges the nature of the welfare state, which is ill-suited to implement personalized policies. A possible solution is the expansion of one of the largest antipoverty programs: the Earned Income Tax Credit. An EITC, which marries the needs of the new maps of life, does not have upper age limits, it extends to all caregivers, and it includes workers without children.

The shifts towards individuality also manifest in the labor markets with the transition from task-assignment to people-centered occupations. Jobs now develop around multitasking, intertask transfers, interdisciplinary projects and intergenerational teams, which require a mix of soft and hard skills that are fluid, subjective and hard to scale. While hard skills constitute an important signaling, virtually all employers expect employees to be on constant training. At the same time, employers increasingly focus on soft and behavioral skills able to decrease the coordination costs of teamwork. Technology is the engine pushing the value of creativity and observation as well as the beauty of unpredictability by freeing individuals from repetitive tasks and their associated detrimental health effects. By automating necessary, but tedious tasks, workers can develop acumen by training the brain to expand their interests and to capture details still undiscovered by machines. It is possible, for example, to imagine a future where robots perform basic haircuts, while

hairdressers provide services, which surpass the hair styling and include conversations in several languages about specific topics, for example, medieval history.

To more realistically anticipate the jobs' features brought about by longer lives, professions with the highest retention rate after retirement age can shed light on the best suited workplace practices. A study by Fidelity Investments showed that 74 percent the university professors plan to delay retirement past age 65 or never retire at all. Among them, 89 percent express their willingness to stay busy and productive, while 64 percent love their work too much to give it up (Flaherty 2013). The commitment of higher education employees is an interesting case of a profession, which allows to develop personal interests, to organize work schedules in flexible ways, to transfer knowledge especially to younger people, to pursue constant learning, to perform of non-strenuous physical activity, to benefit of periodic sabbatical years and, to enjoy tenured positions. Professorships seem to maximize the experience of free choice with respect to other jobs, fuzzing the distinction between the spirit of work and the spirit of play made by Mark Twain.

Technology will continue to alleviate the most tight economic constraint by making the satisfaction of primary needs cheaper and emancipate human brain from monotone jobs, grounding a reconciliation path between the concepts of *work* and *play*. However, the overlap between jobs and personal development moves work towards the center of life satisfaction with the risk of blurring the borders between professional and personal life. With the potential rise in the number of work enthusiasts with high work involvement and enjoyment and low drivenness, the number of hours worked may increase. This may slow the re-alignment between work and play, between biological and social timing, or the work-family balance. Organizational solutions to prevent the risk of overwork may include the development of productivity measures centered on teams' rather than on individuals' performance, the offer of contractual incentives to trade monetary benefits for longer paid time off, and the enhancement of the social contexts in workplaces.

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