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**Article**

## Working hours: Past, present, and future

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## Working hours: Past, present, and future

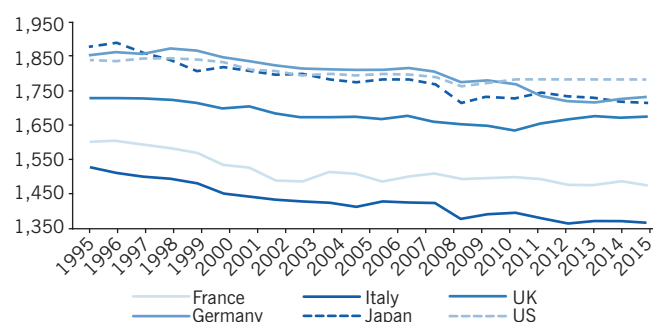
Work hours have been falling in developed countries—But where will they go in the future?

Keywords: working hours, part-time work, female labor market participation, work–life balance

### ELEVATOR PITCH

Working hours across the world are falling, but considerable variation remains. In some countries people work 70% more hours per year, on average, than in other countries. Much of this variation is due to differences in the prevalence of part-time work and patterns of female labor market participation. Looking ahead, the question of how reducing working hours will affect productivity is significant. In addition, how individuals divide up their leisure and work time and what the appropriate work–life balance is in an increasingly technological future are important concerns.

Annual hours worked by country, 1995–2015



Source: Author's own compilation based on data from OECD.Stat. Online at: <http://stats.oecd.org/Index.aspx?DataSetCode=ANHRS>

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### KEY FINDINGS

#### Pros

- + Working hours have been steadily falling in most countries for the last 50 years.
- + Fewer working hours does not necessarily mean lower total output or lower productivity.
- + Countries with higher shares of part-time workers tend to have relatively low annual and weekly working hours.
- + As working hours decrease, workers focus more on work–life balance considerations and how to spend their leisure time.

#### Cons

- The labor markets in many countries are still not very flexible, in that hours of work cannot be chosen by many employees.
- Not all workers are experiencing fewer working hours; for example, some highly educated workers are now working more hours.
- Advanced technology and increasing use of robots is likely to affect the supply of routine jobs and the demand for low- and semi-skilled workers.
- The distributional and welfare implications of fewer working hours are not completely clear and could cause greater inequality.

### AUTHOR'S MAIN MESSAGE

Declining working hours, their variation, and their distribution over different occupations and sectors is a topic of great importance. There is constant pressure to reduce working hours on grounds of work–life balance considerations. Debate is ongoing as to whether and how this can be achieved through technological change, without causing a regressive redistribution of income away from less skilled workers. Looking ahead, achieving the optimal balance between these factors will be a major challenge for policymakers.

## MOTIVATION

Working hours in most countries have been falling over the last 50–100 years. The illustration on page 1 shows the trends for six developed countries during the past 20 years. There are numerous potential drivers of this trend, including: changing demand conditions, shifts in preferences over labor–leisure trade-offs, active pressure from employee trade unions, technological advances improving workplace productivity, enlightened governments introducing maximum working hours legislation, and demographic changes in the pattern of work by men and women. It would be difficult to econometrically disentangle the relative importance of these different factors [1]. Instead, this article traces the origins of this movement toward fewer working hours and presents an overview of key patterns.

## DISCUSSION OF PROS AND CONS

### The movement to reduce working time

Robert Owen, an enlightened factory owner, was the first to call for a 10.5 hour working day [2]. He had successfully adopted it in his New Lanark Mills in Scotland earlier in the 19th century and claimed it was possible to produce output as cheaply with a shortened work schedule because workers were less fatigued. By the turn of the century, there were many calls for an eight-hour work day. This movement gathered momentum and gave rise to the Factory Acts and other legislation in the UK, which progressively limited the length of the working day (and also curtailed the length of time that children could work). Most interesting in this movement was that many claimed it was possible to maintain, or even enhance, productivity by reducing the length of the working day. Understanding whether this is due to fatigue-induced lower marginal productivity at the end of longer work days, or whether workers are more motivated by better working conditions generally is difficult to determine. In the case of Robert Owen, he also provided housing and schools for his workers' children as well as other benefits, which may have made them more willing to work harder.

The issue of the appropriate use of working time became acute during World War I, when the UK government sought to maximize armament production without fatiguing workers too quickly. This gave rise to many scientific studies on the production process and its relationship with working hours [3], [4]. The implications of this research were embraced by Taylorism and the innovative experiments conducted at the Hawthorne plant between 1924 and 1932 [5]. This pioneering work into what induces productivity and the relationship between working hours and conditions continues to this day—though much of it is taking place in the subject of ergonomics rather than economics. There have also been relatively few economists who have examined the implications of these findings for the theory of labor supply or what determines productive output ([6] being one notable exception).

The most recent wholesale reductions in working time have been instigated by the European Working Time Directive (EWTD), which cut working time across the EU to a general maximum of 48 hours per week. Relatively little evaluation of the impact of these reforms has been conducted.

## The microeconomics of labor supply

Standard microeconomic theory of labor supply suggests that workers seek to maximize their utility (which is a function of both labor—including goods that can be bought with the derived wage—and leisure). Basic theory allows the worker to choose the number of hours of work (and leisure) to supply subject to their budget constraint (i.e. based on their potential wage and their feasible consumption of goods); however, this view naïvely assumes that all potential hours are available to workers. In reality, most workers can only work the prescribed full-time hours on offer by their employer; although, workers are increasingly being allowed to work part time or flexi-time. Likewise, many models of employers' demand for labor—and what this means for the length of the working day—are not regularly discussed empirically. This means that when examining the distribution of hours worked in many countries there is a large spike at around 35–40 hours and a smaller spike for part-time workers at around 15–20 hours a week. This perspective is naïve in many other important respects: output during each hour of the day from a worker is considered constant and workers do not get tired or belong to unions, there are no scheduling problems, there are no endogenous technological progress or imperfect competition or monopsony issues, and there are no consequences of working fewer hours or overtime rates [7]. It is generally known that in many countries there is little or no worker autonomy in the choice of working hours. Eurofund sources show that in Latvia, Hungary, Slovakia, Greece, Bulgaria, Romania, Portugal, and Crete, more than 80% of people say that their company sets the working time conditions in their job and there is little or no possibility for changes [8].

## Examining trends across countries and over time

Despite the overall declining trend in working hours, there is still huge variation across countries; why is this? There are now excellent aggregate cross-country data on working hours that allow for the examination of trends over time and cross-country differences.

For many countries, there has been a steady, slow monotonic decline in working hours over time (Australia, Austria, Canada, Chile, Denmark, Finland, France, Germany, Israel, Italy, Japan, Korea, Netherlands, Norway, Spain, the UK, and the US). But there are countries that have experienced variable demand for labor and hours of work, namely: Estonia, Greece, Latvia, Lithuania, Slovakia, and Slovenia. All these countries have experienced either relatively recent opening up to the West and the forces of globalization or have been on the receiving end of tumultuous events in their balance of trade and problems inside the eurozone—i.e. Greece.

Taken together, these trends provide insight into the controversy about differences between working conditions in the US and the EU. This comparison has been framed as a debate over whether Americans are “crazy” or Europeans are “lazy” [9], [10]. Although the US has higher annual hours than other G7 countries, it is more or less firmly in the middle of the countries shown in Figures 1 and 2 in terms of working hours and the share of part-time work. Therefore, the US is not unusual in its work habits when considered against all other countries, and there are good reasons for the significant differences with many EU countries, such as working time legislation, trade union practices, the degree

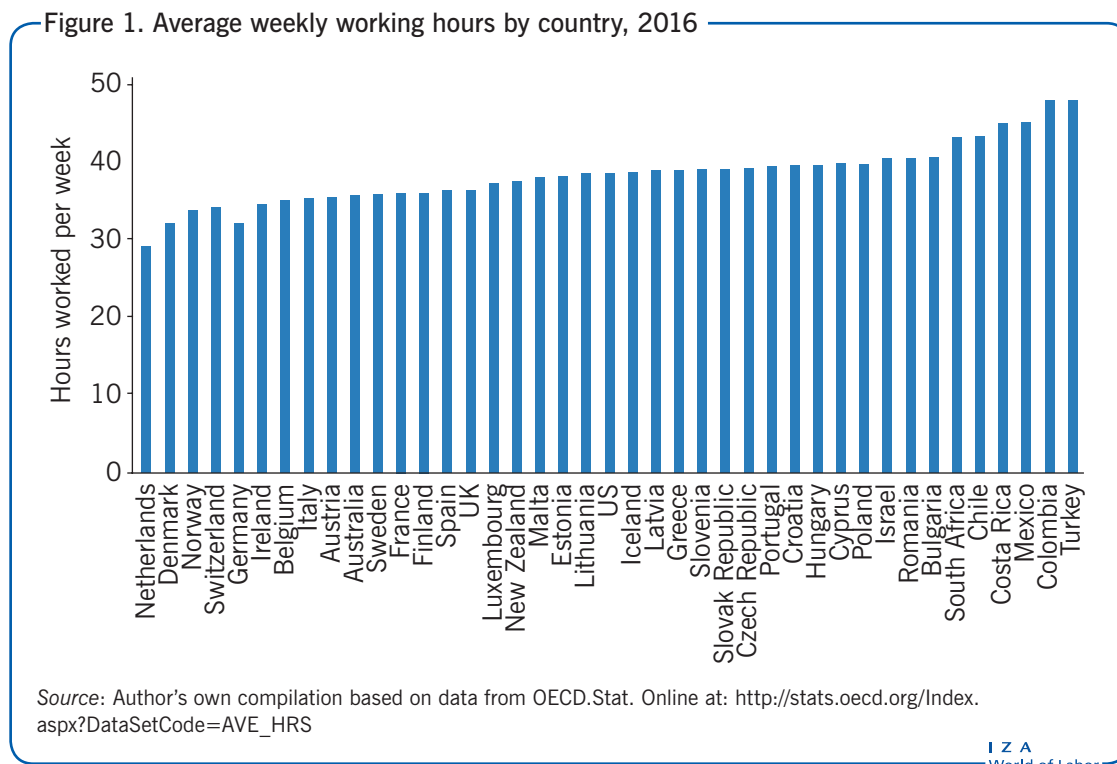
of labor market flexibility, and demographic patterns of female labor force participation. This also provides a rationale for a slightly more considered comparison across countries, which should be reflected in future studies.

Figure 1 shows the number of average weekly working hours across a range of countries in the most recent data. Latin American countries top the table, with Chile, Costa Rica, Mexico, and Colombia recording four of the five longest working weeks. They are only surpassed by Turkey, at around 48 hours a week. The countries at the other end of the table, with 30–35 hour working weeks, are the Scandinavian countries and the Netherlands. The other countries with low working hours are Germany, Switzerland, France, Belgium, and Austria, all of which have had governments enact progressive interventionist labor market policies and are notable for the presence of strong, well-organized trade unions.

### Female labor force participation and part-time work impact overall working hours

The compositional effects of female labor market participation and the prevalence of part-time work are important factors influencing total working hours. Taken together, these factors go some way toward explaining the overall variation in aggregate average working hours across countries. Specifically, there are many countries with low average total working hours that have a high fraction of women in work. Most notably: Iceland, Sweden, Norway, Estonia, Russia, Finland, and Canada all have above 60% of working-age women in employment. This means that more of the working hours in these countries are shared within the household. This is most marked in the Scandinavian countries.

In many countries, most notably former communist countries, the prevalence of part-time jobs is very low. For example, the participation rate in part-time jobs is only 2–8% in

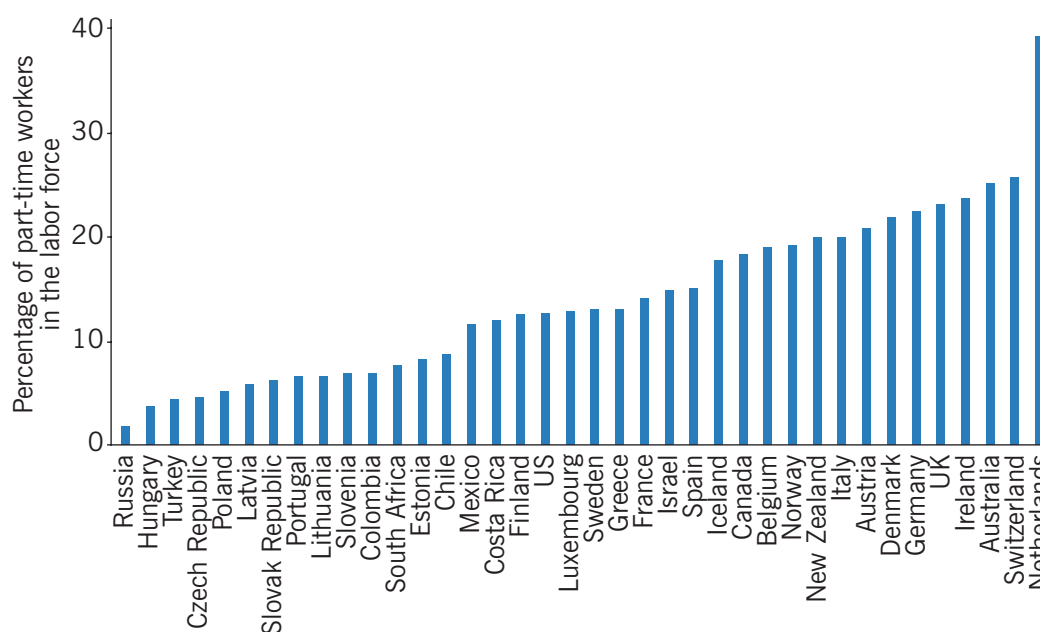


Russia, Hungary, the Czech Republic, Poland, Latvia, Slovakia, Lithuania, and Slovenia. Clearly, the incidence of part-time work is partly a cultural factor, which is associated with history, politics, religion, and the role of women in the family.

These cross-country differences are influenced by different trends toward more part-time work and increasing variability of working hours in some countries. Most EU countries have been subject to the EWTD, which limits working hours but may also have increased job flexibility. However, it is difficult to separate the demands of employers for worker flexibility and the desire by employees to be more flexible about their labor supply.

Many studies have econometrically analyzed working time patterns across countries [1]. Some of the main findings are as follows: First, countries with the lowest female employment population ratios and labor force participation rates have the highest annual and weekly working hours (Turkey, Mexico, and Costa Rica). Second, in contrast, the Netherlands and Switzerland have the highest percentage of part-time workers, relatively high female employment population ratios and labor force participation rates, and some of the lowest weekly and annual working hours. Third, Australia, the UK, and the US have similar annual and weekly working hours as well as similar female employment population ratios and labor force participation rates; however, the US has a substantially smaller percentage of part-time workers than the UK and Australia. Fourth, Russia has the lowest percentage of total, female, and male part-time workers. It has the fifth highest number of annual working hours and a relatively high female employment population ratio and labor force participation rate. Fifth, the ordering of countries based on the percentage of female and male part-time workers is relatively similar for most countries. And finally, for all examined countries, the percentage of female part-time workers is greater than the percentage of male part-time workers.

Figure 2. Percentage of part-time workers, 2016



Source: Author's own compilation based on data from OECD.Stat. Online at: <http://stats.oecd.org/index.aspx?DataSetCode=ANHRS>

In countries with stronger traditions of gender equality and progressive left-wing governments (e.g. the Netherlands and Switzerland), part-time work is generally more commonplace. The finding that the percentage of female part-time workers is higher than the percentage of male part-time workers in all countries implies that having a greater total share of part-time workers translates into a higher female employment population ratio and labor force participation rate. Countries with higher shares of part-time workers also have relatively low annual and weekly working hours. A potential explanation may be that having greater female involvement in the labor force could increase each individual family's earnings potential, thus reducing the need for male household members to work long hours to provide for their families. This is but one explanation and there are several other explanatory factors to consider, such as cultural attitudes toward female employment as well as female and overall unemployment levels.

In contrast to the Netherlands and Switzerland, countries such as Turkey, Mexico, and Costa Rica have the longest annual and weekly working hours and a low percentage of part-time workers, which translates into low female employment population ratios and labor force participation rates. This suggests that part-time work, female employment, and total working hours in a country are closely interlinked, emphasizing the need to consider them all simultaneously when analyzing working hour patterns across and within countries.

### **The productivity effects of working time**

The central aspects when considering the effects of working time on productivity are clear: What is the relationship between fewer hours of work and productivity? What role does fatigue play in production and is there an optimal level of working hours beyond which a worker's marginal production falls?

There is only limited evidence of the effect of working time variation on productivity. There is compelling case study-based microeconomic evidence showing that shorter working weeks are linked not only to working time flexibility but also to substantial productivity gains [11]. Another study, using data on munitions workers, found that output rises linearly with hours up to a threshold, but above this, output rises at a decreasing rate [4]. Recent microeconomic evidence based on the Hawthorne experiments suggests that working more hours can be counterproductive [5]. The Hawthorne experiments were conducted to examine productivity at the Hawthorne plant in Chicago in the 1920s and 1930s by varying working time, rest periods, piece-rates, and illumination at the workplace. The study estimates the optimal length of the working day to be around eight hours, but finds that this optimal level is dependent on the exact nature of the work, and thus varies across occupations.

Evidence based on data from 18 manufacturing sectors in the US between 1956–1991 shows that increasing overtime hours by 10% reduces output by around 2–4%. Although this study is econometrically limited, it is suggestive of structural issues associated with modeling the link between hours of work and aggregated output.

Panel data evidence is used to present cross-country econometric evidence, suggesting decreasing returns to working time, possibly due to a fatigue effect. The authors find the responsiveness of productivity per hour to changes in working time is negative and decreases with working time. However, the effect is not strongly significant, and one must



also be concerned that the econometric evidence is based on only 18 countries with a very limited set of controls. Specifically, the authors only control for changes in employment relative to the population and average working hours, and make no allowance for working time legislation, changing trade union activity, or other demographic differences associated with rising female participation and the growth of part-time work in many countries.

### **What do people do with more leisure time?**

Social scientists have long been interested in what people do with their time; how much of it is spent working and how much doing other things. Studies have often examined how these patterns vary by gender and across time. If individuals are really going to be working fewer hours in the future, will this allow for a better work–life balance, and what might be the implications of this?

In the US in 1965, the average man spent 42 hours a week working at the office or the factory; after allowing for commuting and various work breaks, this rose to 51 hours [12]. Today, the average American man works 36 hours a week, 40 when including breaks and commutes. How is this extra time used? The answer includes activities such as shopping, watching TV, reading, eating out, relaxing, or spending time with friends and family. Overall, depending on exactly what one counts, the average person has an extra six to eight hours of leisure per week. Over the course of a year, this extra time would add up to nine extra weeks of time away from work. The implications of these changes, especially if they continue into the future at the same rate, are enormous.

The other major change in working hours has been a widening of differences between the low skilled and the high skilled. In the US over the period from 1985 to 2005, men who did not finish high school gained eight hours a week of leisure time. Those with a college degree saw their leisure time drop by six hours a week over the same period. The same is true for female graduates in the US who have 11 hours a week less leisure time than those who did not complete high school. The consequences of these trends are that the highly skilled are becoming “cash rich” but “time poor.” The reverse is true of the less well educated. This means that changes in the pattern of working hours could have important long-term implications for the redistribution of income and wealth.

### **Gazing into the working time of the future**

The dilemma in thinking about working hours is that they are traditionally regarded as something one wishes to minimize in order to maximize leisure time. Notwithstanding this, individuals must be cognizant of their budget constraints—desiring fewer working hours is all well and good, so long as people can pay their bills and maintain their standard of living. This means that all but the truly wealthy want to work enough hours to meet their financial obligations. Hence, workers need to be wary of an uncertain future where there may not be enough jobs and hours of work to go around.

A more radical vision of the future is that the nature of work patterns and the distinction between work time and leisure or home time is becoming blurred by the possibility of remote working. Do many office workers actually put in more hours out of the office by, for example, answering emails on the move whilst commuting, in the evenings, and at



weekends? Might this trend, along with “working from home,” lead to even more blurred distinctions between working and non-working hours?

One view of future working hours is eternally optimistic, suggesting there will always be new products, new industries, and new jobs and thus enough work to go around, no matter how often technological advances make old jobs redundant. The alternative perspective is that average working hours will continue declining due to the increased use of robots and mechanization. If the latter view prevails, it is unclear how this affects the relative demand for labor between skilled and unskilled jobs and across different sectors.

There are many commentators who offer a prognostic vision of the future. Many claim that individuals should work fewer hours, relinquishing the so-called workaholic lifestyle. This perspective would also suggest sharing working hours more evenly across the population in an attempt to seek a better work-life balance. Others offer a different vision of the future, pointing out that as life expectancy continues to rise, workers will need to save more to fund their retirement. Hence, it has been suggested by some that part-time working into one’s 70s and 80s will need to become the norm in order to fund future pensions. This would require a rethinking of retirement decisions and labor supply choices over one’s entire lifecycle.

An insightful guide into how much people actually work between the ages of 16 and 70 and how much they would like to work is provided in a study from 2008 [8]. The authors present evidence from the European Working Conditions Survey 2015, which suggests that men would like to work about 38 hours per week, rather than the 41 hours they actually work at the height of their careers. For women, prior to their parenting phase, they would like to work around 35 hours per week, but this goes down to around 30 hours when they have family responsibilities. An important issue for future research is: are these desired hours compatible with the needs of a dynamic growing economy?

## LIMITATIONS AND GAPS

Nobody really knows what the future of work will look like. Technological progress will cause some jobs to disappear but others to grow. Some evidence suggests that there has been a “hollowing out of occupations” as a result of technological change, with an increase in low and high-skill jobs but a fall in clerical, secretarial, and routine non-manual jobs. Has there been a corresponding hollowing out of working hours [13]? Do some highly skilled workers now work more hours than the less skilled in all countries—not just the US, and is there a corresponding increase in inequality in working hours worldwide? More research is needed on this topic to determine the patterns across countries and their consequences.

Likewise, the pattern of working time is changing, with people now able to use smart phones to read emails and to work remotely or while on the move. How these changes will play out in terms of working hours, productivity, and a host of other issues is hard to predict, but continual appraisal is required. Moreover, the optimal pattern of work across the day and the week varies for each occupation. As such, more experimental work needs to be done of the kind that was conducted over 90 years ago at the Hawthorne plant but has never really been repeated. Economists rarely talk to ergonomists/occupational therapists about the optimal pattern of work or the details of how working time relates to

productivity over the course of the working day, or indeed, how working time will shape up in the technological future.

## SUMMARY AND POLICY ADVICE

Key challenges such as increasing life expectancy, aging populations, and inadequate savings and pensions mean that governments need to take a careful look at working patterns and their projected changes in an increasingly technologically-oriented future. Although the famous economist John Maynard Keynes was somewhat ahead of his time when projecting drastic reductions in the working week to around 15 hours a week, the implications of shorter working time need to be addressed. Modern economies need flexible labor markets with variable working times across occupations and sectors in the face of rapid technical change. This poses challenges to governments to consider appropriate policy responses. Likewise, the evidence that there is a trend of rising working hours amongst some groups of highly skilled workers, whilst there is a simultaneous hollowing out of routine job opportunities is worrying [13]. How will governments be able to ensure that the fruits of technical progress are equally shared if nations become more prosperous, whilst at the same time ensuring workers are incentivized to work? How will governments be able to encourage employers to share working hours among larger numbers of employees if total available working hours fall with rising automation? These challenges will require much more innovative approaches to employment taxes than currently exist. The policy implications of a decline in average working hours, while working hours across sectors and countries remain highly variable, is of concern.

As life expectancy rises, policymakers must also be concerned about the demographic balance between the number of working young and the numbers of state-dependent retirees. The world has seen the growing fiscal problems this is causing in Japan, problems that are also likely to be visited on many Western countries in the next 20 years. The reality is that the old must work more years to increase their pension savings to maintain their standard of living into an increasingly lengthy old age. However, the requirements of the young to find jobs is incompatible with the needs of older workers to retire later. How can working hours be shared between the old and the young—that is the question? This will require radical economic policy solutions in the future.

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## Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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