

IEA Discussion Paper No. 46

WORK LONGER, LIVE HEALTHIER

The relationship between economic
activity, health and government policy

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May 2013

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Age Endeavour Fellowship

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This paper is published by the Institute of Economic Affairs in association with the Age Endeavour Fellowship. The Age Endeavour Fellowship is a charity which has provided financial support for this project and the author would like to thank senior IEA staff and Edward Datnow and Andy Mayer for their initiative and support.

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Summary

- In the past 50 years, labour market participation among older people has declined significantly, though the trend has reversed a little in recent years. In the EU, about 70 per cent of people aged between 60 and 64 are inactive.
- In the case of the UK there has been a significant drop in the employment rate among older men. The employment rate among men aged 55-59 decreased from over 90 per cent to less than 70 per cent between 1968 and the end of the 1990s. Employment for men aged 60-64 slumped from around 80 per cent to 50 per cent and, for those aged 65-69, it halved from 30 per cent to about 15 per cent.
- As with the rest of the OECD, this trend has reversed in recent years. The employment rate in 2008 was about 80 per cent for the 55-59 group, 60 per cent for the 60-64 group, and 20 per cent for the 65-69 age group.
- Whilst people have been retiring earlier on average, they have also been living longer. A 61-year-old man in 1960 had the same probability of dying within a year as a 70-year-old man in 2005.
- Healthy life expectancy at age 65 has also increased in the UK, although at a somewhat slower pace than regular life expectancy. This would suggest that people have the capability to work longer, though perhaps not to increase their working life on a one-for-one basis as life expectancy increases. Life expectancy at age 65 increased by 4.2 years for men between 1981 and 2006. During the same period, healthy life expectancy at age 65 increased by 2.9 years for men.
- Increases in the number of healthy years of life that we can enjoy have not been reflected in longer working lives – indeed, the reverse is the case: people were working longer half a century ago.

- If rising pension ages and labour force participation at older ages caused greater ill health then it would be a matter for concern. Most research on the relationship between health and working in old age has produced ambiguous results. Research in this area is inherently difficult because of the fact that, just as retirement can influence health, health can influence retirement decisions.
- To date, research has not generally examined the relationship between the number of years spent in retirement and health. This issue is important. It is possible that health will initially improve when somebody retires and then, after a while, start to deteriorate due to reduced physical activity and social interaction.
- New research presented in this paper indicates that being retired decreases physical, mental and self-assessed health. The adverse effects increase as the number of years spent in retirement increases.
- The results vary somewhat depending on the model and research strategy employed. By way of example, the following results were obtained:
 - Retirement decreases the likelihood of being in ‘very good’ or ‘excellent’ self-assessed health by about 40 per cent
 - Retirement increases the probability of suffering from clinical depression by about 40 per cent
 - Retirement increases the probability of having at least one diagnosed physical condition by about 60 per cent
 - Retirement increases the probability of taking a drug for such a condition by about 60 per cent.
- Higher state pension ages are not only possible (given longer life expectancy) and desirable (given the fiscal costs of state pensions) but later retirement should, in fact, lead to better average health in retirement. As such the government should remove impediments to later retirement that are to be found in state pension systems, disability benefit provision and employment protection legislation.

Introduction

Since the Second World War three factors have combined to produce a significant reduction in the working population as a proportion of the total population in industrial countries. Those factors are: declining fertility rates; increasing life expectancy; and the emergence of retirement as a widespread phenomenon. Financial incentives to use pathways to early retirement as well as the overall generosity of state pension systems have been important drivers of this latter development (see, for example, Gruber and Wise, 2004; Asch et al, 2005; Börsch-Supan et al, 2009; Hanel, 2011; Hurd et al, 2012). The reduced employment-population ratio has put increased pressure on countries' pension systems and worsened prospects for economic growth. Low labour force participation rates also generally reduce savings rates, which, in turn, leads to lower investment and economic growth. As a response, many countries have begun to reform their countries' pension systems to induce people to work longer, particularly by reducing financial incentives to retire.

In the UK, governments have increased the state pension age, which will reach 68 for both men and women in the coming decades, and further increases are likely to follow. In his 2012 budget speech, Chancellor George Osborne (2012) announced that 'there will be an automatic review of the state pension age to ensure it keeps pace with increases in longevity'. Increasing the labour force participation rate among the elderly will continue to be important since, notwithstanding policy changes, life expectancy is likely to increase faster than the state pension age.

Indeed, life expectancy at the state pension age is currently projected to rise continually from today to 2051 – though the picture is slightly more complex for women than for men (Office for National Statistics 2012). It is worth noting that the original proposal to raise state pension age to 68 came from a Labour government following a report by cross-bench peer Lord Turner. There is therefore broad political support for some action to raise pension ages.

At the same time, some have expressed concern that people are simply not healthy enough to work longer. For example, the TUC (2012) recently stated: ‘Ministers seem to think that putting up the state pension age will automatically increase working lives, yet the TUC argues that many older people are unfit or will find it hard to find work and so will end up in a new limbo zone - too young for a pension, and too old to work.’ Len McCluskey, Unite’s General Secretary, has argued: ‘Making British people work until they drop is another hijacking of our living standards and shows no care for the lives of ordinary people’ (quoted in Bow, 2012). Health problems will purportedly prevent people from working longer.

If this is true, and if it is also true that working longer may worsen health problems, there are two consequences. Firstly, the government’s reforms in this area, as well as future reforms that incentivise people to work longer, may be thwarted. If people simply cannot work longer, the result might instead be increased rates of sickness and longer periods of incapacity leave, and so on. Secondly, since healthcare is to a large extent publicly funded in the UK, this also means that the government might be forced to increase public spending in this area among older people. And, of course, working might also create more suffering among people who would have been healthy retirees had they been able to retire earlier.

A crucial issue in this debate, therefore, is the relationship between working in old age and good health. If working leads to better mental and physical health, there might be a virtuous circle arising from increases in retirement age.

On the other hand, if working leads to poorer mental and physical health, attempts to resolve the fiscal pressures of an ageing population by raising state pension age might be partially thwarted.

A significantly higher share of older people in OECD countries – including the UK – was employed 50 years ago, despite the fact that life expectancy and healthy life expectancy have increased. The simultaneous decrease in employment and improvement in health in older middle age are conspicuous indeed. This raises the question: is the drop in employment rates causally related in some way to the improvements in health? Are people retiring earlier and, as a result, enjoying better health? If so, it might be the case that people's health, and thus quality of life, would decrease if they were to work longer before receiving a retirement income.

The theoretical relationship between retirement and health is far from straightforward and it might well be the case that people would have been healthier still on average had retirement not taken place at younger ages over the last few decades. Inducing people to work longer in the future may produce better health among the elderly, thus also increasing their quality of life as well as enabling them to continue working. Furthermore, this would mean that a government policy that generates strong incentives to retire rather perversely produces a decline in healthy ageing among the elderly. This is an empirical matter but it is a matter that is profoundly important for public policy.

In fact, the existing research on this issue is mixed, which is most likely to be due to the fact that different methods are used. The key problem for any research strategy is that retirement is not random. Retirement decisions themselves are affected by health. For example, evidence suggests that poorer health increases the likelihood of retirement. When looking at health and retirement it is therefore very difficult to separate cause from effect. In addition, a plethora of variables that cannot be observed are likely to bias results in any empirical studies – and it is difficult to predict the

direction of this bias. Also, few studies take into account lagged effects properly, which is a problem since it might take time before the health impact of retirement kicks in.

In order to provide further evidence, and remedy some of the shortcomings in the literature, this paper analyses data from a large European panel database. Employing two distinct research strategies, it finds statistically significant and substantial negative effects of retirement on health. The time spent in retirement is also found to affect health negatively. There is, however, some evidence of a short-term boost to health from retirement, though this short-term effect is far from robust.

The findings support the “win-win” scenario in which economic growth prospects, public finances and health are all improved when older people are not encouraged to retire by state pension arrangements or labour market regulation.

The policy implication of this research is that policymakers should remove disincentives to continue work in old age. This does not mean that politicians should force people to “work until they die”, but that they should entirely remove disincentives to stop working. Continuing some form of paid work in old age is one way to ensure a healthier population and a more economically viable work-retirement balance in the UK.

Labour force participation and health among older people – the historical context

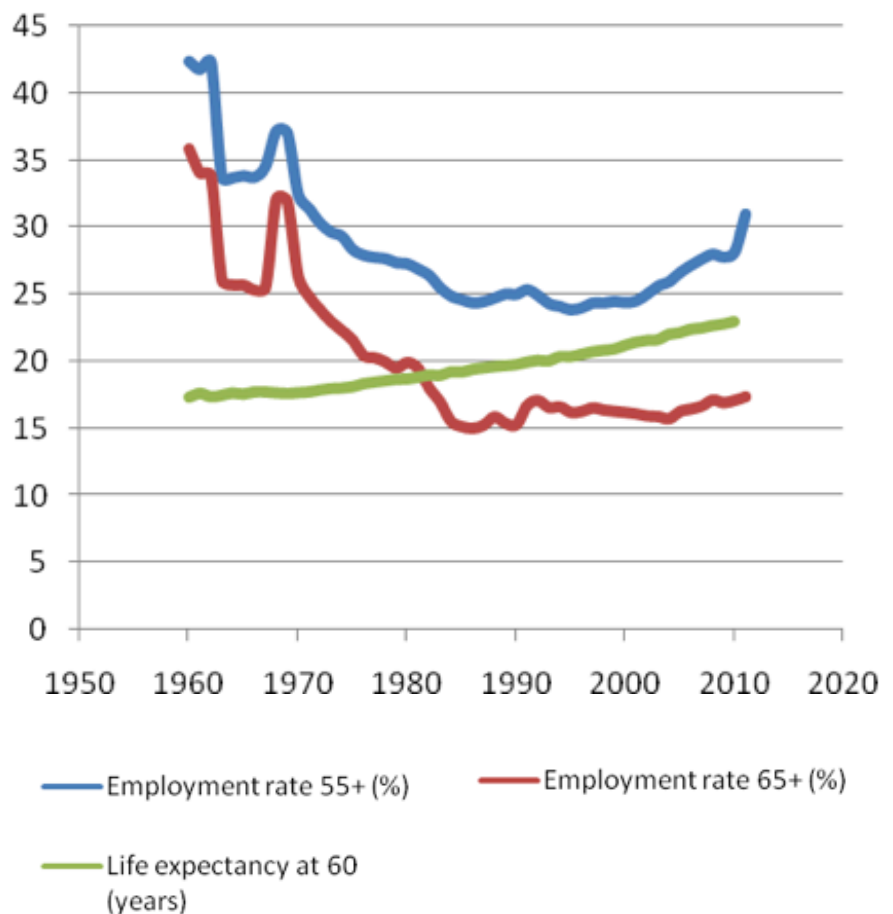


Figure 1: Employment rates and health in OECD countries. Source OECD (2012)

In the past 50 years, labour market participation among older people has changed significantly. Figure 1 shows that OECD countries have seen a significant decline in employment rates among the elderly since 1960. The trend has reversed since the beginning of the 2000s, however, and especially so among people aged 55-64. Nevertheless, labour market participation remains low today compared with recent generations. Participation in the EU is astonishingly low with 67 per cent of people aged between 60 and 64 inactive, although there are vast differences between countries. In Sweden, 39 per cent of the population aged 60-64 is not working; in Hungary, the figure is 87 per cent (Eurostat, 2012). At the same time, life expectancy at age 60 has increased steadily throughout the period.

In the case of the UK specifically, there has been a significant drop in the employment rate among elderly men. As Banks et al (2011) show, the employment rate among men aged 55-59 decreased from over 90 per cent to less than 70 per cent between 1968 and the end of the 1990s. Employment for men aged 60-64 slumped from around 80 per cent to 50 per cent, and for those aged 65-69, it halved from 30 per cent to about 15 per cent. As with the rest of the OECD, this trend has reversed in recent years. The employment rate in 2008 was about 80 per cent for the 55-59 group, 60 per cent for the 60-64 group and 20 per cent for the 65-69 age group.

Whilst people have been retiring earlier, they have also been living longer. A 61-year old man in 1960 had the same probability of dying within a year as a 70-year old man in 2005.

Self-reported limiting illnesses

Though death rates at given ages have fallen, the proportions of older men who report limiting long-standing illnesses in the age groups 50-54, 55-59, 60-64 and 65-69 remained rather flat between 1972 and 2006. The share of people reporting limiting long-standing illnesses at any given age between 50 and 64, as well as at any given level of mortality risk, did increase between 1977 and 1997, but tended to decrease among men afterwards. Furthermore, the increase in the prevalence of self-reported limiting illness, when holding mortality rates constant, is significantly lower than the decrease in the employment rate, and the health trend does not follow the employment trend closely. However, among men aged 55-59, there is some evidence that self-reported disability follows the receipt of disability benefits 'laying grounds for claims that self-reported disabilities reflect as much the impact of being in receipt of a "disability benefit" as some measure of perceived incapacity' (Banks et al. 2011:22). Among women aged 55-59 there is no negative correlation between the employment rate, which has generally been increasing¹, and self-reported disability, which has increased slightly over time. Nevertheless, it is clear that the evidence regarding self-reported disability does not reflect the large improvements in objective measures of health.

¹ On the other hand, the employment rate among women aged 60-64 declined by about 10 percentage points in the 1970s, but began increasing in the late 1980s (Blundell and Johnson 1999:406).

Self-assessed healthy life expectancy

It is clear that healthy life expectancy at age 65 (constructed using a self-assessed health measure that asks people to rank their health status on an ordinal scale) has also increased in the UK, although at a somewhat slower pace than regular life expectancy. This would suggest that people have the capability to work longer, though perhaps not to increase their working life on a one-for-one basis as life expectancy increases. Figure 2 shows that life expectancy at age 65 increased by 4.2 years for men and three years for women between 1981 and 2006. During the same period, healthy life expectancy at age 65 increased by 2.9 years for men and 2.6 years for women. Men who live to experience their 65th birthday could, in 2008, expect 12.8 healthy years, although this depends on how exactly 'healthy life expectancy' is defined; using a newer measure, the corresponding figure is 9.9 years.² Overall, it is clear that increases in the number of healthy years of life that we can enjoy have not been reflected in longer working lives – indeed, the reverse is the case: people were working longer half a century ago.

² The new definition uses the self-assessed health categories 'good' and 'very good' on a five-point scale as measures of good health, whereas the older definition uses 'fairly good' and 'good' on a three-point scale. This is only available from 2006 so the data is simulated from 2001 to 2005, according to the Office of National Statistics. Healthy life expectancy for 1996, 1997 and 2000 are the average between the year before and after because of data availability.

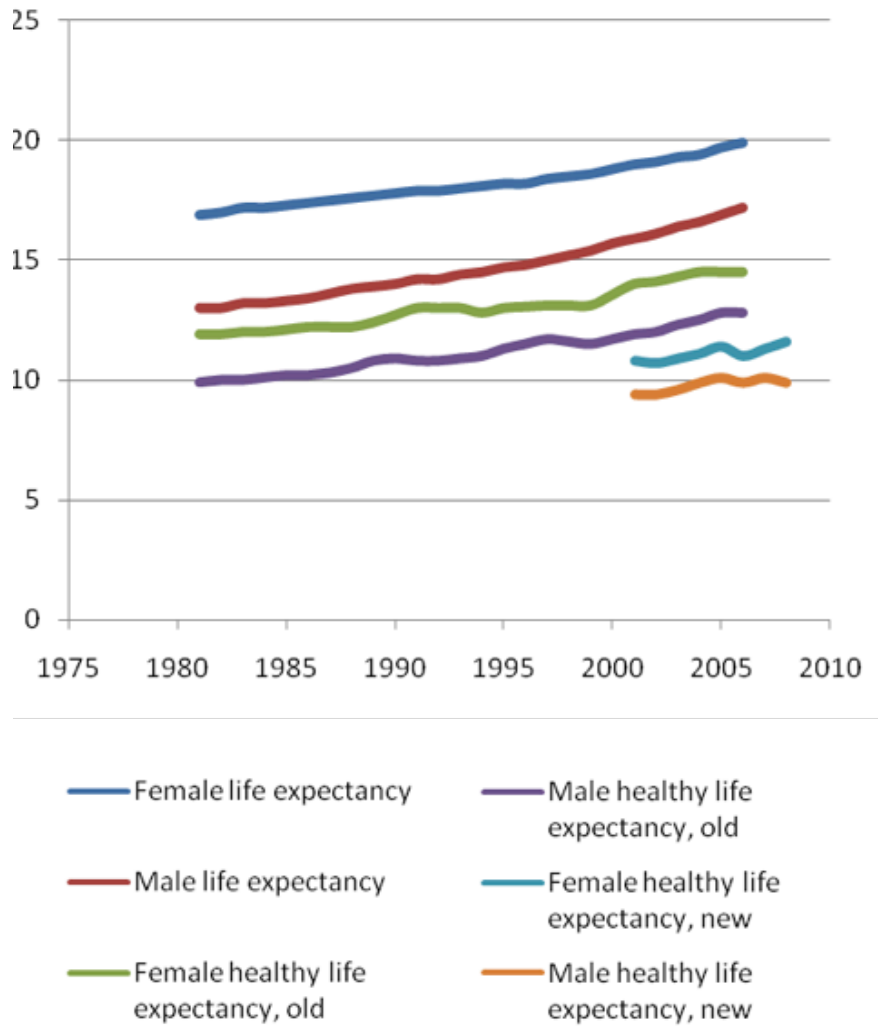


Figure 2: UK life expectancy and healthy life expectancy at age 65.
Source Office of National Statistics (2012)

How can retirement affect health?

This analysis raises an important question: is the decreased labour force participation rate partly responsible for the improvements in general health? This question is important. If a longer working life induces health deterioration, then a policy of trying to encourage people to work longer will be much less attractive. Furthermore, since healthcare is mostly publicly funded in the UK, a decline in health as a result of policies that induce longer working lives may lead to increases in health spending. At the same time, of course, such policies would also produce more suffering among the elderly, who would pay for their labour force participation with poorer health.

On the other hand, it is also possible that retirement may be to the detriment of health so that policies to induce longer working lives could, in fact, produce even better improvements in life expectancy and healthy life expectancy. In fact, Milligan and Wise (2012) find little relationship between mortality and employment rates at the country level. For any given mortality rate, the employment rate among older men varies significantly across countries and changes in mortality within countries are weak predictors of changes in employment rates of older men. However, mortality is a rather crude measure of health. Secondly, it is not necessarily the case that the apparently non-existent relationship between employment and health holds up in micro-level analyses. Indeed, the evidence clearly suggests that deteriorations in health-induced retirement at the individual level in the British context (Disney et al, 2006).

Theoretically, the impact of retirement on health is far from certain. According to the human capital model of Grossman (2000), good health is crucial for allowing individuals to maximise their utility. Health has an impact on utility directly through its effect on people's life satisfaction and happiness while also reducing work-related illness which, in turn, allows people to raise their total earnings. The former mechanism may lead people to invest more in their health after retirement – since they have more time to enjoy their leisure activities – whereas the latter mechanism may lead them to invest less, since they no longer have a job with which to increase their earnings. Whether incentives to invest in health increase or decrease after retirement depends on whether the marginal benefit of better health is higher or lower compared with before retirement, and there is no straightforward correct answer regarding which scenario is correct (Dave et al, 2006). Additionally, it is important to note that health investments may change prior to retirement since individuals engage in retirement planning the effects of which may kick in once they have retired. Also it should be noted that investment in health may not be primarily monetary investments. They can include making changes to diet, developing a daily exercise routine, and so on.

Other mechanisms by which retirement can affect health appear equally ambiguous. The social capital literature, for example, indicates beneficial effects of trust and social interactions on health (for example, see Petrou and Kupek, 2008; d'Hombres et al, 2010; Ronconi et al, 2012). It is plausible that retirement can reduce social networks if these mostly stemmed from a person's job. However, the retired also have more leisure time, which can be used to establish new social contacts outside work. Additionally, retired people have more time to devote to voluntary work, which is also a base from which new contacts can be established.

Equally, while stress is clearly detrimental to health, the impact of retirement on stress is also not clear-cut. Retirement is an important life event that can be very stressful, but it can also decrease work-related pressure. The same applies for physical exercise. Some people get most of their exercise from work, whereas retirement may allow others to exercise more on a voluntary basis. Indeed,

the impact of retirement on exercise appears to vary depending on the type of people and the type of job from which they exit (Chung et al., 2009; Kuvaja-Köllner et al., 2012).

Another mechanism by which retirement affects health is through what is termed the 'income effect'. When people retire, they are likely to see a drop in their income. This, in turn, might affect their health negatively.

Furthermore, it is important to note that the health impact of retirement is not necessarily linear: immediate and short-term effects may differ significantly from medium- and long-term impacts. The mechanisms linking retirement to health can involve very long delays. It is clearly plausible that the longer-term health effects of retirement can differ significantly from the short-term impact. For example, the reduction in stress may have a beneficial short-term impact but the reduced social contact may have a detrimental longer-term impact.

The impact of retirement on health: previous research and its problems

A key problem for any valid study is that retirement status is not random but rather a function of a wide variety of factors that are not necessarily observed in simple statistical models. Furthermore, analysis is seriously complicated by the fact that, just as retirement can affect health, the decision to retire can also be affected by health in many ways as noted above. As such, an observed correlation between health and retirement says nothing about causation. Clearly somebody with a chronic condition that makes it difficult or dangerous to work is more likely to retire than somebody who is healthy. However, there can be more subtle effects. For example, somebody who has been diagnosed with cancer – even a non-aggressive type – may choose to retire in order to ensure that he has a period of leisure before he becomes restricted by deteriorating health. If health deteriorates, individuals may also be able to purchase annuities more cheaply thus making early retirement easier. The effect could, on occasions, work in the other direction: retirement may mean that such individuals are excluded from work-related insurance benefits to which they would be entitled if they remained at work. These problems have been examined by Coile (2004); Cai (2010); García-Gómez et al (2010); and Zucchinelli et al. (2010). On the whole, it is found that poor health is likely to precipitate retirement, and that this is likely to lead to a finding of a ‘false negative’ effect of retirement on health. In other words, because poor health can lead to retirement, it is more likely that researchers who do not take account of this will conclude that retirement leads to poorer health than is really the case.

There is also a potential problem of 'omitted variable bias'. There might be 'unseen' variables that affect both retirement and health, which would lead the data to show a false correlation between retirement and health. Of course, these omitted variables may also mask a potential effect of retirement on health, which would lead researchers to conclude that such an effect does not exist. For example, it is conceivable that some people's retirement decisions are affected by the health status of their spouses (poor health of a spouse making it more likely that somebody will retire). If people's health, in turn, is affected by spouses' health (for example, if one is ill, the other may become depressed), and we have not included the health of spouses in the statistical model, it means that the correlation between a person's retirement and health could be picked up when, in fact, the underlying correlation is between the health statuses of the two spouses. Because of these problems, a plethora of studies, which display conflicting results, cannot separate causality from correlation (e.g. Litwin 2007; Alavinia and Burdorf 2008; Brockman et al, 2009; Jang et al. 2009; Westerlund et al. 2009; Roberts et al. 2011).

Some researchers have tried to deal with these problems by following individuals over time and by focusing on whether changes in retirement status generate changes in health, while controlling for all unobserved differences between individuals that do not vary over time (such as genetic factors). This is a valid technique if, and only if, the sources of the above selection problems and omitted variables do not vary over time. Such a strategy is used by Kerkhofs and Lindeboom (1997) and Lindeboom et al (2002). However, many sources of the problems noted above do vary over time and so it is not possible to view the results of these studies as implying causal effects.

Overcoming problems in analysing the impact of retirement on health

In order to analyse the causal effect of retirement on health more sophisticated econometric techniques must be used. Normally, this means that researchers resort to instrumental-variable (IV) models. These necessitate a third variable – an instrument – that predicts retirement but is otherwise unrelated to individuals' health (after controlling for other relevant variables). Imagine, for example, that the government unexpectedly offered the possibility to a random group of 10 per cent of all 55-year olds – regardless of health status – to retire the next day with a certain percentage of their salary as their yearly pension until they die. The government then selects (randomly) 50 per cent of the applicants. We could examine the health status of those who are accepted and those who are rejected. This unexpected offer would clearly induce many to retire, but whether the offer was actually made would not be related to health. Thus, one could use the offer as an instrument for retirement status, and get around the problems of reverse causality and omitted variable bias. This scenario is of course unrealistic, and should merely be seen as a hypothetical example of what would constitute a perfect instrumental variable for retirement.

If such a variable, or variables, can be found, it is possible to isolate the variation in retirement that is not correlated with other variables not included in the model but that also affect health. Secondly, this approach is not affected by reverse causality running from health to retirement. This means that we can separate causality from correlation.

A common approach in the recent and relatively scant economic literature on the subject has been to apply IV models using the ages at which people become entitled to take early retirement and regular pension benefits as ‘instruments’ for retirement. It would be reasonable to assume that reaching official retirement ages – or state pension age as it would be known in the UK - increases the incentives to exit the labour market, simply because people can tap into the state pension. It is also likely that reaching such ages predicts labour market exit well. At the same time, it could be argued, there is little reason why reaching the official retirement ages would have an impact on health in other ways apart from through retirement. Retirement can take place at many ages, but the state pension is received from age 65 (for males). At most ages we would expect to see retirement rise in people with ill health. However, at age 65, there would arguably be a rise in retirements for reasons unrelated to health. While also controlling for age effects, and other variables that are likely to have an impact on health in old age, researchers can then estimate the impact of retirement on health that occurs because an individual reaches the official retirement age. In econometric terms, this is sometimes referred to as a specific application of a ‘regression discontinuity design’.

Another approach in the literature has been to use reforms to the pension system to create groups of ‘treated’ people, who are subjected to the changes, and a ‘control group’ containing individuals who are not subjected to the changes. The argument is similar: while pension reforms often alter financial incentives to retire, they should not affect health through other paths. These econometric techniques are supposed to untangle the independent impacts of health and pension age on retirement, and can thus potentially allow us to determine the independent effect of retirement on health if used properly.

The multi- and within-country research – including studies using English data – that use these strategies generally find no health effects from retirement or they find positive health effects from retirement. There are some exceptions.

Lei et al's (2011) study displays a large, negative impact of retirement on self-assessed health in China, and Kolodziej's (2011) paper displays some negative effects of retirement on mental health across eleven European countries. Research also finds that people's body mass index increases as a result of retirement, with some evidence that the impact is strongest among people who are already overweight or obese (Chung, Domino, and Stearns 2009; Kantarci and van Soest 2011).

Another approach in the US has been to use unexpected retirement windows offered by employers to employees as instruments. Again, in this case, there will be an increase in retirement that is not related to health and so it is possible to use econometric techniques to disentangle the effects of retirement on health. Coe and Lindeboom (2008) do so, and find no or positive effects of retirement on health. Calvo, Sarkisian, and Tamborini (2013) use both unexpected retirement windows and changes to the eligibility ages as instruments and find that, when retirement occurs earlier than at the established US early retirement threshold, it is negative for self-assessed health and for a measure of mental health. On the other hand, if it occurs 'on time or later', it has no significant effects.⁴ This may be due to expectation effects among individuals produced by the official state pension ages. Since the rules and institutions that are in place may cause specific retirement expectations, individuals are likely to adapt to later retirement in the long run once they get accustomed to new rules.

⁴ Retirement is somewhat positive for health when the authors exclude all records after the first transition to retirement. This, however, means dropping a significant number of observations for each person. In addition, the authors never report the outcomes of the over-identification test, which is concerning given the below discussion of the potential problems with the instruments.

Problems with the more sophisticated research studies

The research discussed above produces mixed results, but the majority of studies display either positive effects or no effects of retirement on health. However, some questions arise regarding the appropriateness of the techniques used. It is possible that official retirement ages, changes in pension systems and unexpected retirement windows are all related to health in ways other than through retirement. This, in turn, means that the research strategies can give biased results.

Anticipation effects

Firstly, there is a problem of anticipation effects. Since there are financial incentives to retire at certain ages, people may adjust their behaviour before retiring. If these adjustments, in turn, affect health following retirement, the instrument is not valid. In this case, the existence of the retirement age itself affects behaviour and health and thus it becomes inappropriate to use it as an instrument. While retirement planning applies to most regular pathways to labour market exit in old age, research suggests that the state pension system has traditionally been a key route (Gruber and Wise 2004), which is likely to make it especially susceptible to retirement planning and behavioural change. Indeed, the finding of Calvo et al (2013) that retirement earlier than at the US early retirement age is negative for health but has no effects afterwards does suggest that people often plan for retirement according to the established state pension rules.

The problem also applies to changes in the state pension system if these are predictable, which is often the case due to public debate preceding such changes or because of long lead-in times for reforms. Since individuals often have time to adapt to the reforms before they retire, they may also alter their behaviour in ways that have an impact on their health. For example, there is some evidence that reforms reducing pension rights lead workers to participate in training courses (Montizaan et al, 2010). Such participation, in turn, may have an independent impact on health which they would not have incurred without the pension reform. If this is the case, the instrument does not solely cause changes in health through its impact on retirement, but also by its impact on the ways in which people alter their behaviour prior to retirement.

Official retirement ages

In addition, as Behncke (2012) argues, reaching the official pension eligibility age might also have an independent impact on health, especially mental health, if this is considered a milestone in an individual's life. It might also be the case that individuals with a particular health status choose jobs with mandatory retirement—or jobs in which early retirement is more likely to be granted—which makes it even more difficult to separate causation from correlation. If, for example, individuals with specific health profiles choose jobs where they are certain to be able to retire at the official retirement age, any estimates would suffer from 'self-selection'. This is especially true of the early retirement age, and changes to that age. All individuals do not necessarily even know whether they are eligible for early retirement, and those who do are more likely to have been searching for ways to retire prematurely. Similarly, a concern with the approach of using unexpected retirement windows from employers in the US as an instrument is that employees of companies giving such offers may differ systematically from other individuals. If this is the case, the results may again be plagued by selection bias.

Health and time since retirement

However, perhaps the biggest problem with many of these studies is that they do not account for a varying impact with time. It is quite possible that retirement may benefit health at first due to a reduction in stress levels and an ability to undertake enjoyable and fulfilling activities: this might be termed a "holiday effect". As time goes on, however, other influences might lead health to deteriorate. These may include the lack of social interaction and physical activity. Also, the initial psychic benefit of retirement might fade away. In general, furthermore, behavioural changes take time before they affect health. For example, if an individual starts eating, drinking and smoking more because they retire, or in anticipation of retirement, the health effects are not going to appear until some point in the future. It is clearly important to take lags between any retirement indicators into account when analysing the effects of retirement on health.

Studies finding a negative impact of retirement on health

Given the problems with estimating the independent impact of retirement on health, it is not surprising that other estimation strategies display different findings. Analysing US data, Daveet al (2008) use spouses' retirement status as instruments for individuals' retirement status and find that retirement predicts worse physical and mental health. However, there is a problem with this estimation procedure too. The retirement of a spouse may well be correlated with or affect an individual's health directly or indirectly. Furthermore, the health of a person may be affected by the health of their spouse. Indeed, some research displays a potentially causal effect of a husbands' general health on their wives' mental health (Michaud and van Soest, 2008) making it important to take this source of potential bias seriously. Given this, we might need to control for the impact of a spouses' health on the health of a given respondent in order to obtain unbiased results.

Research in Austria has also found negative effects of retirement on health. Kuhn et al (2010) use an unexpected change in the Austrian old age unemployment insurance system as an instrument and find that early retirement among male blue-collar workers increases the probability of dying before age 67. However, there is no effect among women. It is notable that very little planning for the new rules could have been taking place after they were instituted because there was an economic slump and people retired immediately when the system was changed. This may make the instrument more likely to be valid compared with previous research using similar research strategies.

Analysing English data, Behncke (2012) focuses on individuals who were subject to a series of interviews at different stages. The first wave of interviews took place when all the subjects were employed. The researchers then examined whether retirement at the time of the second wave of interviews altered health by the time of the third interview. The researcher was able to control for a very large number of variables affecting retirement and health and this should have ensured that the estimates were unbiased. The researcher also uses IV models with the normal retirement age as an instrument. In both strategies, she finds negative effects on various types of health from retirement, although in one of the models the effect of retirement on subjective health, chronic conditions and mental health is insignificant. Interestingly, the author controls for the date at which people expect to retire and also for their expectations of being subject to work-limiting health shocks. While this strategy is supposed to take into account retirement planning and health shocks, it is unlikely to do so sufficiently. Self-reported retirement dates may suffer from justification bias if individuals simply do not tell the truth about their health because they plan to retire prematurely. Also, people are not likely to be able to predict their own health shocks. Nevertheless, it is certainly better to use this strategy than not when using the state pension age as instrument. The results are therefore especially intriguing considering that other studies using British data and similar instruments find either positive or no health effects of retirement on health (Bound and Waidmann 2007; Johnston and Lee 2009; Fé and Hollingsworth 2011, 2012).

New evidence from Europe

Overall, the most methodologically convincing research on the health effects of retirement is rather mixed. This is likely to be due to researchers employing different research strategies and data. Few studies, and no multi-country studies, take lagged effects into account properly. As argued above, this is problematic since the lagged effects of retirement on health may differ significantly from the immediate ones. Research has focused on the impact of being fully or partially retired, but no study has evaluated the effects of the number of years spent in retirement.

Motivated by the mixed literature, and especially by the above-noted flaws in multi-country research, this paper presents a new statistical analysis to determine the health effects of retirement. In this analysis, micro-level data from the Survey of Health, Ageing, and Retirement in Europe (SHARE) from eleven European countries has been used. These countries are: Austria, Belgium, Denmark, France, Italy, Germany, Greece, the Netherlands, Spain, Switzerland and Sweden. This involves a sample of about 7,000-9,000 individuals aged between 50 and 70 years at the time of their first interview. The exact sample size depends on the model specification.

In contrast to prior research, this paper analyses the effects of being retired as well as the number of years spent in retirement.⁵

⁵ The natural logarithm of this variable is used since one might expect the marginal effect to decrease with time.

By lagging the retirement indicator one period, the analysis takes into account the fact that short- and longer-term effects of retirement may differ. Both self-assessed health and mental health as well as a health stock variable constructed from a plethora of objective health indicators are analysed. In addition, physical health indicators – more specifically, the number of diagnosed physical conditions, the number of drugs taken for such conditions, and grip strength – are included in the analysis. The research also examined the effects of the retirement variables on changes in self-assessed health trajectory (i.e. on changes-in-changes in self-assessed health).

In order to deal with the issues of reverse causality and omitted variables that can bias the results as discussed above, one needs to find variables that are directly related to retirement but not related to health apart from through retirement. In this research two distinct strategies are used. Firstly, the fact that couples' retirement decisions are not independent of each other was exploited. Research has given support to the so-called 'joint retirement hypothesis', which holds that spouses often retire relatively close to each other due to financial incentives and leisure complementarities (Banks et al, 2010; Casanova, 2010; Stanca, 2012). It is therefore likely that spouses' retirement status is related to individuals' retirement status as well as to the time that the spouse has spent in retirement. The second instrument used is the log of spouses' ages. The rationale for this instrument is similar to the first one. Older spouses are more likely to retire which, in turn, increases the likelihood that individuals retire with the expectation that they will soon be followed by their spouses.

Presuming that it might actually be better for health to be with a spouse in retirement, this instrument should not bias the results upwards. There is little reason why isolation from a spouse would be beneficial for one's health, so this is a plausible assumption.

In the second strategy, instruments from prior research are used. These are dummy variables indicating whether or not people have reached the state pension ages in their respective countries. Due to data limitations, this strategy can only be used when analysing self-assessed health. However, unlike previous multi-country research using these instruments, this study examines whether changes in retirement status over time affect changes in people's health. This is a strategy that controls for variables that are constant, such as genetic factors – while at the same time taking into account lagged effects. In addition, controls are used for time effects that take into account the fact that there might be common health shocks that affect all individuals. In essence, this means that the research is analysing whether changes in retirement and the number of years spent in retirement between the first and second interviews cause changes in health between the second and third interviews.

All models control for other important variables, such as age, education and lagged health levels at the time when retirement status is measured. In other words, the analysis focuses on the lagged effect of being retired at the first interview on health at the second interview (which is approximately 2-3 years later). For a full technical discussion on the methodology, instruments, and variables included in the models, see the working paper (Sahlgren, 2012).

The impact of retirement on health⁶

Results from first research strategy

Overall, it is found using this data that there are negative and substantial effects on health from retirement. The number of years spent in retirement also affects health. It is not easy to express the results in terms that are easily understandable because of the nature of the measures being assessed. Health is not like, for example, the death rate at a specific age, which can easily be measured on a linear scale. For that reason, various approaches to explaining the effects are used below starting with the most technical and then moving on to a discussion of the practical implications.

Depending on the model used, the effect of being retired - rather than working for pay at the first interview generates a decline in self-assessed health by 0.71-1 standard deviations (SD)⁷ between the first and the second interviews (conditional on the level of health at the first interview). The decline in mental health and the health stock is 0.97-1.23 SD and 1.51-1.65 SD respectively.⁸ At the same time, doubling the number of years spent in retirement reduces the health measures by 0.26-0.34 SD, 0.37-0.46 SD, and 0.51-0.57 SD respectively.⁹

⁶ In this section, I highlight the main findings from my analysis. For a more in-depth discussions and robustness tests, see Sahlgren (2012).

⁷ A standard deviation is a measure indicating the variation from the arithmetic mean in the data analysed.

⁸ In support of the argument that reaching the early retirement age – which could be correlated with both retirement status and health – may bias the mental health estimates especially, we find no impact at all on mental health when excluding the dummy variables indicating whether or not individuals and their spouses have reached the early retirement age.

⁹ In general, the lower impact can be found when I control for spouses' self-assessed health. As discussed in Sahlgren (2012), however, this is likely to control for some of the effects in which we are interested, which is especially the case for mental and self-assessed health. It is therefore conspicuous that the health stock, which measures health more objectively, is basically unaffected by this control.

This means, for example, that a person who has been retired for four years is likely to have 0.26-0.34 SD, 0.37-0.46 SD, and 0.51-0.57 SD lower health score on the respective measures compared with a person who has been retired for two years.

Similarly, a consistent negative impact of retirement on physical health measures is found. The state of being retired increases the number of diagnosed physical conditions by 1.21 SD (which is equivalent to about one and a half conditions) and the number of drugs taken against physical conditions by 0.97 SD (roughly one drug). It also decreases grip strength by 1.28 SD. Doubling the years spent in retirement, for example from two to four years, increases the number of physical conditions and drugs for such conditions by 0.38 SD and 0.30 SD respectively, at the same time as decreasing grip strength by 0.38 SD.

Using measures where each person is classified into binary categories either ill or healthy – being retired at the first wave has the following effects on changes in health between the first and second waves:

- It decreases the likelihood of being in ‘very good’ or ‘excellent’ self-assessed health by 39 per cent.
- It increases the probability of suffering from clinical depression by 41 per cent.
- It increases the probability of having at least one diagnosed physical condition by 63 per cent.
- It increases the probability of taking a drug for such a condition by 60 per cent.

The results for doubling the number of years spent in retirement are as follows:

- It decreases the likelihood of being in ‘very good’ or ‘excellent’ self-assessed health by 11 per cent.¹⁰
- It increases the probability of suffering from clinical depression by 17 per cent.
- It increases the probability of having at least one diagnosed physical condition by 22 per cent.
- It increases the probability of taking a drug for such a condition by 19 per cent.

The above figures are an average of all people who are 50-69 years old at the time of the first interview. It should be remembered that these findings are controlled for age and other factors affecting health discussed in the working paper. They represent the independent effect of retirement.

¹⁰ This estimate is imprecise and the statistical tests also suggest that the instruments may be biased in this model. We should consequently interpret this figure with caution.

Results from second research strategy

The findings regarding self-assessed health from the second estimation strategy are very similar. The negative effect on health of the number of years spent in retirement, however, is stronger. Depending on model, retirement reduces the likelihood of being in good self-assessed health by 28-46 per cent at the third interview. At the same time, when using years spent in retirement as the retirement indicator instead of the binary retired/not retired category, doubling the number of years spent in retirement, for example from two to four years, decreases the likelihood of being in good self-assessed health by 27-28 per cent, again depending on the model. This method analyses the dynamic effects of whether changes in retirement status and changes in the number of years spent in retirement have an independent effect on changes in health in the following period.

Using this strategy, it is also found that retirement leads to a significantly worse health trajectory and that the length of time spent in retirement is also detrimental to health. For more discussion about the results from the second research strategy, see the working paper (Sahlgren, 2012).

Finally, the difference between men and women was examined using both research strategies. No differences in terms of the impact on self-assessed health were found, but the negative impact on mental health and the health stock was slightly greater for women in the first strategy.

Comparison with earlier studies

The results have been cross-checked against the methodologies used in earlier research studies, and it has been found that the positive impact of retirement on health found in earlier studies is, at the very least, partly due to shortcomings in that research, especially in the case of the multi-country studies: for a longer discussion, see Sahlgren (2012).

Part of the explanation for the seemingly positive impact of retirement on health is the difference between short-run and long-run effects. Retirement does not seem to adversely affect health in the short run. Using the first research strategy with non-lagged retirement measures, and excluding all individuals who had been retired for three years or longer, the impact of retirement on health is actually insignificantly positive. Using the second strategy, and again looking at the short-run health effects of retirement instead of the lagged effects, most estimates also generally suggest insignificant positive effects. This is supportive of the hypothesis that short- and longer-term effects differ, but further research into this area is necessary.

Overall, therefore, it is found that whereas the short-term impact of retirement on health is somewhat uncertain, the longer-term effects are consistently negative and large. As an example, Figure 4 displays the lagged effect on self-assessed health of being retired (using estimates from both research strategies) compared with the average health levels among people who are working. The average among the working population is 3.38 (3.33), which means that the mean health level in this group is a bit higher than 'good' (the categories are (1) 'poor', (2) 'fair', (3) 'good', (4) 'very good' and (5) 'excellent'). If these people were retired instead, it would mean that their mean health level would decline to 2.36 (2.25), rendering an average health level of a bit higher than 'fair'. This is a significant drop indeed.

The findings are in line with research showing that general practitioners note a drop in various health indicators as a result of early retirement, despite the fact that their patients often believe that retirement has positive effects on their health (Maes and Stammen 2011). The results also accord with the most recent study of English data which finds lagged negative retirement effects on health while also taking stronger precautions to ensure that the research strategy is valid compared with other British research (Behncke 2012). Overall, the evidence thus indicates that old people benefit from continuing some form of paid work for longer instead of retiring entirely.

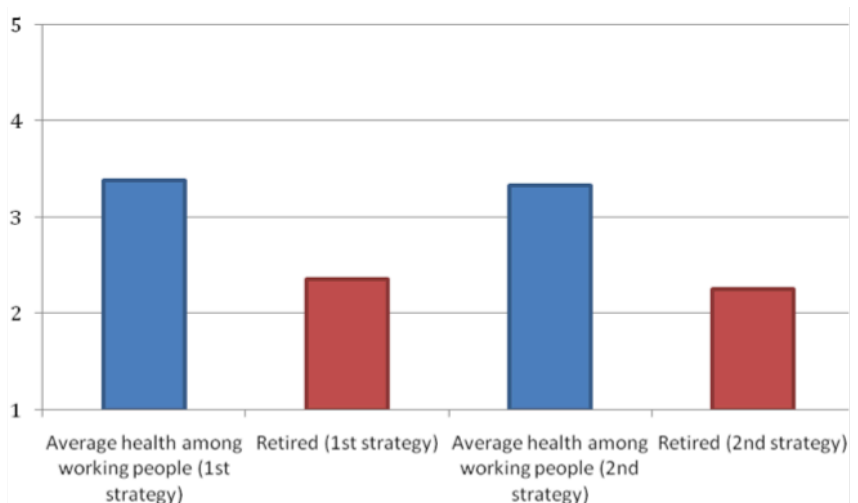


Figure 4: The impact of retirement on self-assessed health

Conclusion and policy implications

In the past 50 years, there has been a decline in labour force participation among older people in industrialised countries, which in turn has put pressure on public pension systems. This is despite the fact that life expectancy and healthy life expectancy have both increased. The UK government recently proposed increased state pension ages for both men and women and there are now plans to link the pension age to life expectancy. These changes, which aim to induce people to work longer, have met resistance among interest groups who argue that people's health must be taken into account before they are implemented. If health deteriorates because people continue paid work for longer, the government's policies may not be effective. Instead, increased sick leave and healthcare expenditures could result.

Research on whether retirement is bad for health has produced mixed results. However, this research may very well be biased because of its methods. Untangling cause and effect in the relationship between retirement and health is very difficult. This is especially true of earlier multi-country research. Of course, some studies have found negative effects of retirement on health. Indeed, this is the case of the most recent study using English data, which better deals with concerns raised in this paper than previous British research.

This paper shows the results from new research that attempts to deal with the problems of previous studies. The results, from two distinct research strategies, display large negative health effects of retirement among both women and men. These results are robust according to a range of alternative specifications.

One key issue that this paper does not examine is whether or not there are differential health effects of retirement among different types of workers (for example, people engaged in heavy manual labour compared with people engaged in office work). However, even if there are differential effects, important policy implications derive from understanding the average effect among all workers. This is because policies such as increased state pension ages, and the general removal of disincentives to continuing paid work in old age, are unlikely to be differentiated. In terms of a cost-benefit analysis regarding overall costs, the average effect among all workers is indeed a crucial issue.

While there remains some doubt about the immediate health impact of retirement, there seem to exist longer-term health benefits of employment among older people. This, in turn, indicates that politicians do not face a trade-off between improving the health of the older population, increasing economic growth, decreasing health spending among the elderly and producing solvent pension systems. The policy implication is that impediments to continuing paid work in old age should be decreased. This does not necessarily mean that people should be expected to work full time until they die, but rather that public policy should remove the strong financial incentives to retire at earlier ages.

The specific policies that need to be followed to raise participation in the labour force will be the subject of a further paper. However, it is worth giving some indication here of the kinds of policies that might lead to a reversal of the fall in retirement ages in recent decades. It would be expected that lower pension ages and a higher level of state pension reduce average retirement ages. Furthermore, where disability provision provides an alternative pathway to retirement rather than a pathway back to the labour market, this can lead to lower economic activity at older age groups.

Employment protection legislation may also play a part in making the employment of older people less attractive.

It is likely, therefore, that policies are available that will reverse the rise in economic inactivity amongst older-middle-aged people. Such policies will not only improve the sustainability of public finances but they are also likely to improve well-being through better self-assessed health, whilst also improving actual health outcomes amongst older people. These policies will not only improve health and well-being and the sustainability of welfare systems but also allow people to control their own retirement rather than have it controlled by the institutional characteristics of state pension systems.

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