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The Early Retirement Burden

Assessing the Costs of the Continued Prevalence of Early Retirement in OECD Countries*

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Abstract

Despite substantial increases in longevity, the age of retirement in the industrialized countries has steadily fallen throughout most of the 20th century. In France, for instance, the employment-population ratio of 55-64 year-old males fell from 74% in 1970 to 38.5% in 2000. In most other OECD countries, labor force participation rates for those 65 and above have fallen significantly. The economic cost of low labor market participation, in terms of lost output, benefit payments, and lower tax base is substantial. However, part of the cost of low labor market participation is cyclical or structural and hence separate from the costs of early retirement. This paper develops a simple framework to assess the specific costs of early retirement and applies it using data from the OECD countries. More significantly, we find that the costs associated with early retirement are projected to rise considerably in the next ten years from 7.6% of output in 2003 to 9.1% of output in 2010. This projected rise in the costs of early retirement over the course of the rest of the decade is slightly larger than the percentage point rise in the costs of early retirement over the twenty year period from 1982 to 2003. The projected rise in costs over the course of the next decade is largely due to population ageing, whereas the rise in costs over the past twenty years was primarily due to lower labour force participation of older workers.

Keywords: Early retirement, labor supply/demand, foregone output

JEL classification: H55, J14, J21, J26

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1 Introduction

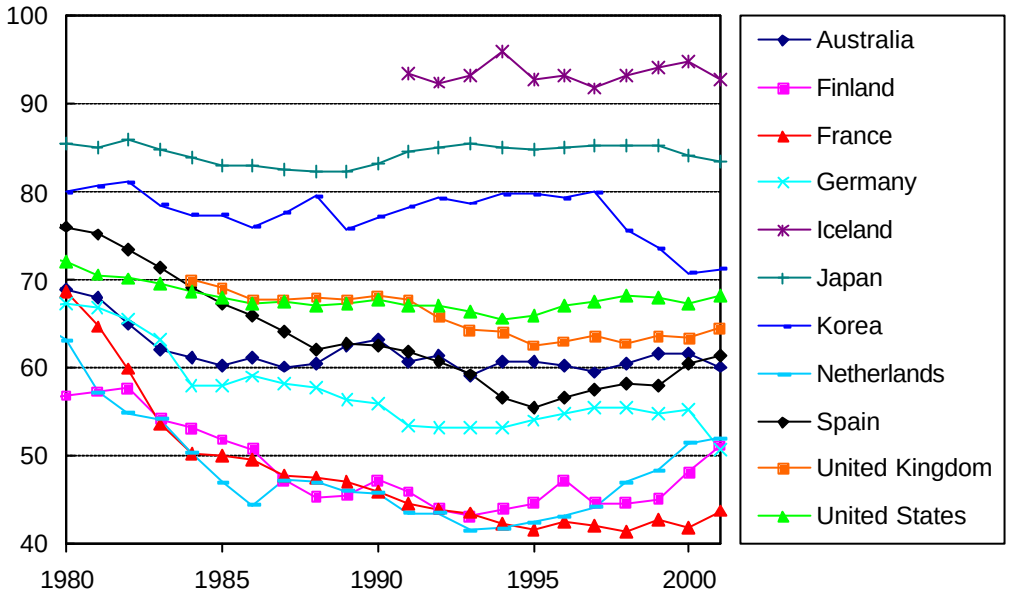
The trend in most industrialized countries is toward older workers' decreasing labor market participation. The steady withdrawal of workers from the workforce at a younger age suggests that retirement income is gradually increasing or that older workers are increasingly being forced out of the labor market. Unlike his 18th century colleague, the average worker today has accumulated substantial wealth during his working life. Moreover, incentives built into national social insurance systems often encourage him to retire early. As noted in Costa (1998) the modern worker cannot only afford to retire early but is also willing to do so since recreational opportunities have increased, and relative prices of leisure activities have decreased.

Despite substantial increases in longevity in OECD countries, the average age of retirement has steadily fallen throughout most of the 20th century. In 13 OECD countries, the average labor force participation of 55-64 year-old males fell by more than 12 percentage points between 1979 and 1998. The participation rate increased by approximately 5 percentage point for females, resulting in an overall average drop in OECD labor force participation of almost 3 percentage points. Despite the common trend toward earlier retirement, however, labor market participation rates differ significantly across countries, as illustrated in Figure 1.[1]

As can be seen from the figure, participation rates differ vastly from country to country, Iceland has far the highest labor force participation and Hungary the lowest. Moreover, the development of the participation rate is quite different between countries, i.e., the male labour force participation rates have stayed almost unchanged over the last twenty years in Japan, while they have fallen about 21 percentage points in France. Furthermore, the dispersion of the rates increased dramatically in the '80s and the '90s. This divergence illustrates that participation depends on a wide variety of country-specific factors. The structure of labor markets and employment opportunities is particularly important.

Indeed, one of the more important policy challenges is that early retirement has become commonplace in some countries, while life expectancy at age 65 has risen sharply. This combination of earlier retirement and longer life expectancy results in much longer retirement.

Figure 1. Labor force participation rates for men 55-64 in selected OECD countries (source; OECD Labour Force Statistics, 2002)



In the past few years, the rate of decrease in labour market participation has either slowed or decreased in many countries. One explanation for this tendency has been the increase in demand for workers because of high levels of economic growth. Another related explanation has been a reduction in the degree of early retirement incentives (Clark and Quinn (2002)) More recently though it is likely to be because individuals need to keep on working because of declines in their asset wealth.

The causes of high levels of early retirement are less than well understood. The body of research on early retirement has focused on the supply side of the labor market and incentives therein. Incentives such as wealth, accrual rates, earnings tests, taxes, etc., play

[1] The decline in labor force participation has reversed a bit in the past few years. However, as (Costa, 1999) points out, this is not unprecedented and is not necessarily part of a long-run trend.

a crucial role in determining the labor supply of older workers, see Herbertsson (2001). Boskin (1977) was one of the first to pay close attention to the effects of incentives on early retirement. Other subsequent work includes Quinn, Burkhauser, and Myers (1990). Indeed, incentives are the focus of a huge body of US literature that includes papers by Stock and Wise (1990) and Fields and Mitchell (1984). Empirical work in Europe has also examined early retirement using an incentive-based approach; examples include Borsch-Supan (1992) for Germany and Meghir and Whitehouse (1996) for the UK.

There are a number of comprehensive studies on incentives and early retirement. These include work by the OECD which OECD (1995) OECD (1995) focuses on incentives created on both the supply and the demand side of the labor market, an EU project published in the *European Economy*, and an NBER book edited by Gruber and Wise (1999). The methodology in each of these cases was slightly different. The EU study focuses on replacement rates for different routes out of the labor market, whereas the Gruber/Wise project highlights the concept of pension wealth or accumulated pension assets. The Gruber/Wise approach is notable because it includes comparisons across a large number of countries using the same methodology. Its findings have spurred much policy and academic interest. However, the Gruber/Wise study offers only limited insight into the relevant pension systems because it did not generally incorporate the impact of private benefits. Private benefits, particularly individual accounts with tax advantages may be important to take into account when considering incentives for early retirement, especially since individual accounts are sometimes used to fund early retirement. For example, Mitchell and Luzadis (1988) argue that the increase in early retirement provisions in the U.S. may have been partially due to the elimination of the ability of employers to set mandatory retirement.

However, a key assumption underlying the supply side literature is the degree to which retirement is or has been voluntary. Lee (2003) reviews the evidence on retirement of older men from 1880-1940 in the US and concludes that labour demand factors probably played a more important role in whether individuals retired than the voluntary decisions of individuals about their labour supply. In addition, UK Cabinet Office (2000) finds that

at most one-third of early retirees in the age range between 50 and the official state pension retirement age in the UK retire voluntarily, and that only about 12 per cent have planned for the retirement. Also, the one European country not witnessing a substantial increase in early retirement in the 1980s was Iceland, and it did not experience a labor demand shock (Herbertsson (2001)). Further evidence on these points can be found in Downs (1995) (which reviews some evidence about layoffs of older American workers), in Gray (2002) which shows that French workers with high wage increases and therefore wage pressure tend to be those high layoffs

On the other hand, Stern and Todd (2000) use historical US data on mandatory retirement programs and retirement behaviour from the National Longitudinal Survey (NLS) and finds that many workers in mandatory retirement situations will retire before their mandatory retirement date.

Regardless of the causes, the withdrawal of older workers from the labor force causes an increase in unused production capacity, a reduced tax base, and an increased burden on pension and fiscal systems. If the trend toward earlier retirement were to continue far into the future, it would thus pose even larger fiscal threats to pension systems, especially those that do not include a penalty for early retirement. It is therefore of critical importance to design pension systems providing appropriate incentives for delaying retirement. Furthermore, given the fact that incentives do not in themselves seem to provide a good indication of the severity of the early retirement problem, it is useful to derive others. Gruber and Wise (1999), for instance, have a measure of *unused productive capacity* capturing the extent to which older workers are not working.

In this paper, we develop a simple framework, taking into account wages and also incorporating the effects of increased employment on wages. The next section puts forth a framework to assess the costs associated with the low labor force participation of older workers, while Section 3 utilizes the framework to estimate the cost of early retirement in the OECD and Section 4 accesses the burden. Section 5 concludes.

2 A Cost Assessment Model

In this section, we present a simple model allowing us to assess the share of potential GDP lost due to early retirement. While simple, this model does take into account the effects on equilibrium wages of high taxes to fund early retirement programs.

2.1 Model Without Capital

There are two types of workers: older workers and other workers. We define:

w_o - wage of older workers

w_m - wage of other workers

P_o - population of older workers

P_m - population of other workers

E_o - employment rate of older workers

E_m - employment rate of other workers

Total wage income is hence:

$$Y = w_o E_o P_o + w_m E_m P_m \tag{2.1}$$

where Y is actual wage income. To simplify the analysis, we assume no capital income so that Y is also gross national product. To assess the cost of early retirement, it is necessary to assess what the employment rate would be in the absence of early retirement where the employment rate is $\widehat{E}_o$ instead of E_o, and where the employment rate of other workers has not changed from E_m, i.e., an increased labor supply of older workers following a decrease in early-retirement does not affect labor supply or labor demand for other workers. We envisage this change in labor force participation occurring in an atmosphere of more general macroeconomic change in which both wages and benefits are changed. Potential output, $\widehat{Y}$, is then given by:

$$\widehat{Y} = \widehat{w}_o \widehat{E}_o P_o + \widehat{w}_m E_m P_m \tag{2.2}$$

where $\hat{w}_o$ is the new average wage for older workers, and $\hat{w}_m$ is the new average wage for other workers. The ratio of actual output (2.1) to potential output (2.2) is less than unity to the extent that early retirement induces systemic inefficiencies. For example, if the ratio of actual to potential output is 0.90, early retirement has induced a 10 per cent output gap.

Using Equations (2.1) and (2.2) we can express the output gap as:

$$GAP = 1 - \frac{w_o E_o P_o + w_m E_m P_m}{\hat{w}_o \hat{E}_o P_o + \hat{w}_m E_m P_m} \tag{2.3}$$

or:

$$GAP = 1 - \frac{\frac{w_o E_o P_o}{w_m E_m P_m} + 1}{\frac{\hat{w}_o \hat{E}_o P_o}{w_m E_m P_m} + \frac{\hat{w}_m}{w_m}} \tag{2.4}$$

Before exploring (2.4) in detail, it is useful to understand a simplified version. A simplification of (2.4) can be achieved by assuming that $\hat{E}_o = E_m$, so that employment rates of all workers are equalized. Furthermore, we assume that the wages of all workers are equal, and that the change in labor force participation does not change wages. We can then write the output gap as:

$$GAP = 1 - \frac{\frac{E_o P_o}{E_m P_m} + 1}{\frac{P_o}{P_m} + 1} \tag{2.5}$$

The output gap depends only on the ratio of old employees to other employees and the ratio of old population to other population.

Suppose that the ratio of wages of older workers to other workers is k, e.g., $k = w_o / w_m$. Then, if we make the following additional assumptions that, as a result of the change in labor force participation, this ratio does not change, we obtain:

$$GAP = 1 - \frac{1}{1+m} \frac{k \frac{E_o P_o}{E_m P_m} + 1}{k \frac{\hat{E}_o P_o}{E_m P_m} + 1} \tag{2.6}$$

where m is the rate of growth in wages following increased labor supply (reduction in early retirement). We note that equation (2.5) is a seven-parameter model. In particular, estimates of the gap depend on five direct observables (E_m, E_o, P_m, P_o, and k) and two other variables ($\hat{E}_o$ and m). We have already noted the possibility of closing the model for $\hat{E}_o$ by assuming that $\hat{E}_o = E_m$, so that employment rates of all workers are equalized. However, it may also be useful to adjust $\hat{E}_o$ to be somewhat below E_m to account for higher incidence rates of disability at older ages.

One possibility for m is simply to assume that changes in wages are very slow as a result of reform and therefore the effect of changes in wages can in effect be ignored. However, an alternative approach is to distribute savings in benefit payouts to all workers in proportion to their current wages. An example where this would happen is if proportional payroll taxes were cut equally for all workers. We let Δb be the savings. Then we can write:

$$\hat{w}_o = w_o \left(1 + \frac{\Delta b}{w_o \left[\frac{1}{k} E_m P_m + \hat{E}_o P_o \right]} \right) = w_o \left(1 + \frac{\Delta b}{\bar{Y}} \right) \tag{2.7}$$

where $\bar{Y}$ is the level of output where labor participation rates have adjusted to their new levels, but wages have not. We hence find that:

$$m = \frac{\Delta b}{\bar{Y}} = \frac{\Delta b}{Y}\frac{Y}{\bar{Y}} = \frac{\Delta b}{Y}\frac{k\frac{E_o P_o}{E_m P_m}+1}{k\frac{\hat{E}_o P_o}{E_m P_m}+1} \tag{2.8}$$

which depends only on observables and the change in benefit expenditure relative to the initial level of output (or the percentage of GDP to be saved on benefit expenditure as a result of lower labor force participation).

2.2 Model With Capital

Omission of capital is obviously a weakness in our model above. To investigate the effect of this omission, we consider a Cobb-Douglas production function:

$$Q = A(E_m P_m + kE_o P_o)^a \, K^{1-a} \tag{2.9}$$

If we consider the effect of reform, then output after the reform is:

$$\hat{Q} = A(E_m P_m + k\hat{E}_o P_o)^a \, K^{1-a} \tag{2.10}$$

Assuming capital does not change as a result of the reform, then the ratio of output before vs. after the reform is:

$$\frac{(E_m P_m + kE_o P_o)^a}{(E_m P_m + k\hat{E}_o P_o)^a} \tag{2.11}$$

or:

$$\frac{w_m^{-a}(w_m E_m P_m + w_m kE_o P_o)^a}{w_m^{-a}(1+m)^{-a}(w_m(1+m)E_m P_m + kw_m(1+m)\hat{E}_o P_o)^a} \tag{2.12}$$

which simplifies to:

$$\frac{Y^a}{(1+m)^{-a}\hat{Y}^a} \tag{2.13}$$

so that the output gap including a fixed stock of capital is related to the gap without including capital. The difference of course is the labor share a. With, for instance, a labor share of 0.80 and a ratio of actual to potential output (excluding capital) of 0.90, the output gap is 8 per cent instead of 10 per cent.

3 The Costs of Early Retirement

To assess the economic costs of early-retirement in countries reporting to the OECD, we use equations (2.5) and (2.7) and data on:

- Employment rates of older workers, defined here as workers between 55-64,
- Employment rates of other workers, defined here as workers between 25-54,
- The number of people in the age group 55-64,
- The number of people in the age group 25-54,
- Average wages of 55-64 year-old workers,
- Average wages of 25-54 year-old workers,
- Government expenditures on pension benefits of 55-64 year olds,
- Assumptions about what the employment rates of workers aged 55-64 would be in the absence of early retirement.

For data on population we use United Nations (2002)[2] and on labor markets OECD (1999). For a baseline calculation, we assume no wage effects from reform $m = 1$, equal wages for all workers, $k = 1$, and no differences in labor force participation after reform $\widehat{E}_o = E_m$. For these calculations, Table 1 shows results for the OECD countries over the last two decades. The OECD fraction of output lost to early retirement was almost 7.1 per cent in 2000. Continental and Eastern Europe tend to have higher costs than the rest of the OECD, but Iceland has particularly small costs.

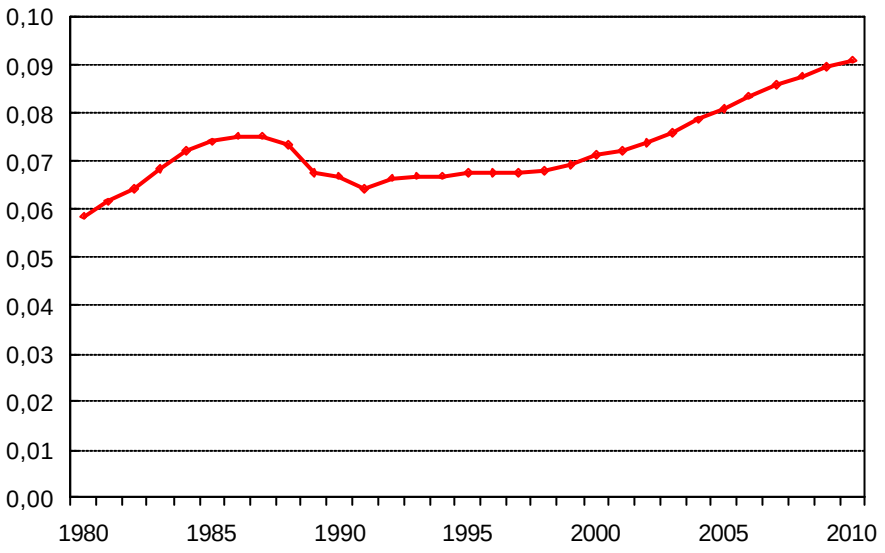
[2] We use the medium variant for the population projections.

Table 1. *Cost of Early Retirement in the OECD as a Share of Potential GDP*

	1980	1990	2000	2010		1980	1990	2000	2010
Hungary	-	-	16,5%	19,4%	Ireland	4,6%	6,9%	6,8%	8,9%
Belgium	-	15,2%	14,1%	17,9%	Australia	7,5%	7,5%	8,1%	11,1%
Luxemburg	-	12,5%	12,6%	15,1%	Canada	5,5%	6,7%	7,2%	10,5%
Austria	-	-	14,4%	15,9%	Sweden	5,9%	4,7%	5,2%	7,5%
Germany	7,8%	9,5%	13,2%	12,6%	USA	5,6%	5,4%	5,7%	8,1%
Greece	-	10,4%	10,7%	11,2%	New Zealand	-	7,9%	7,8%	11,6%
Czech Republic	-	-	11,1%	15,2%	Turkey	-	5,0%	4,0%	5,1%
France	6,2%	11,2%	10,3%	15,1%	Japan	2,8%	4,3%	5,4%	7,5%
Netherlands	8,1%	10,5%	11,2%	15,9%	Norway	5,0%	4,9%	5,2%	8,1%
Poland	-	-	7,7%	11,1%	Switzerland	-	2,9%	6,7%	9,3%
Finland	8,2%	9,6%	10,6%	15,8%	Korea	-	2,2%	3,7%	5,0%
Spain	4,8%	9,7%	9,3%	11,1%	Mexico	-	2,1%	2,8%	3,7%
Portugal	6,0%	9,1%	8,6%	9,4%	Iceland	-	0,5%	1,6%	2,2%
Denmark	-	6,9%	8,2%	11,3%					
UK	-	7,5%	7,2%	10,1%	**OECD Average**	**5,3%**	**6,7%**	**7,1%**	**9,1%**

Figure 2 plots the OECD average costs of early retirement, which peaked at about 7.5 per cent of potential output in the mid 1980s, and is predicted to increase to as much as 9,1% in 2010.

Figure 2. *Costs of Early Retirement in the OECD*, 1980-2010



These are estimates, and indeed our own analysis suggests the need for qualification. The first qualification is in the parameter $\widehat{E}_o$, which we assumed to equal E_m. However, this assumption may not be reasonable because, in the absence of early retirement, the participation rates of older workers will be lower than those of younger workers (to account for higher rates of disability incidence in the older age group). Disability statistics are quite difficult to interpret, but a 10 per cent lower participation rate is a reasonable, if not high, figure. For example, in Iceland where early retirement is almost nonexistent, 90.9 per cent of 25-54 year-old males participated on average in the labor force in 1990s, compared with 87 per cent of the age group 55-64. The difference is only 3.9 per cent, see Herbertsson (2001).

Using a 10 per cent lower participation rate, Figure 3 shows the costs of early retirement in the OECD, assuming a 10-percentage-point lower participation rate for older workers. Figure 4 shows the corresponding figures for men alone.

Figure 3. *Costs of Early Retirement with a 10-percentage-point Lower Participation* Rate *of Older Workers to Account for Disability*

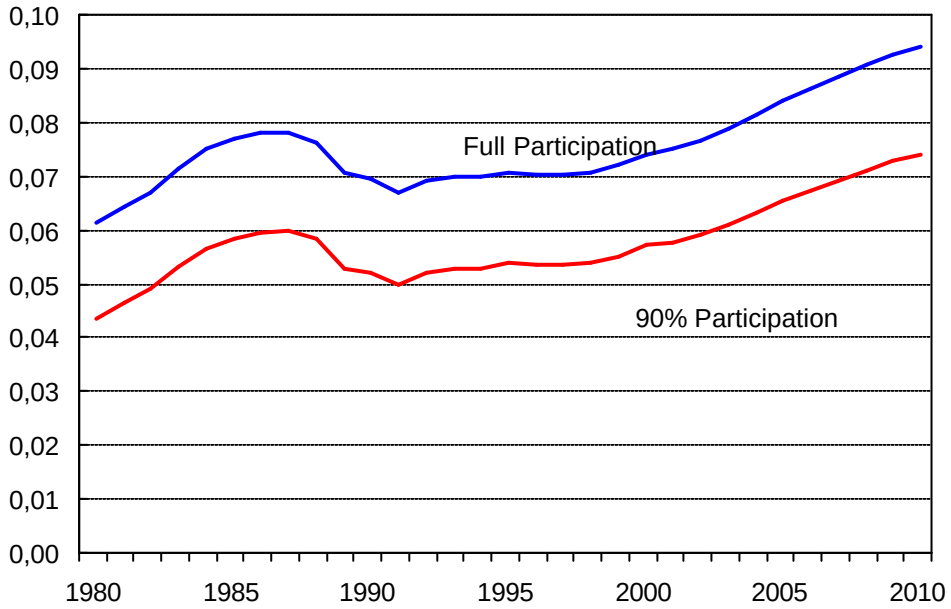
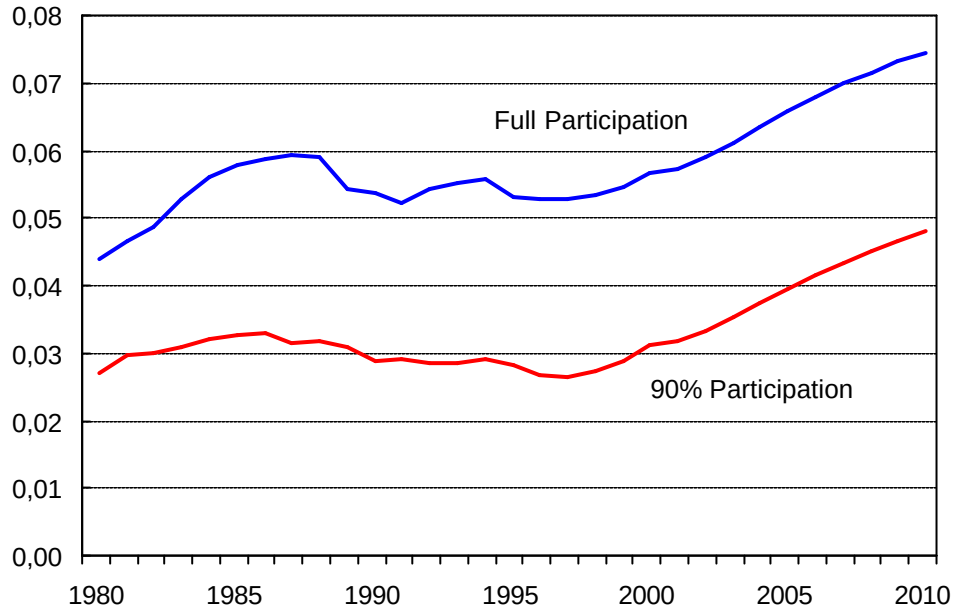


Figure 4. *Costs of Early Retirement for Men with a 10-percentage-point Lower Participation* Rate *of Older Workers to Account for Disability*



The effect of using a lower participation rate is significant, and, indeed, the costs fall by about 25 per cent for the population as a whole and 30 percent for males alone. The reason for this is that a 10-percentage-point lower participation rate of older workers is indeed a significant drop relative to overall participation.

This difference in effects suggests the importance of looking at males and females separately. Table 2 and 3 provide costs by country for males and females respectively.

Table 2. *Cost of Early Retirement of Males in the OECD as a Share of Potential GDP*

	1980	1990	2000	2010		1980	1990	2000	2010
Hungary	-	-	11,8%	14,2%	Ireland	3,6%	5,1%	4,7%	5,3%
Belgium	-	12,7%	12,2%	15,9%	Australia	5,0%	5,4%	6,2%	8,8%
Luxemburg	-	10,7%	11,5%	14,5%	Canada	3,4%	4,9%	5,5%	8,1%
Austria	-	-	12,6%	14,1%	Sweden	4,0%	3,8%	4,7%	6,9%
Germany	4,5%	7,1%	10,9%	10,6%	USA	4,5%	4,3%	4,6%	6,8%
Greece	-	8,9%	8,8%	9,3%	New Zealand	-	6,8%	6,7%	10,3%
Czech Republic	-	-	7,4%	11,0%	Turkey	-	5,3%	4,2%	5,1%
France	5,1%	10,3%	9,5%	13,9%	Japan	1,7%	3,0%	3,2%	4,4%
Netherlands	5,7%	8,6%	9,8%	14,1%	Norway	3,3%	3,7%	4,2%	6,9%
Poland	-	-	5,9%	8,8%	Switzerland*	-	2,0%	4,1%	6,0%
Finland	6,4%	8,7%	10,1%	15,6%	Korea	-	2,2%	3,4%	4,2%
Spain	3,7%	7,4%	6,9%	8,4%	Mexico*	-	1,4%	1,4%	1,8%
Portugal	4,1%	6,3%	6,2%	7,2%	Iceland*	-	0,1%	1,0%	1,3%
Denmark	-	4,8%	6,4%	9,6%					
UK	-	5,6%	4,8%	7,1%	**OECD Average**	**4,3%**	**5,3%**	**5,6%**	**7,4%**

Note: *Data for 1991

Table 3. *Cost of Early Retirement of Females in the OECD as a Share of Potential GDP*

	1980	1990	2000	2010		1980	1990	2000	2010
Hungary	-	-	21,4%	24,8%	Ireland	6,6%	10,2%	11,2%	14,5%
Belgium	-	18,6%	16,6%	20,5%	Australia	11,5%	10,6%	10,5%	13,7%
Luxemburg	-	15,4%	14,3%	15,9%	Canada	8,4%	8,9%	9,2%	13,0%
Austria	-	-	16,7%	18,3%	Sweden	8,0%	5,6%	5,8%	8,2%
Germany	10,7%	12,6%	16,1%	15,0%	USA	7,4%	6,7%	6,8%	9,4%
Greece	-	13,1%	13,2%	13,8%	New Zealand	-	9,4%	9,2%	13,0%
Czech Republic	-	-	14,9%	19,5%	Turkey	-	4,1%	3,2%	4,9%
France	7,3%	12,2%	11,1%	16,4%	Japan	3,5%	5,8%	8,0%	11,1%
Netherlands	12,2%	13,1%	13,3%	18,2%	Norway	6,9%	6,1%	6,3%	9,4%
Poland	-	-	9,6%	13,5%	Switzerland*	-	5,3%	10,3%	13,5%
Finland	10,0%	10,5%	10,9%	16,0%	Korea	-	1,2%	4,0%	5,8%
Spain	6,3%	13,5%	12,8%	14,9%	Mexico*	-	4,5%	5,2%	6,6%
Portugal	8,5%	12,2%	11,1%	11,7%	Iceland*	-	0,4%	0,3%	2,6%
Denmark	-	9,2%	10,1%	13,1%					
UK	-	9,7%	10,0%	13,5%	**OECD Average**	**7,4%**	**8,3%**	**8,9%**	**11,1%**

Note: *Data for 1991

For men, the gap is much smaller than for women, as shown in Figure 5, with a 0 percentage point lower potential participation rate for older workers. Figure 6 shows the effects assuming a 10 percentage point reduction both for males and females.

Figure 5. *Costs of Early Retirement of Males and Females with a 0-percentage-point Lower Participation Rate of Older Workers.*

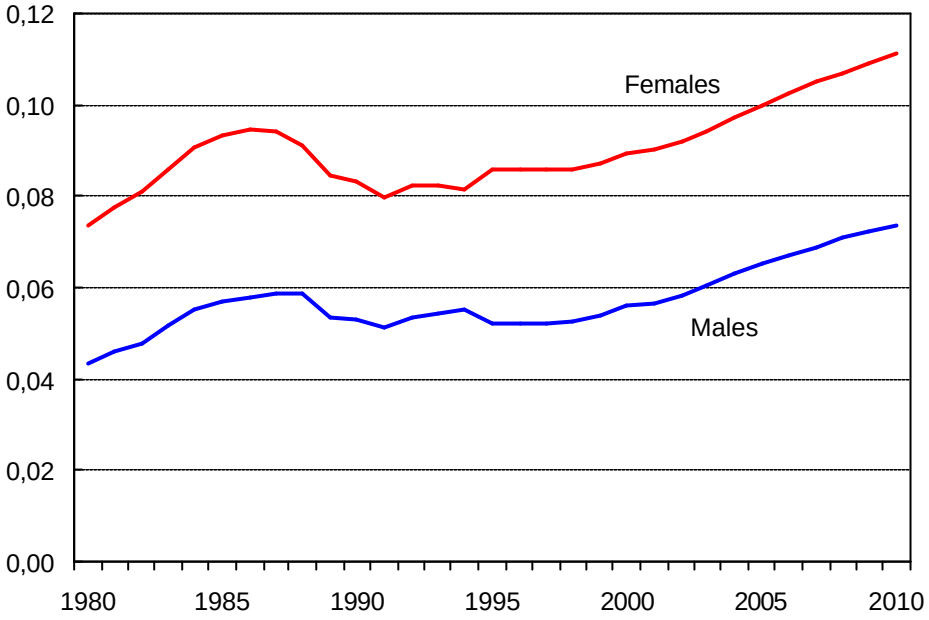
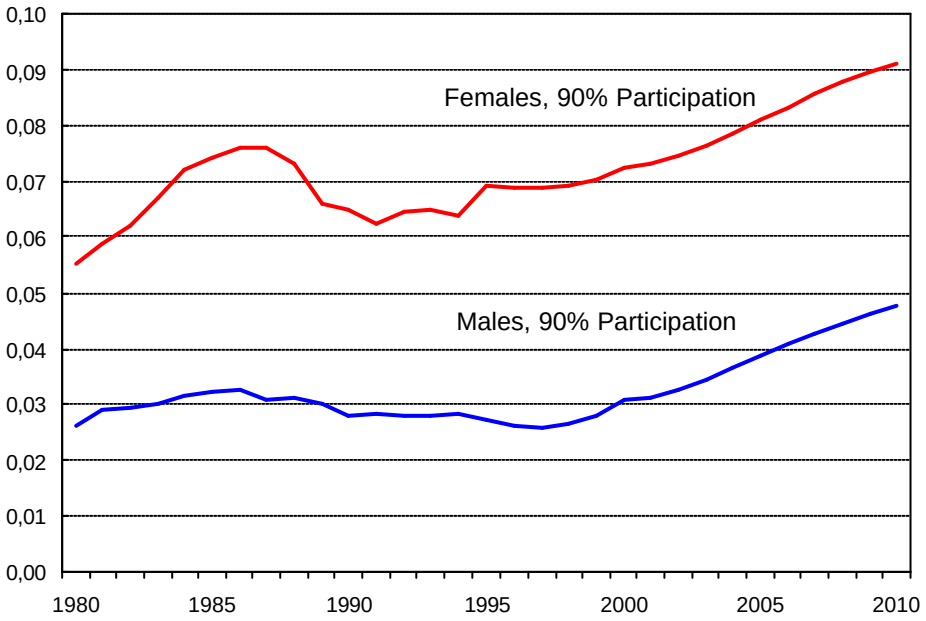


Figure 6. *Costs of Early Retirement of Males and Females with a 10-percentage-point Lower Participation Rate of Older Workers.*



In 2000, assuming a participation rate for older workers after a reform of 90 per cent that of younger workers, the cost of early retirement for men was 3.9 per cent of potential GDP, whereas for women it was 7.2 per cent. If there is a natural barrier to the labor force participation of older workers, then the cost figures we have derived may be overestimated. On the other hand, the participation rates resulting from a policy for women are tied to the potential participation rates of younger women, which may be low relative to those at older ages due to childrearing and other factors.

On the other hand, there are a number of important factors leading to a higher gap. First is the equilibrium effect through wages. The effect through wages depends on the savings in benefit expenditures. For example, a 1 per cent savings due to benefit expenditure costs feeds through (using equation (2.7)) to a higher output and raises the cost of early retirement in 1998, for instance, from 6.3 per cent in the absence of wage effects to 7.2 per cent. These savings thus have a significant effect on work incentives and productivity and hence output.

Another significant factor leading to a higher gap is the fact that the baseline for older workers is employment of younger workers. Younger workers may not be experiencing full employment, and, indeed, at least theoretically, older workers could have higher participation rates than younger workers. This consideration suggests that perhaps during recessions our cost estimates are too small. But, we do not believe this to be a weakness of the analysis – on the contrary. The cost of recessions is a separate issue, and we focus here only on the cost of having low labor force participation of older workers relative to younger workers.

4 Addressing the Burden

The implications of an ageing population are clear. Even in the absence of further decreases in labour market participation of older workers, there will be considerable increase in the economic costs of early retirement in coming years simply because there will be more older workers. In 2010, for instance, we estimate the output gap in the

OECD at 9.1% with baseline assumptions. In order to keep the gap at the 2003 level of 7.6%, labour force participation in the 55-64 age bracket would need to rise to roughly 56% from the current level of about 51%. While this is not completely implausible, it does point to the fact that even maintaining the current level of costs as a percentage of GDP is going to require significant shifts in retirement behaviour of older workers.

Addressing the costs of early retirement can occur either from keeping younger people in the workforce or encouraging retirees to return to work. The latter approach is presumably more difficult. Anderson, Burkhauser, and Slotsve (1992) look at experience of work after retirement and the types of workers who go back to work. Less skilled workers and those in poor health are less likely to return to work and accordingly policy measures should take into account the relative willingness of different types of individuals to return to work.

In many respects the problem of encouraging labour market participation of older workers has close parallels with the debate over appropriate policy instruments with which to encourage employment of younger workers. Phelps (1997) for instance argues for wage subsidies as a means to raise the return to work relative to not working. Lower taxes on work for older workers are equivalent to a wage subsidy for continuing to work. On the other hand, Orszag and Snower (2000) and Snower (1994) examine employment vouchers targeted only at those not currently in work. In the early retirement context, such vouchers would go to those already retired to encourage them to return to work. Orszag and Snower (2002) compare vouchers and wage subsidies for employed workers and find that vouchers work better where there is a steep wage profile whereas wage subsidies work better when there is little prospect of wage increase and workers are risk averse. Therefore, if these results carry over to the early retirement setting, it appears that addressing the rate of tax on continued work is the appropriate policy instrument. A detailed analysis of the different policy options for reducing early retirement and their equilibrium steady state impact is an important area for research.

5 Conclusion

In this paper, we have examined the cost of early retirement in the OECD using a simple equilibrium model. Our experiments suggest, though, that the cost of early retirement is not wildly sensitive to reasonable variations in assumptions. The analysis suggests a cost estimate of early retirement policies of about 7.5 per cent of potential annual OECD output, with higher figures in the EU. This cost rose rapidly after the 1970s, peaked in the mid-1980s and has declined since but is still not at the 1970s' level. The calculations separate out the cost of recessions by using relative labor participation as a benchmark. The total output gap due to lack of full labor force utilization is considerably higher, as was noted in Gruber and Wise (1999). While these calculations measure the cost of early retirement and the potential gains from successful reforms, they do not suggest specific reforms, and the micro-modelling of the gains from specific reforms is clearly outside the scope of our analysis. Finally, reducing early-retirement does not necessarily improve welfare.

At the same time, our analysis shows that even if labour force participation remains constant, the ageing of the population in OECD countries will result in a significantly higher burden from early retirement in the future. To keep the costs of early retirement at current levels for men in 2010, for instance, male labour force participation rates would need to rise to 70% in 2010 from 66% today. While this is not implausible, it does highlight the need for continued emphasis on behavioural adjustments.

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