

IMSERSO / European Centre / UNECE

# Workshop

---

## **Sustainable Ageing Societies: Indicators for Effective Policy-Making**

### **Thematic session 2**

Sustainability of social security schemes  
and pension systems

Madrid, Spain, 14-16 April 2004

## **Public Pension Program Provisions: Induced Retirement and Program Cost**

*David A. Wise*

# **PUBLIC PENSION PROGRAM PROVISIONS: INDUCED RETIREMENT AND PROGRAM COST**

by  
David A. Wise

## **Policy Brief for Discussion at the IMSERSO / European Centre /UNECE Workshop on Sustainable Aging Societies: Indicators for Effective Policy-Making Madrid, Spain, 14-16 April 2004**

For some time it has been clear that under pay-as-you-go social security systems, governments around the world made promises they couldn't keep. The systems were not sustainable. Social reform discussions have been ongoing in almost all developed countries. Some proposals have called for fundamental reform, often calling for funding through personal social security accounts. Other proposals have called for "incremental" reform, suggesting increases in retirement ages and other changes without changing the basic pay-as-you-go structure of the systems. Here I emphasize provisions of social security systems that induce older persons to leave the labor force and the cost of the reduced labor force participation. My conclusions—in particular my suggested "indicators"—are based on an ongoing project to study the implications of social security provisions in 12 countries--see Gruber and Wise (1999a-b and 2004a-b.)

What caused the social security problem? It has been commonly assumed that the problem was caused by population aging. The number of retirees is now increasing very rapidly relative to the number of younger persons in the workforce. In addition, persons are living longer, so that persons who reach retirement age will be receiving benefits longer than they used to. The increase in the ratio of the number of persons age 65 and over to the number 20 to 64 is striking in almost every country. In Japan, with the most rapid population aging, the ratio will more than double by 2020 and will almost triple by 2050. These demographic trends have placed enormous pressure on the financial viability of the social security systems in these countries, increasing the number of retirees relative to the number of employees who must pay for the benefits for retirees.

The financial pressure caused by demographic trends has been compounded by another trend. In virtually every country employees were leaving the labor force at younger and younger ages, further increasing the ratio of retirees to labor force participants who must pay for the benefits. The decline in the labor force participation rates of men aged 60 to 64 between 1960 and 1996 was substantial in each of the countries participating in our project, but was much greater in some countries than in others. In the early 1960s, the participation rates were above 70% in all but one of the countries and above 80% in several countries. By the mid 1990s, the rate had fallen to below 20% in Belgium, Italy, France, and the Netherlands. It had fallen to about 35% in Germany and 40% in Spain. Although United States analysts have often emphasized the "dramatic" fall in that country, the U.S. decline from 82% to 53% was modest in comparison to the much more precipitous declines in these European countries. The decline to 57% in Sweden was also large, but modest when compared to the fall in other countries. Japan stands out with the smallest

decline of all the countries, from about 83% to 75%. Labor force participation rates of 45-59 year old men, as well as those 60 and older, have also declined substantially.<sup>1</sup>

What had gone largely unappreciated was that, like the retirement incentives built into employer-provided defined benefit plans--in the United States for example--defined benefit social security programs could also induce older workers to leave the labor force. Thus the provisions of the programs can contribute to their own financial insolvency.

## **Unused Labor Force Capacity**

The proportion of men out of the labor force between ages 55 and 65 is shown in Figure 1 for 11 countries. The term “unused labor force capacity” is used to emphasize that incentives to induce older persons to leave the labor force reduces national economic production, recognizing of course that not all persons in these age ranges want to work or are able to work. For the 55 to 65 age group the proportion ranges from close to 0.7 in Belgium to about 0.20 in Japan. Subsequent results will show the relationship between social security plan provisions to leave the labor force and this measure of unused labor force capacity. I first describe the measurement of incentives to retire.

## **Measuring Incentives to Retire and Indicators of Inducements to Retire Early**

The provisions that induce withdrawal from the labor force themselves suggest the “indicators” that can be used to monitor the degree to which social security provisions foster early retirement. Three key features of social security systems have an important effect on labor force participation incentives.

**Eligibility Age:** The first is the age at which benefits are first available. This is called the early retirement age, or the age of first eligibility. Across the countries participating in our project, the first eligibility age ranges from about 53 for some employee groups in Italy to 62 in the United States. The “normal” retirement age—e.g. 65 in the United States—is also important, but typically much less important than the early retirement age. Now in most countries, few people work until the “normal” retirement age.

**Benefit Accrual:** The second important feature of plan provisions, which is strongly related to extent to which people continue to work after the early retirement age is the pattern of benefit accrual after the age of first eligibility. The idea can be explained this way: Consider two components of total compensation for working an additional year. One component is current wage earnings. The other component is the “increase” in future promised social security benefits. Consider a person who has attained the social security early retirement age (when benefits are first available) and suppose that a person is considering whether to work for an additional year. It is natural to suppose that if benefit receipt is delayed by a year, benefits when they are received might be increased, to offset the receipt of benefits for one fewer years. But in most countries this is not the case. Once benefits are available, a person who continues work for an additional year

---

<sup>1</sup> In many countries, the aging population and early retirement trends come on top of very generous retirement benefits, further compounding the financial consequences of these trends. For example, in Belgium, France, Italy, and the Netherlands the social security replacement rates at the early retirement age—the benefit relative to final earnings—average 77%, 91%, 75%, and 91% respectively. In contrast the replacement rate at the early retirement age in Canada is only about 20%; in the United States it is about 41%.

will receive less in social security benefits over his lifetime than if he quit work and started to receive benefits at the first opportunity. That is, the present value of expected social security benefits declines. In many countries, this loss of social security benefits can offset a large fraction of the wage earnings a person would receive from continued work. Thus there is an implicit tax on work and total compensation can be much less than net wage earnings.

A bit more formally, consider the difference between the expected discounted value of social security benefits (social security wealth) if retirement is age  $a+1$  and the present value if retirement is at age  $a$ — $SSW(a+1) - SSW(a)$ . This difference is called the accrual of benefits between age  $a$  and age  $a+1$ . It is this value that is often negative. If the accrual is positive it adds to total compensation from working the additional year; if the accrual is negative, it reduces total compensation. The ratio of the accrual to net wage earnings is an implicit tax on earnings if the accrual is negative and an implicit subsidy to earnings if the accrual is positive. Thus a negative accrual discourages continuation in the labor force and a positive accrual encourages continued labor force participation. This accrual rate, and the associated tax rate, is a key calculation that was made in the same way for each of the countries in our project. As it turns out, the pension accrual is typically negative at older ages: continuation in the labor force means a loss in pension benefits, which imposes an implicit tax on work and provides an incentive to leave the labor force. In many countries the implicit tax on work is 80 percent or more the first year after benefit eligibility.

This feature of plan provisions is related to a technical term called “actuarial adjustment.” In the United States, for example, if benefits are taken at 64 instead of 65, they are reduced just enough to offset the receipt of benefits for one additional year. If they are taken at 63 instead of 65 they are reduced just enough to offset the receipt of benefits of 2 additional years, and so forth.<sup>2</sup>

In Germany there was no actuarial adjustment before the 1992 reform legislation, and until recently most employees still retired under provisions that did not include actuarial adjustment. The magnitude of the combined effect of early retirement under the disability program in Germany and no actuarial adjustment is illustrated conceptually in Figure 2. The official social security normal retirement age in Germany is 65. Suppose that at that age, benefits would be 100 units per year. Many employees can receive benefits at age 57 through the disability program (emphasized just below). The disability benefits at 57 are essentially the same as normal retirement benefits at age 65. That is, a person eligible for disability benefits at age 57 who did not take the benefits at that age would forego 100 units per year. On the other hand, suppose benefits were reduced actuarially if taken before age 65 and increased actuarially if taken after age 65. Then benefits taken at 57 would be about 60 instead of 100. And if receipt of benefits were delayed for a year, annual benefits would be increased just enough to offset their receipt for one fewer years. And if the receipt of benefits were delayed past age 65 they would be increased actuarially. Benefits if taken at 70 would be about 140 instead of 100. There would be no incentive to take benefits early. Indeed there would be no social security incentive to take benefits at any specific age, once benefits were available. The playing field would be level for individuals to make retirement decisions based on the individual circumstances and preferences.

---

<sup>2</sup> Now, benefits in the United States are actuarial between 62 and 65, but are increased less than actuarially if the receipt of benefits is delayed beyond age 65, thus providing an incentive to leave the labor force at 65. Under current law benefits will eventually slowly become actuarial.

**Disability Program Benefits:** As the German example above suggests, a third important feature of social security systems is that in many countries disability insurance and special unemployment programs essentially provide early retirement benefits before the official social security early retirement age. The importance of disability programs is indicated in Figure 3 that shows the proportion of men collecting disability benefits by age in 7 countries.<sup>3</sup> At age 54, the proportion of men collecting disability benefits ranges from under 5 percent in Spain to over 20 percent in the United Kingdom. At age 64 the range is from about 7 percent in Spain and the United States to over 37 percent in Sweden.<sup>4</sup> In each of the countries with very high proportions, the rate essentially falls to zero at the “normal” retirement age, which is 65 in Sweden, the UK, the Netherlands, and Germany, and age 60 in France. At the normal retirement age, benefits are obtained from country social security programs rather than disability programs. It is evident that the receipt of benefits from a disability program does not always indicate that a person is physically disabled. It is surely implausible that the rate of physical disability varies so much among these industrialized countries.<sup>5</sup>

Where these programs are important they are incorporated in the social security incentive calculations in our analyses. For example in Germany, many employees retire as early as age 57 under a “disability” program.

To demonstrate the importance of monitoring these retirement incentives, I now illustrate the labor force participation and the cost implications of the inducements for older persons to leave the labor force. I show figures for men here. The country papers from which these data are drawn present analogous data for women as well as men.

### **Retirement Incentives and Labor Force Participation**

To summarize the social security incentive to retire in each country we propose a simple measure. At each age, beginning with the early retirement age, the implicit tax on work was calculated in each country. These implicit tax rates on work were then summed beginning with the social security early retirement age and running through age 69.<sup>6</sup> This measure we called the “tax force” to retire. The sum is shown for each of the countries in Figure 4. This tax force to retire ranges from over 9 in Italy to about 1.5 in the United States.

### **The Tax Force to Retire and Unused Labor Force Capacity**

The key finding from this phase of our analysis is shown in Figures 5 and 6. Figure 6 shows the relationship between the tax force to retire and unused labor force capacity—the proportion of men between ages 55 and 65 that is out of the labor force. It is clear that there is a very strong correspondence between the two. Figure 6 shows the same data for all of the countries except Japan, and rescales the tax force measure to achieve a linear relationship between the tax

---

<sup>3</sup> The number of countries is limited to make the figure more readable.

<sup>4</sup> The data for Italy are similar to the data for Spain. The rates for Belgium and Canada are similar and follow a path approximately midway between the path for the United States and the path for Germany.

<sup>5</sup> Burkhauser and Daly, for example, find that disability rates among men in the working age range 25 to 59 are about the same in Germany and the United States—Burkhauser, Richard V. and Mary C. Daly (1992). “Disability and Work: The Experiences of American and German Men.” Federal Reserve Bank of San Francisco *Economic Review*, Number 2.

<sup>6</sup> The summation could start at a younger age to account for the importance of special disability and unemployment benefits in some countries.

force to retire and unused labor force capacity. The relationship between the two is perhaps even more evident. The proportion of variation in unused labor force capacity that is explained by the tax force to retire is 86 percent (as indicated by the R-squared value).

### **The Cost of Early Retirement Inducement**

The results above were reported in Gruber and Wise (1999a) and the introduction (Gruber and Wise 1999b). The first stage of our on-going project established two key results: (1) that the social security systems in many countries provide enormous incentives to leave the labor force at older ages; and (2) that there is a strong correspondence between social security incentives to retire and the withdrawal of older workers from the labor force. Subsequent analysis of the project country teams estimated how much the retirement age would change if social security provisions were changed, based on within-country analysis of the determinants of retirement. The results strongly confirm that the relationship between labor force participation and retirement across countries is not the result of cultural differences, for example, that could yield different norms, or “taste” for work, at older ages across countries. The within country analyses show similar responses to retirement incentive effects, even though the countries differ with respect to cultural histories and institutions. For example, Figure 7 shows the effect of the three-year increment in eligibility ages, based on the method that we believe is most likely to reflect the long-run effect of such a reform. To help to standardize for the wide variation across countries in the age at which retirement begins, each bar shows the reduction in the fraction of the population out of the labor force four years after the age at which a quarter of the population has retired (which is an “effective retirement age”). There are two notable features of this figure. The first is that the average reduction in the OLF proportion is very large—47 percent. The second notable feature of the figure is the similarity across countries. The reduction is between 34 and 55 percent in 9 of the 12 countries. In Germany and Sweden, the reductions are 77 and 68 percent respectively. (The average reduction is 28 percent using the simulation method that we believe is likely on average to substantially underestimate the response to the three-year increment.)

The third phase of the project (not yet published) focused on estimation of the fiscal effects of changes in plan provisions. What would be the financial implications of changing the provisions of social security systems? Again, the results are demonstrated by simulating the fiscal effects of illustrative reforms. For example, the net reduction in total government expenditure resulting from a three-year increment in eligibility ages is shown in Figure 8. The net reduction includes both the change in social security benefits and the change in government revenue—from the prolonged labor force participation and the associated increase in earnings and other taxes. For example, in Germany, the increase in government revenue resulting from a three-year increment in all eligibility ages would be equivalent to about 36 percent of the current cost of the program. Across all countries, the average increase in revenue is equivalent to 27 percent of current program cost—reported as a reduction in government expenditures minus revenues. Figure 9 shows the increase in government revenue—resulting from the three-year increment—as a percent of Gross Domestic Product. The average increase in revenue over all countries is equivalent to 0.72 percent of GDP—again reported as a reduction in government revenues minus expenditures. Figure 10 shows the fiscal effect of actuarial adjustment, as a percent of base cost. As expected, there is large variation across countries. In the United States and Canada, for example, where adjustment is close to actuarial already, the effect is small. In Germany, where until recently there was no actuarial adjustment, the reduction is about 43 percent of current program cost. In France, actuarial increase in benefits after the age 60 normal retirement age would result in an increase in net government expenditure. The same is true in the United Kingdom. On average the decrease in

government expenditure minus revenue is equivalent to 2.8 percent of the base cost across all countries. Excluding the United Kingdom, the average is about 26 percent—reported as a reduction in government expenditures minus revenues.

### **Indicators of Inducement to Retire Early**

The finding that social security provisions penalize work, and thus distort retirement decisions, is a critical foundation for understanding the effects of social security and in particular the implications of system reform. The issues raised here might be monitored by following the relative trends in these three indicators across countries:

1. What are the youngest eligibility ages for benefits, including benefits from disability programs?
2. What is the accrual of benefits if retirement (benefit receipt) is delayed after the first eligibility age?
3. How many persons are collecting benefits from disability programs at ages younger than the social security early retirement age? (It is clear that benefits based on poor health status must be provided; the issue here is the vast difference in the receipt of benefits from “disability programs” in countries that likely have small differences in health status.)

As a general indicator of inducement to retire early, following the relative trend across countries in the labor force participation of men between ages 61 and 65 may be useful indicator.

### **Going Forward**

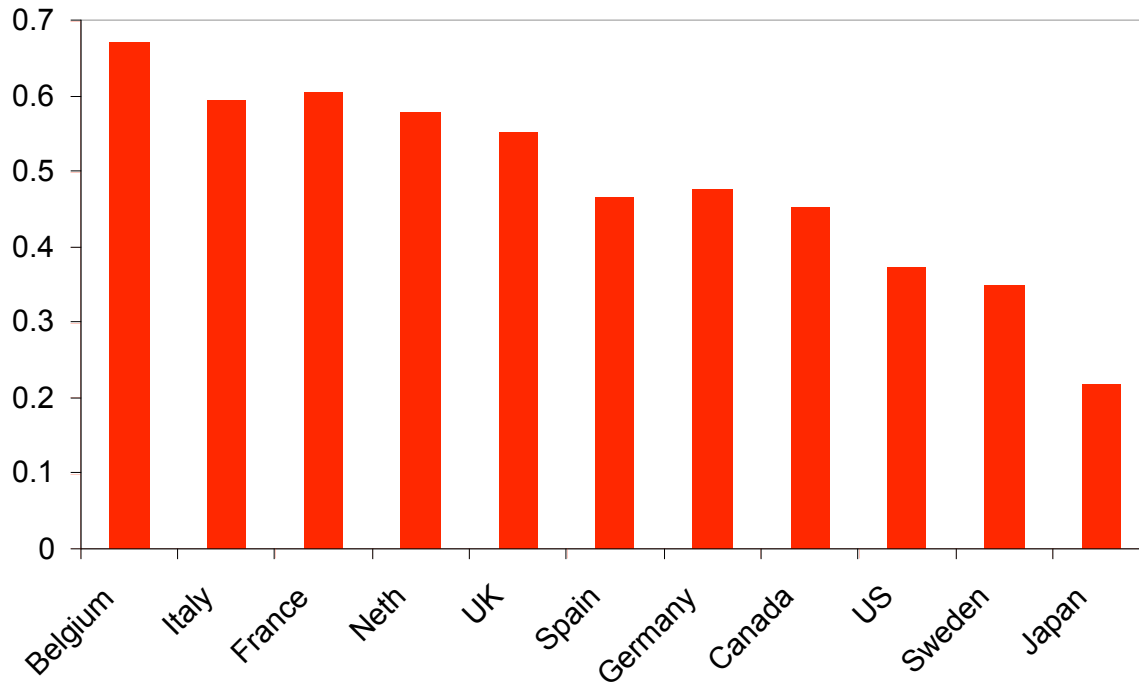
Going forward, our ongoing project will turn attention to related issues. In particular, we hope:

- To understand the relationship between social security system provisions and the well-being of the elderly and the young.
- To understand the relationship between social security system provisions and the employment of the young.
- To understand how the relationship between health status and retirement varies with the provisions of social security (including disability insurance) programs, and to understand how the well-being of the disabled and the non-disabled elderly depends on program provisions.

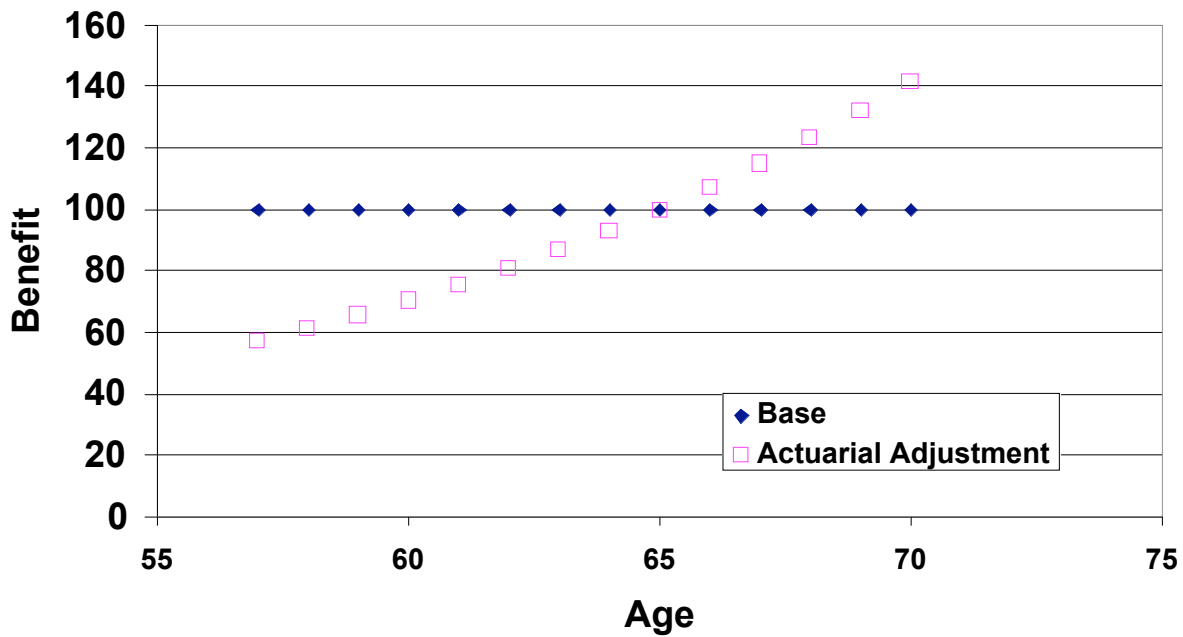
### **REFERENCES**

- Gruber, Jonathan and David A. Wise (editors), *Social Security and Retirement around the World*. University of Chicago Press, 1999a.
- Gruber, Jonathon and David A. Wise. “Social Security and Retirement Around the World: Introduction and Summary,” in Jonathon Gruber and David A. Wise, eds., *Social Security and Retirement Around the World*, University of Chicago Press, 1999b.
- Gruber, Jonathan and David A. Wise (editors), *Social Security and Retirement around the World: Micro-Estimation*. University of Chicago Press, 2004a.
- Gruber, Jonathan and David A. Wise, "Introduction and Summary," In J. Gruber and D.A. Wise, (eds.), *Social Security Programs and Retirement around the World: Micro-Estimation*, University of Chicago Press, 2004b.

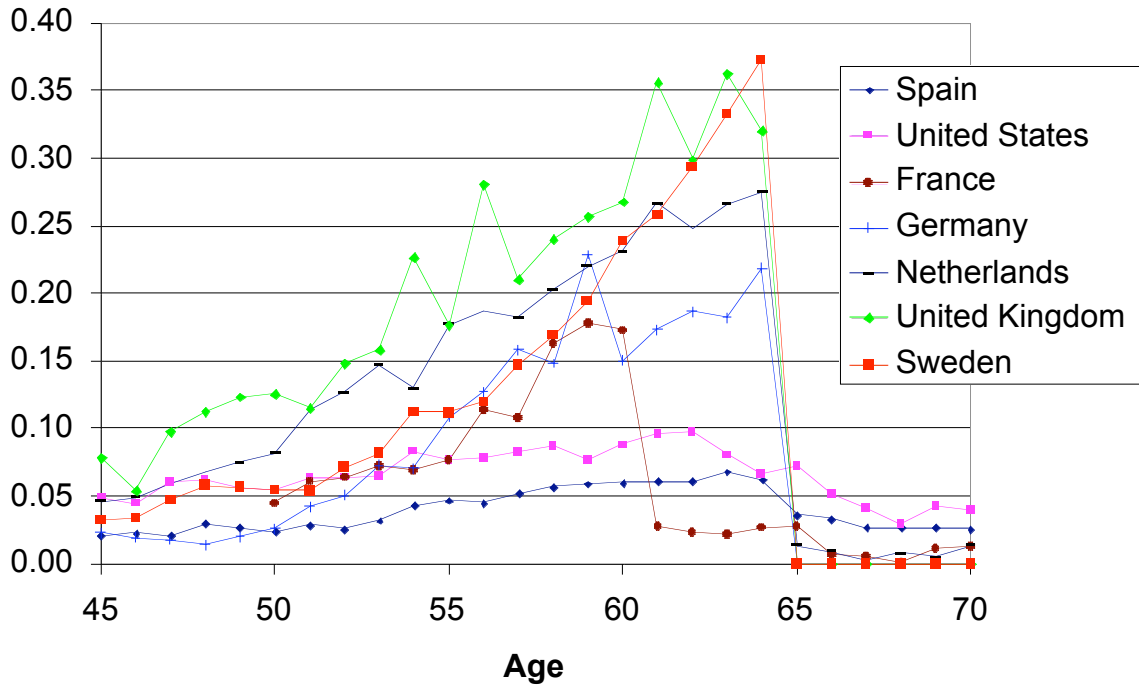
**Figure 1. Unused productive capacity:  
men age 55 to 65**



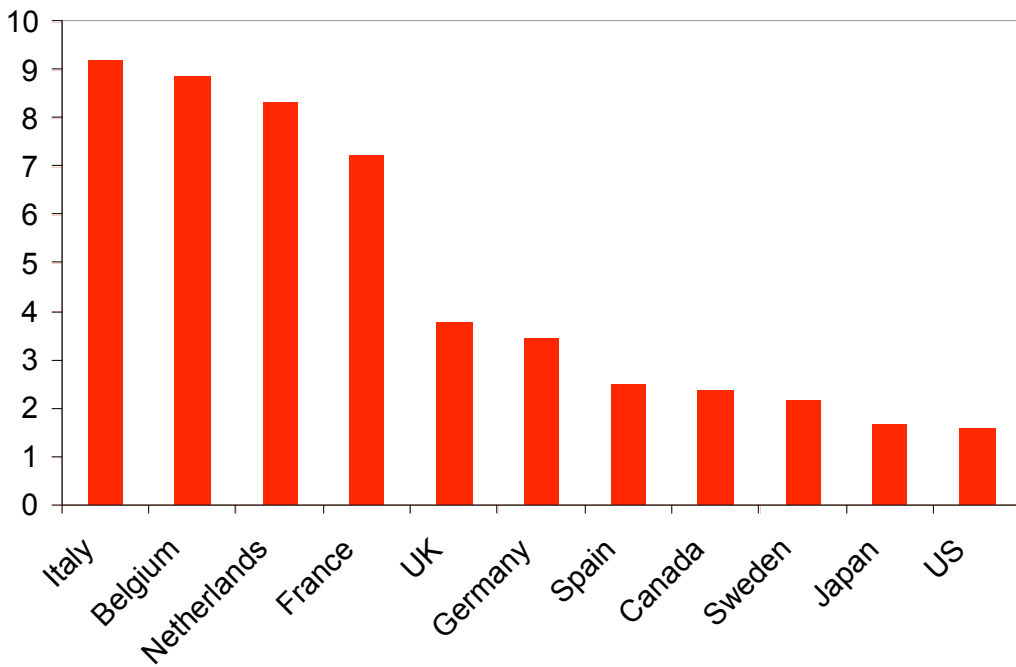
**Figure 2. Germany: base and actuarial adjustment**



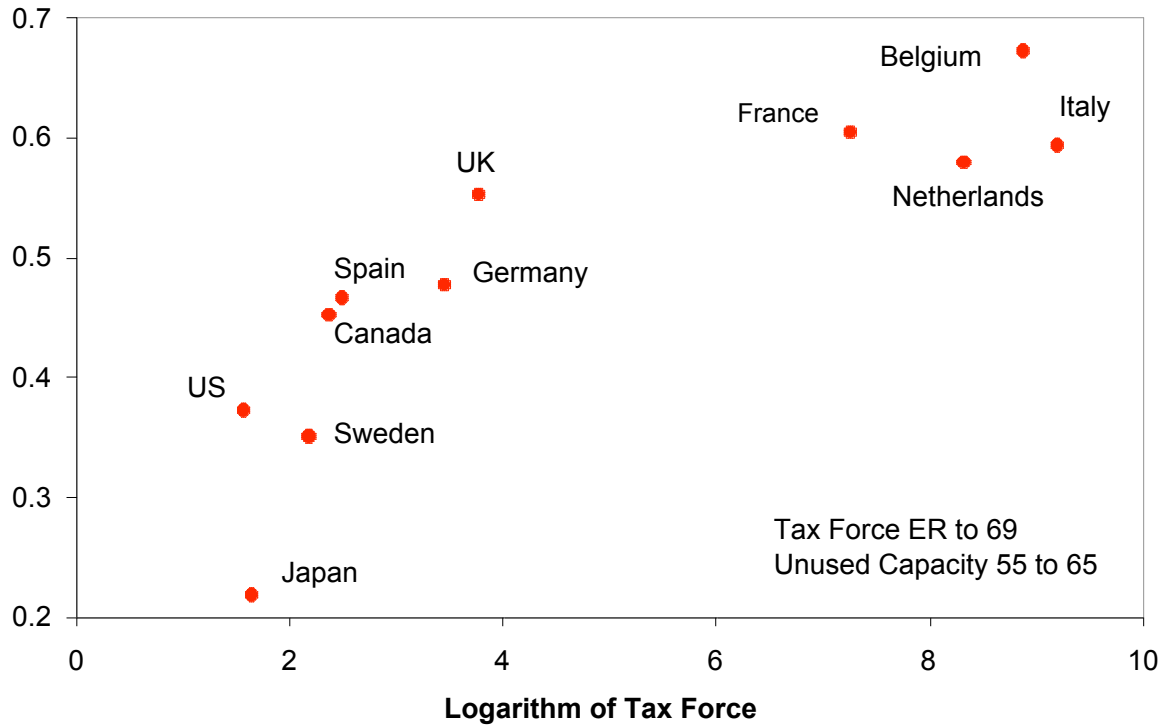
**Figure 3. Proportion of men collecting disability benefits, by age**



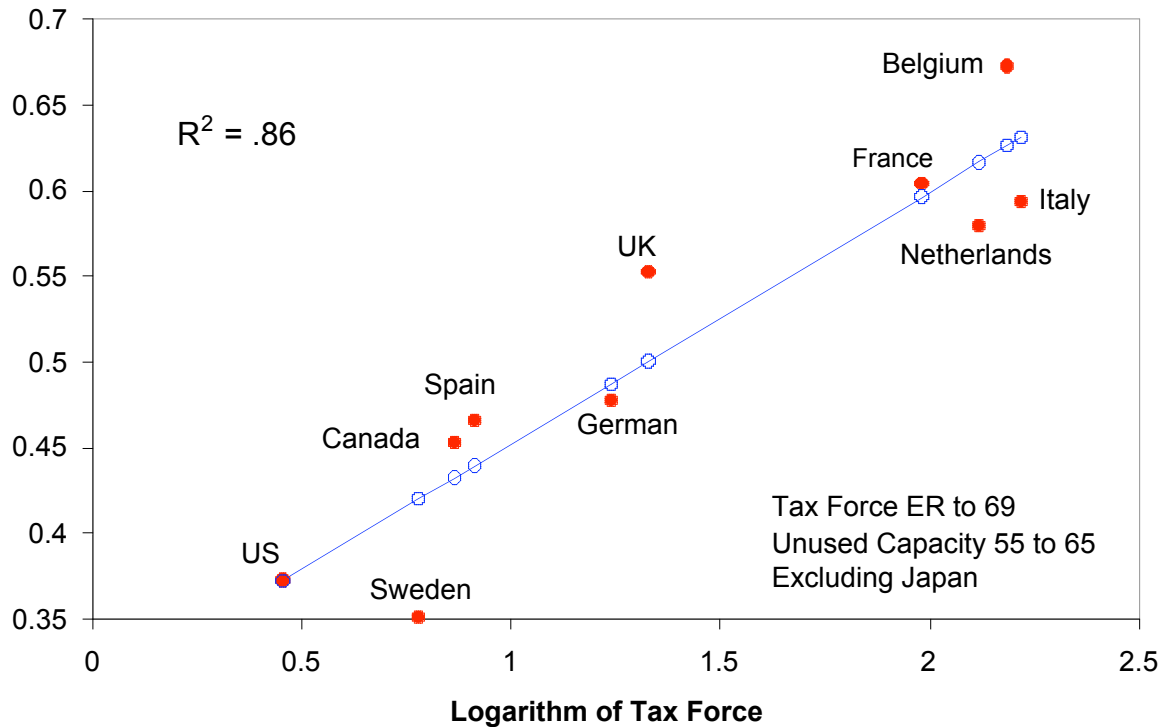
**Figure 4. Sum of Tax Rates on Work From Early Retirement Age to 69**



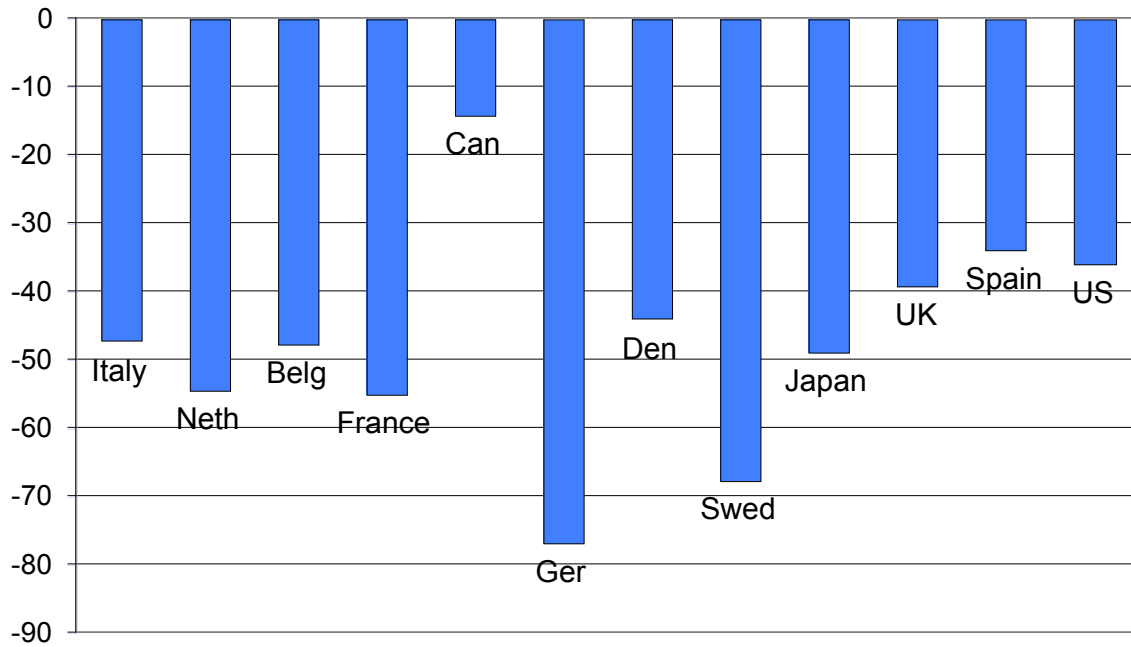
**Figure 5. Unused Capacity v Tax Force to Retire**



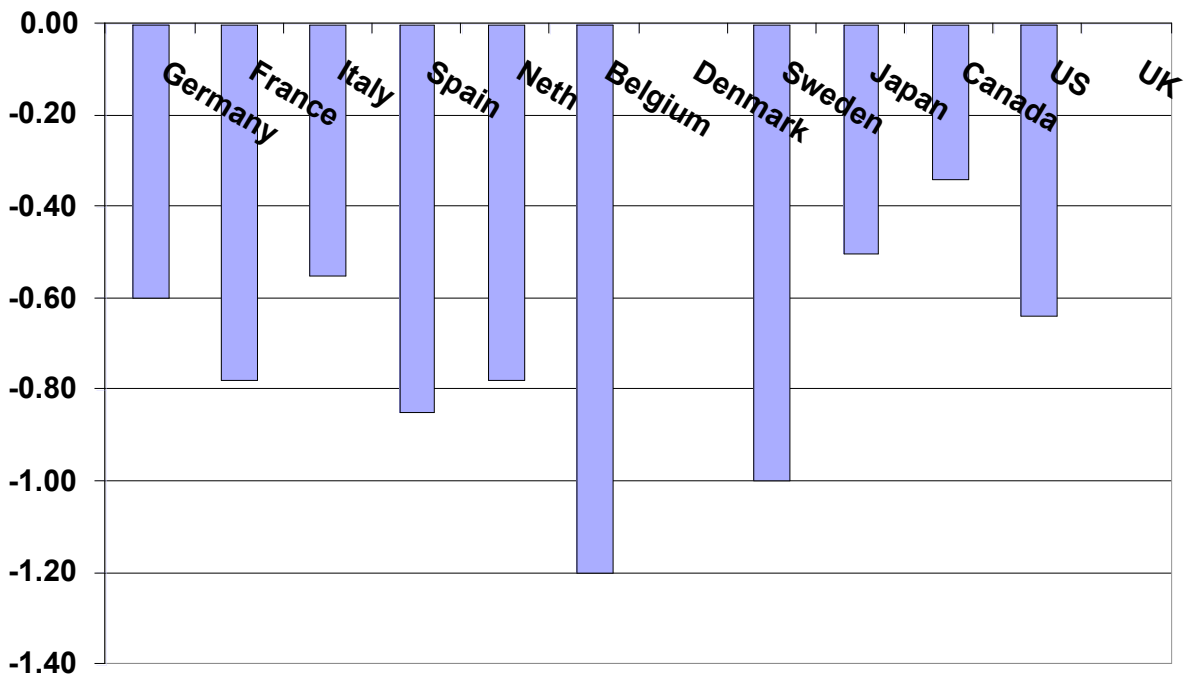
**Figure 6. Unused Capacity v Tax Force to Retire**



**Figure 7. OLF Change 25% Age + 4 Yrs  
Base versus 3-Year Delay: OV-S3**



**Figure 9: Total fiscal effect of  
3-yr increment, as % of GDP**



**Figure 10. Total fiscal effect of actuarial reform, as % of base cost**

