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Social Security and Retirement: An International Comparison

By JONATHAN GRUBER AND DAVID WISE*

In almost every industrialized country, the population is aging rapidly, and individuals are living longer. The ratio of the number of persons age 65 and over to the number age 20–64 is shown Figure 1 now and in future years for 11 countries. The increase 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. The financial pressure caused by demographic trends is compounded by another trend. In virtually every country, employees are leaving the labor force at younger and younger ages. The trend is most evident for men of course, but for older women participation is also declining, in spite of large increases in the labor-force participation of younger women. In some countries, the labor-force participation rates of 60–64-year-old men have fallen by 75 percent over the past three decades, increasing substantially the proportion of retired persons to those in the labor force.

One explanation for the striking decline in labor-force participation is that social-security provisions themselves provide enormous incentive to leave the labor force early, thus by their very structure exacerbating the financial problems that they face. This is the aspect of social-security plan provisions that is emphasized in this paper. By considering the relationship between plan provisions on the one hand and labor-force participation rates on the other, we draw attention to the important role that social security can have on the labor-force decisions of older persons.

This paper presents comparisons based on evidence presented in papers written for 11 industrialized countries. The authors, who are listed below, in the * footnote, are part of an ongoing project to analyze the relationship between social-security plan provisions and retirement in many countries, as well as other related issues. Three of the individual country papers are summarized by other participants in this session. Important conclusions that can be drawn from comparison of the findings of all of the individual papers are distilled in this brief paper. The project relies on the analysis of a large group of economists who have analyzed social-security provisions and labor-force participation in their own countries. The central feature of the project is the presentation of comparable descriptive data and analytic calculations for each of these 11 countries. Thus, comparisons can be made on a common

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* Gruber: Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139, and NBER; Wise: J. F. Kennedy School of Government, Harvard University, 79 John F. Kennedy St., Cambridge, MA 02138, and NBER. This work is based on papers by Pierre Pestieau and Jean-Philippe Stijns (1998), Belgium; Jonathan Gruber (1998), Canada; Didier Blanchet and Louis-Paul Pelé (1998), France; Axel Börsch-Supan and Reinhold Schnabel (1998b), Germany; Agar Brugiavini (1998), Italy; Takashi Oshio and Naohiro Yashiro (1998), Japan; Arie Kapteyn and Klaas de Vos (1998), Netherlands; Michele Boldrin, Sergi Jimenez-Martin, and Franco Peracchi (1998), Spain; Mårten Palme and Ingemar Svensson (1998), Sweden; Richard Blundell and Paul Johnson (1998), United Kingdom; and Peter Diamond and Jonathan Gruber (1998), United States. The work was supported by the National Institute on Aging through grant no. 5 P20 AG12810 to the National Bureau of Economic Research. We are indebted to comments from all of the country-paper authors in putting together this comparison.

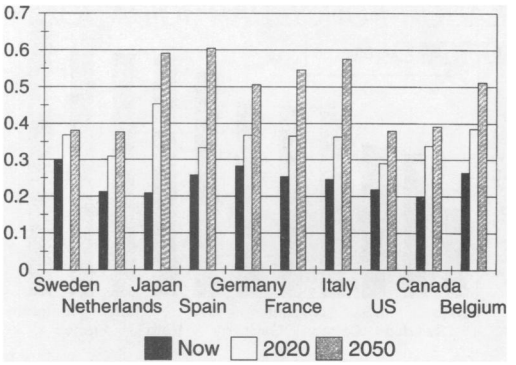


FIGURE 1. RATIO OF POPULATION AGE 65+ TO POPULATION AGE 20–64

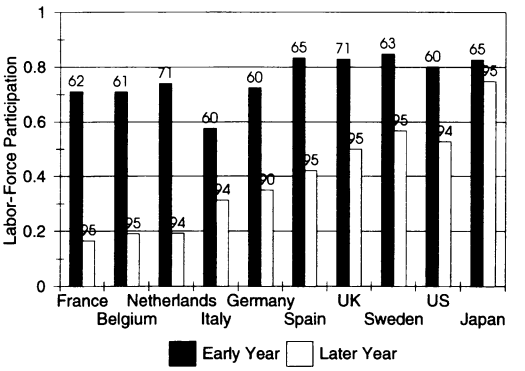


FIGURE 2. DECLINE IN LABOR-FORCE PARTICIPATION, AGE 60–64

Note: Numbers above histogram bars give years corresponding to the data for each country.

footing. The core of each country paper is a detailed analysis of the retirement incentives inherent in the provisions of that country's retirement-income system. By making the same analytic calculations, the individual studies provide a means of comparing the retirement incentives among the nations. To facilitate comparisons across countries, we refer to data for men in this paper. The individual country papers present parallel data for both men and women, and it is clear that the incentive effects of social-security plan provisions are important for women as well as for men.

I. Decline in Labor-Force Participation

The decline in the labor-force participation of older persons is perhaps the most dramatic feature of labor-force change over the past several decades. The decline has been striking in all but one of the countries studied here. The labor-force participation rates of men aged 60–64 for the years 1960–1996 are shown for each of the 11 countries in Figure 2. The decline was substantial in each of the countries but was much greater in some countries than in others. In the early 1960's, the participation rates were above 70 percent in all but one of the countries and above 80 percent in several countries. By the mid 1990's, the rate had fallen to below 20 percent in Belgium, Italy, France, and the Netherlands. It had fallen to about 35 percent in Germany and 40 percent in Spain. Although analysts in the United States have often emphasized the "dramatic" fall in that country, the U.S. decline from 82 percent to 53 percent was modest in comparison to the much more precipitous decline in these European countries. The decline to 57 percent 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 percent to 75 percent. Labor-force participation rates of 45–59-year-old men, as well as those 60 and older, have also declined substantially, and these trends can be seen in the individual country papers.

The current relationship between labor-force participation and age for men is shown for each of the countries in Figure 3. At age 50, approximately 90 percent of men are in the labor force in all of the countries. The decline after age 50 varies greatly among countries. By age 65 fewer than 5 percent of men in Belgium are working, and in all but three countries fewer than 20 percent are working. The range in participation rates is large, however. In Japan almost 75 percent of men are still in the labor force at age 60, and 60 percent are still working at age 65.

There are many implications of the withdrawal of older men from the workforce. We emphasize the forgone productive capacity of older employees who leave the workforce. Here we use a rather crude measure of forgone

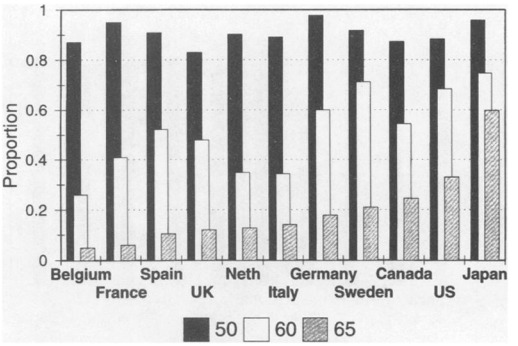


FIGURE 3. CURRENT LABOR-FORCE PARTICIPATION BY COUNTRY AND AGE

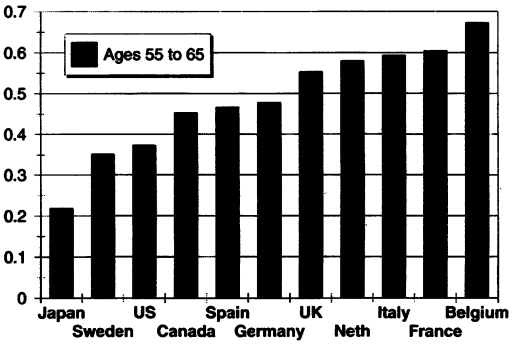


FIGURE 4. UNUSED PRODUCTIVE CAPACITY (PROPORTION)

productive capacity. Consider the proportion of men not working at a given age (1 − LFP, where LFP is the labor-force participation rate): about 0.95 in Belgium and about 0.40 in Japan at age 65, for example. Loosely speaking, we refer to this measure as the "unused productive capacity" at that age. If the unused capacity is added up over all ages in some range, we find the area above the LFP curve in that range. When divided by the total area above and below the curve for that age interval and multiplied by 100, it provides a rough measure of the unused capacity over the age interval, as a percentage of the total labor capacity in that age range.

The unused productive capacity measures for all of the countries are shown in Figure 4 for the 55–65 age group. Unused capacity in this age group ranges from 67 percent in Belgium to 22 percent in Japan. We consider below how this relative measure is related to the provisions of the social-security programs in the countries.

II. Social-Security Benefit Accrual and the Implicit Tax on Work

Two features of social-security plans have an important effect on labor-force participation incentives. The first is the age at which benefits are first available. This is called the early-retirement age. The "normal" retirement age is also important but is typically much less important than the early-retirement age. It may once have been that the normal retirement age was when most people were expected to retire; now in most countries, few people work until the "normal" retirement age.

The extent to which people continue to work after the early-retirement age is closely related to the second important feature of plan provisions, the pattern of benefit accrual. Suppose that at a given age a person has acquired entitlement to future benefits upon retirement. The present discounted value of these benefits, minus future taxes paid, is the person's social-security wealth at that age (SSW_a). The key consideration for retirement decisions is how this wealth will evolve with continued work. If a person is 59, for example, what is the change in SSW if he retires at age 60 instead of age 59? The difference between SSW if retirement is at age a and SSW if retirement is at age $a + 1$, $SSW_{a+1} - SSW_a$, is called SSW accrual.

We compare the SSW accrual to net wage earnings over the year. 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 (along with the associated tax rate) is a key calculation that is made in the same way for

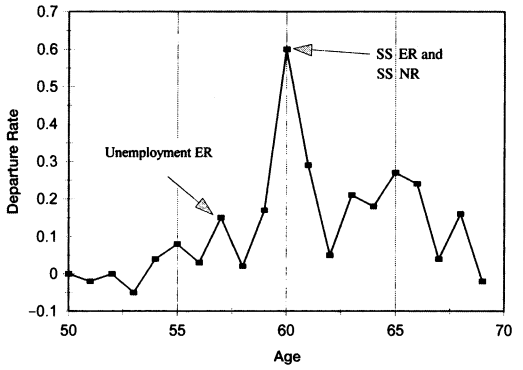


FIGURE 5. HAZARD RATES FOR FRANCE

Notes: ER = early retirement; NR = normal retirement. Persons who become unemployed between ages 57 and 59 are guaranteed income approximately equal to social-security benefits which will begin at age 60.
Source: Blanchet and Pelé (1998).

each of the countries considered here. As it turns out, the pension accrual is typically negative at older ages: continuation in the labor force implies a reduction in the present discounted value of pension benefits. That is, in most countries, due to insufficient actuarial adjustment for fewer years of pension receipt, combined with generous earnings replacement rates for retirees and high social security payroll taxes for workers, there is an implicit tax on work and an incentive to leave the labor force. The magnitude of the SSW accrual and the corresponding tax or subsidy differ greatly from country to country.

Two features of plan provision are particularly important: the age the benefits are first available and the tax on earnings if a person continues to work after this age. Each is discussed in turn.

III. The Importance of the Early-Retirement Age

For illustration, we draw here on data from France. As in all the countries, the current labor-force departure rates in France correspond closely to social-security provisions. Social-security benefits in France are first available at age 60. The age-specific rate of departure from the labor force in France jumps to approximately 60 percent at that age, as shown in Figure 5. (The rather large departure rates before the early-retirement age reflect the guaranteed income provisions for employees who become "unemployed," even if they are not eligible for social-security benefits.) The collective evidence for all countries combined shows that statutory social-security eligibility ages contribute importantly to early departure from the labor force. In addition, unemployment and disability programs serve as early-retirement programs in many countries. This evidence is discussed in some detail in Gruber and Wise (1998) and in the individual country papers.

IV. The Implicit Tax on Work and Labor-Force Participation

The high rate of departure at the early-retirement age in France also illustrates the role of the implicit tax rate on work imposed by social-security plan provisions. At the early-retirement age in France, the implicit tax rate is nearly 70 percent for persons with median lifetime earnings. Such high tax rates are common in European countries, with tax rates over 50 percent in many instances, and in one case as high as 141 percent.

Drawing on the evidence from all of the country studies, we find that the relationship between the implicit social-security tax on work is strongly related to the labor-force participation of older persons. There is no completely satisfactory way to summarize the country-specific incentives for early retirement. The measure we use is based on continued labor earnings once a person approaches eligibility for social-security benefits. For this paper, we sum the implied tax rates on continued work beginning at age 55 and running through age 69. We call this the "tax force to retire." The measure ranges from less than 1 in Japan to over 9 in Italy. (A measure of 15 would imply a 100-percent tax rate on all earnings beginning at age 55.)

The relationship between this tax force to retire and unused labor-force capacity is shown in Figure 6, which presents a scatter plot of the tax force to retire and unused labor capacity between ages 55 and 65. The relationship is clear: there is a strong correspondence between the tax force to retire and

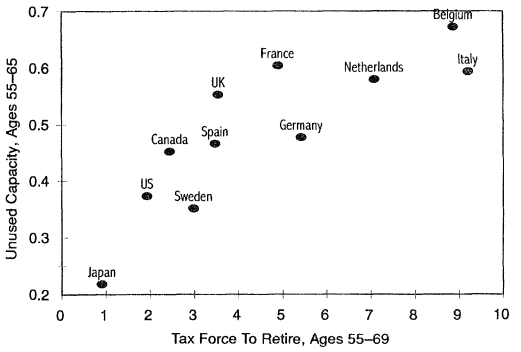


FIGURE 6. UNUSED LABOR-FORCE CAPACITY VERSUS TAX FORCE TO RETIRE

unused labor capacity. The relationship is nonlinear, however. If unused capacity is plotted against the logarithm of the tax force, creating an approximate linear relationship, the "fit" is surprisingly tight. A regression of unused capacity on the logarithm of the tax force, indicates that 82 percent of the variation in unused capacity can be explained by the social-security tax force to retire. Thus, these data suggest a strong relationship between social-security incentives to quit work and the labor-force departure of older workers. As shown in Gruber and Wise (1998), the relationship is not very sensitive to alternative age ranges for measuring either the tax force or unused capacity.

The correspondence between the two should be understood in a broader context, however. There are two distinct issues: First, while it seems apparent that social-security provisions do affect labor-force participation, it also seems apparent from the country papers that in at least some instances the provisions were adopted to encourage older workers to leave the labor force. For example, anecdotal evidence suggests that in some countries it was thought that withdrawal of older employees from the workforce would provide more job opportunities for young workers. This possibility does not by itself bring into question a causal interpretation of the relationship between plan provisions and retirement. To the extent that it is true, it simply says that in some instances the provisions were adopted for a particular reason. And, the data show that they worked.

The second issue, however, must temper a causal interpretation of the results. It could be argued that, to some extent at least, the social-security provisions were adopted to accommodate existing labor-force participation patterns, rather than the patterns being determined by the provisions. For example, early-retirement benefits could be provided to support persons who are unable to find work and thus are already out of the labor force. While this is surely possible, the weight of the evidence suggests otherwise. The paper by Börsch-Supan and Reinhold Schnabel (1998) in this session and Blanchet and Pelé (1998) provide clear illustrations that changes in social-security provisions precede changes in labor-force participation, as do other examples in the individual country papers.

In short, it is clear that there is a strong correspondence between the age at which benefits are available and departure from the labor force. Social-security programs often provide generous retirement benefits at young ages. In addition, plan provisions often imply large financial penalties on labor earnings beyond the social-security early-retirement age. Furthermore, in many countries, disability and unemployment programs effectively provide early-retirement benefits before the official social-security early-retirement age. We conclude that social-security program provisions have indeed contributed to the decline in the labor-force participation of older persons, reducing the potential productive capacity of the labor force. It seems evident that if the trend to early retirement is to be reversed, as will almost surely be dictated by demographic trends, changing the provisions of social-security programs that induce early retirement will play a key role.

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