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Different Approaches to Pension Reform from an Economic Point of View

Jonathan Gruber and David A. Wise

Most social security systems around the world are operated on a pay-as-you-go (or PAYGO) basis. Taxes collected from working people today are routed directly to pay the benefits of current retirees. Now these systems are faced with rapidly aging populations, increasing the number of retirees relative to the number of persons in the labor force. In addition, employees in most countries are leaving the labor force at younger and younger ages, further increasing the ratio of retirees to employed persons. The combination of these two trends, together with generous retirement benefits in many countries, has placed social security systems around the world under enormous financial stress. Most social security systems face large unfunded liabilities. Without changes in the systems, the prospect is for rapidly increasing tax rates on the young to pay for benefits for the old. What is more, in many countries the young are likely to receive benefits when they retire that are substantially lower than benefits promised today. It seems inevitable that the young will have to consume less to save for their own retirement while at the same time paying the benefits of current retirees. The goal of this paper is to explain the nature of the problem faced by social security systems and then to describe the various approaches that might be used to address the problem, commenting on the economic features of each.

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2.1 What Is the Problem?

We first consider the demographic and labor force trends that have placed financial pressure on social security systems. We then discuss specific features of PAYGO systems that provide a background for discussion of reform proposals. We give particular attention to the critical provisions of most social security programs that induce employees to leave the labor force at increasingly younger ages. Removing these features can be an important component of almost any reform proposal.

2.1.1 Demographic and Labor Force Trends

Suppose that the social security taxes paid today are just enough to pay the benefits of today's retirees. As long as the number of retirees does not grow faster than total earnings of employees, the tax receipts can continue to pay the benefits of retirees. That is not the case today, however. Babies born after World War II—the baby boomers—are now approaching retirement age. 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 those who reach retirement age will be receiving benefits longer than they used to. The ratio of the number of persons aged sixty-five and higher to the number aged twenty to sixty-four is shown in figure 2.1, now and in future years, for ten countries.[1] 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.

This pressure is compounded by another trend: In virtually every country, employees are leaving the labor force at younger and younger ages. The labor force participation rates of men aged sixty to sixty-four for the years 1960 to 1996 are shown for each of the ten countries in figure 2.2. The decline was substantial in each country, but was much greater in some countries than in others. In the early 1960s, the participation rates were higher than 70 percent in all but one of the countries and higher than 80 percent in several countries. By the mid-1990s, the rate had fallen to less than 20 percent in Belgium, Italy, France, and the Netherlands. It had fallen to about 35 percent in Germany and 40 percent in Spain. Although U.S. analysts have often emphasized the "dramatic" fall in the United States, the U.S. decline from 82 percent to 53 percent was modest in comparison to the much more precipitous declines 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

1. These projected trends account for projected birth rates, which are slowing in many countries, and in future years will reduce the number of persons in the labor force.

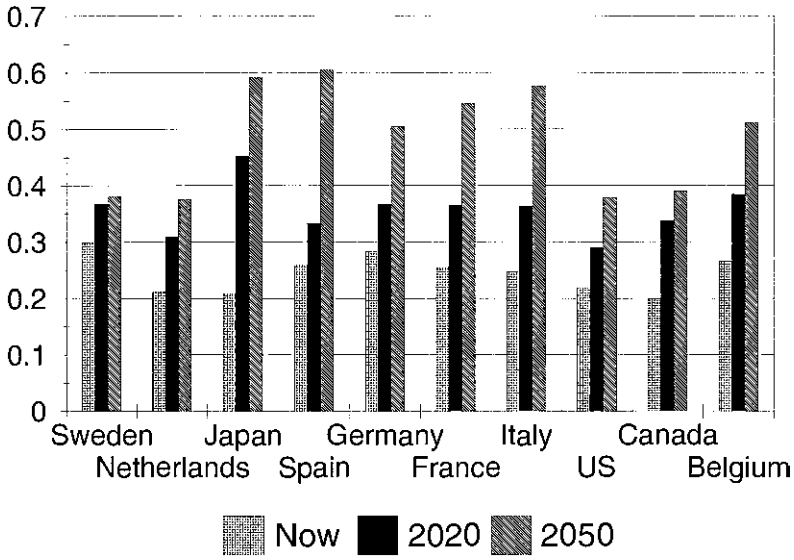

Fig. 2.1 Ratio of individuals in the population aged sixty-five and up to those aged twenty to sixty-four

decline of all the countries, from about 83 percent to 75 percent. Labor force participation rates of forty-five- to fifty-nine-year-old men, as well as those of men aged sixty and older, have also declined substantially. Below, we will emphasize that these declines in labor force participation can be attributed in large part to the provisions of the social security systems themselves.

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—the benefit relative to final earnings—at the early retirement age average 77, 91, 75, and 91 percent, respectively. In contrast, the replacement rate at the early retirement age in Canada is only about 20 percent; in the United States it is about 41 percent.

2.1.2 Incentive Effects of Plan Provisions and Early Retirement

A critical feature of many social security systems is the incentive they provide for early retirement. As emphasized above, the financial pressure of aging populations on social security systems is compounded by younger and younger withdrawal from the labor force. Ironically, in many countries social security provisions themselves provide enormous incentive to leave the labor force early, thus by their very structure exacerbating the financial problems they face. Reducing the work penalty alone could improve the

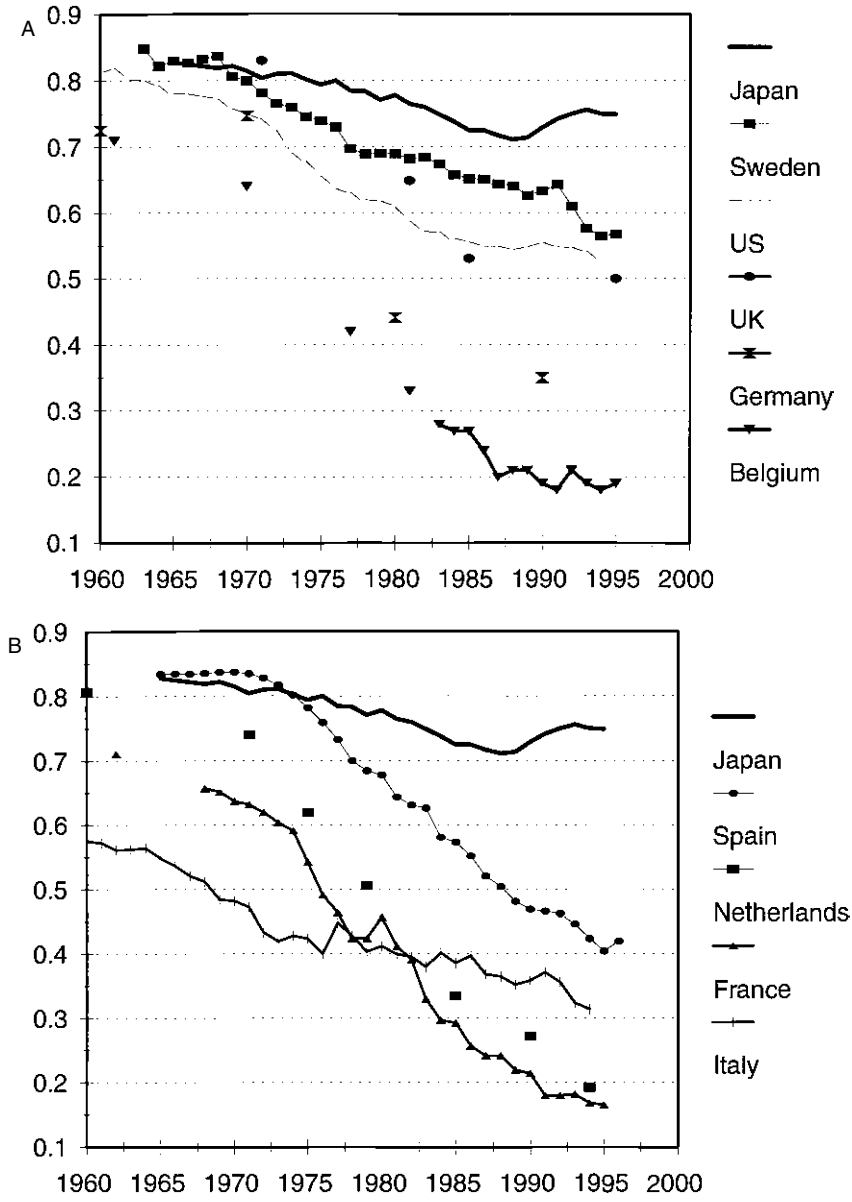

Fig. 2.2 Labor-force participation trends for men aged sixty to sixty-four. Panel A: Japan, Sweden, United States, United Kingdom, Germany, and Belgium; Panel B: Japan, Spain, the Netherlands, France, and Italy
Source: Gruber and Wise (1999b).

financial situation of social security systems in many countries, and we return to this issue in discussion of reform possibilities.

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 (the age at which benefits are first available), and suppose that 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 year fewer. In most countries, however, this is not the case. Once benefits are available, a person who continues work for an additional year will receive less in social security benefits over his or her lifetime than if the person quit work and began 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.

Data for Germany—summarized in Gruber and Wise (1998, 1999a) and presented in more detail in Börsch-Supan and Schnabel (1999)—illustrate the importance of this "implicit tax on work." These data also illustrate two other important features of social security systems: One is the importance of the age of first eligibility for benefits; the second is that, in many countries, disability and unemployment insurance programs effectively provide early retirement before the explicit social security early retirement age. In considering social security reform, therefore, these programs must be considered in conjunction with the social security program itself.

Before 1972, the social security retirement age in Germany was sixty-five, except in the case of disability, and there was no social security early retirement age. However, legislation in 1972 provided for early retirement at age sixty for women and at age sixty-three for men (given the accumulation of required social security work years). In addition, liberal use of disability and unemployment benefits effectively expanded the early retirement option. In a large fraction of cases, social security early retirement benefits were made available with no reduction in benefits; benefits taken at the early retirement age were the same as those taken at the normal retirement age. This greatly increased the net tax on work because delaying retirement simply reduced the number of years that one could receive benefits, without increasing the annual benefit.

In fact, there was a dramatic response to this increase in retirement incentives. Over the next few years the mean retirement age of white-collar workers was reduced by five and one-half years, as shown in figure 2.3.[2]

2. The mean retirement age is the average age of persons retiring in a given year.

The correspondence between plan provisions and retirement can also be demonstrated by considering the relationship between retirement and social security provisions at a point in time. The detailed provisions of the 1972 legislation are mirrored in the retirement rates by age. Figure 2.4 shows the proportion of men employed at a given age who retire at that age—the *hazard* (or *departure*) rate. The ages of key plan provisions are also noted in the figure so that the correspondence between provisions and retirement is easily seen. Men who are disabled or unemployed at age sixty, and who have a certain number of years of employment under the social security system, are eligible for early retirement at that age. There is a large corresponding jump in the retirement rate at that age. Men who have been employed for thirty-five years are eligible for early retirement at age sixty-three and there is a corresponding jump in the retirement rate at that age. The normal retirement age is sixty-five and there is a corresponding spike at that age as well. By age sixty-five, however, fewer than 29 percent of men are still in the labor force. In addition, even before age sixty, liberal interpretation of disability and unemployment plan provisions effectively serves to provide early retirement benefits, a situation discussed in more depth later.

Retirement eligibility may not by itself induce retirement, however. In Germany, a high price is paid for not retiring if eligible. Consider, for example, the prospects faced by a man with median earnings whose wife is three years younger than he is. He—like 40 percent of older German

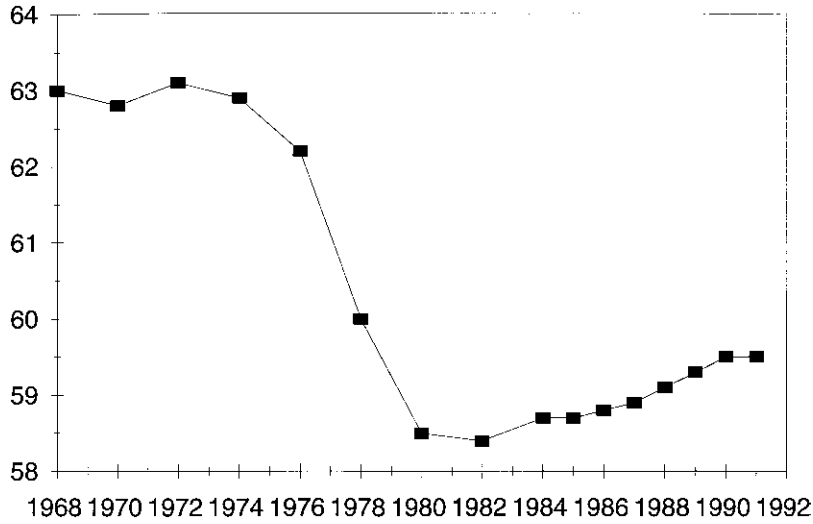

Fig. 2.3 Mean retirement age in Germany
Source: Gruber and Wise (1999b).

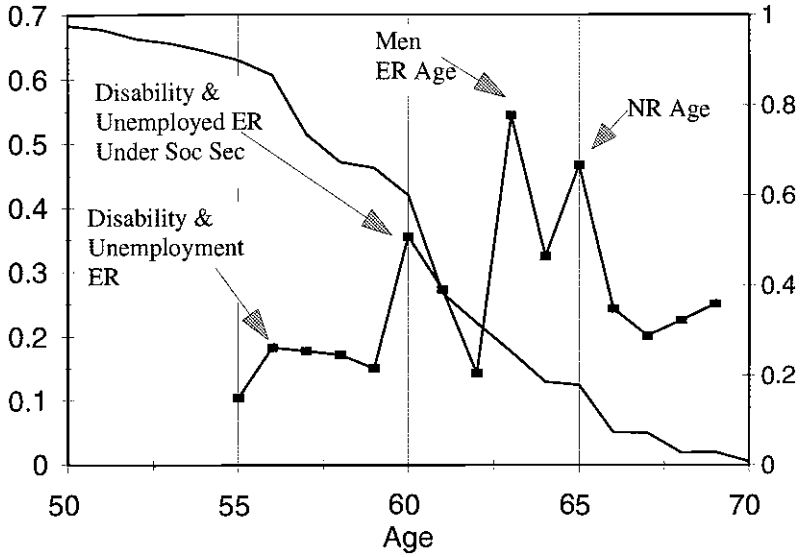

Fig. 2.4 Hazard and labor force participation rates for Germany
Source: Gruber and Wise (1999b).

workers—would be eligible for disability benefits were he to leave the labor force. Suppose he could retire at age sixty but was considering postponing retirement until age sixty-five. The receipt of benefits for five fewer years would not be offset by larger benefits. Indeed, the present value of benefits if taken at sixty-five would be much less than the present value of benefits if taken at sixty; that is, the social security accrual rate is negative. If retirement were postponed by five years, the present value of the benefits would fall by almost 18 percent. Delaying retirement from sixty to sixty-one would reduce the present value of future social security benefits by more than 4 percent. This large negative accrual rate implies a substantial tax on additional work. The 4 percent reduction in benefits from delaying retirement until age sixty-one is equivalent to a tax of roughly 35 percent of the net wage earnings from working an additional year. This represents an enormous disincentive to continued work, in addition to the already high earnings tax.

The tax rates on earnings for each additional year in the labor force from age fifty-five to age seventy are shown in figure 2.5. It is clear that the cost of postponing retirement is substantial; a large fraction of what would be gained in wage earnings if the person worked between sixty and sixty-five, for example, is lost by way of reduced pension benefits. Thus a large fraction of employees retire as soon as they are eligible.

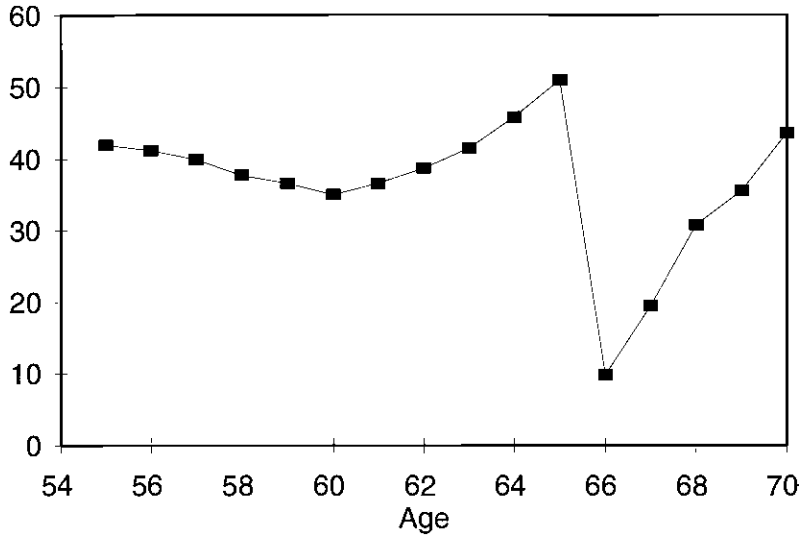

Fig. 2.5 Tax rates on work in Germany
Source: Gruber and Wise (1999b).

The net effect on labor force participation is illustrated by figure 2.6, which describes the labor force status of men by age.[3] Retirement under the social security plan begins at age sixty and labor force participation declines rapidly thereafter; by age sixty-five virtually all men are retired under the social security retirement system.

This figure also provides an illustration of the interaction of the social security system and other programs. The labor force participation of men begins to fall well before the social security early retirement age. Indeed, at age fifty-nine—just before the social security early retirement age—only about 50 percent of male employees are still in the labor force. The fall coincides with the increase in the proportion of men who are receiving unemployment benefits and the proportion receiving disability benefits. These programs, in effect, provide retirement benefits before the social security early retirement age. At age sixty, most of those who had been receiving unemployment, and many of those receiving disability benefits, switch to receiving social security benefits instead. At age sixty-five, all of those who had been receiving disability benefits switch to social security.

Gruber and Wise (1999a,b) show that there is a striking correspondence between the implicit tax on work and the proportion of older persons who

3. Note that the labor force participation figures here do not correspond exactly to the hazard rates shown earlier. The labor force status estimates are based on a nationally representative microdata survey, whereas the hazard rate estimates are from administrative data on pension receipts.

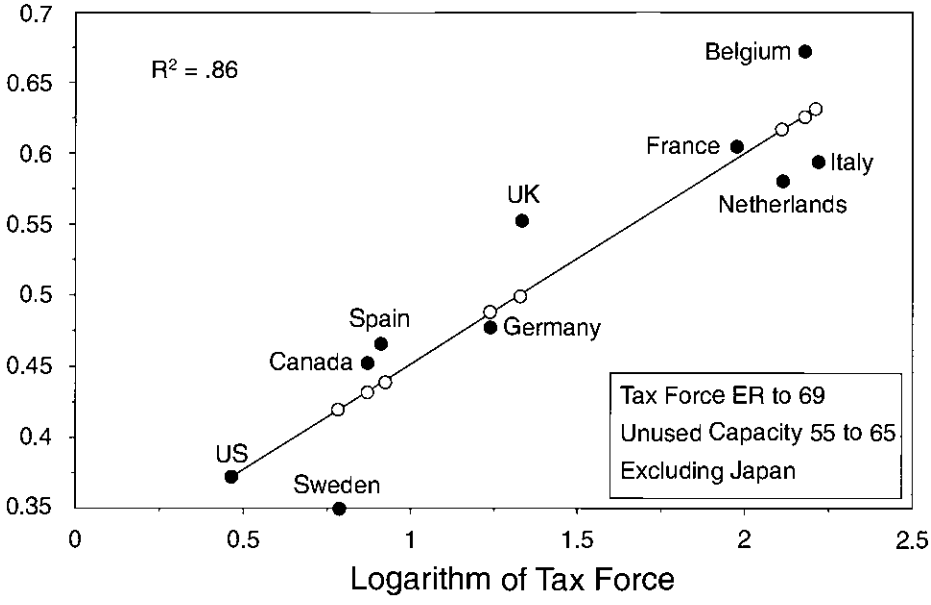

Fig. 2.6 Status of men by age in Germany
Source: Gruber and Wise (1999b).

have left the labor force. Figure 2.7 shows the relationship between the (logarithm of the) "tax force" to retire (the summation of annual implicit tax on work from the early retirement age to age sixty-nine) and "unused capacity" (the proportion of men aged fifty-five to sixty-five who are out of the labor force) in several countries. The correspondence between these two measures is striking: The variation in the tax force across countries can explain more than 80 percent of the variation in unused capacity. Although there may be other factors correlated with the tax force that are also driving work decisions at older ages, this enormous correspondence, taken together with case studies for Germany and other countries in Gruber and Wise (1999b), suggests strongly that social security incentives are an important determinant of work decisions.

2.1.3 Saving, Return, and Risk Features of the PAYGO System

A simple representation of the relationship between tax receipts and benefits in the PAYGO system will help emphasize the importance of the population and labor force trends and will also highlight other features of the PAYGO system. The relationship can be represented by

$$\begin{aligned}&(\text{Number in the Labor Force}) \cdot (\text{Average Wage}) \cdot (\text{Tax Rate})\\ &\qquad = (\text{Number of Retirees}) \cdot (\text{Benefit per Retiree}).\end{aligned}$$

Fig. 2.7 Unused capacity versus tax force
Source: Gruber and Wise (1999b).

The left side represents tax receipts and the right side represents benefits paid. An aging population increases the number of retirees. Early departure from the labor force further increases the number of retirees and reduces the number of persons in the labor force. If receipts are to equal benefits, the tax rate is given by

$$\text{Tax Rate} = \left(\frac{\text{Number of Retirees}}{\text{Number in the Labor Force}}\right) \cdot \left(\frac{\text{Benefit}}{\text{Wage Rate}}\right)$$
$$= (\text{Dependency Ratio}) \cdot (\text{Replacement Rate}).$$

Thus, the larger the replacement rate, the greater the increase in the tax rate required to balance tax receipts and benefits paid when the dependency ratio increases. Both population aging (together with increasing life expectancy) and a declining retirement age increase the dependency ratio. With rapidly increasing dependency ratios, the prospect is for large increases in social security tax rates, unless benefits are changed. To put it another way, balancing the system requires that benefits be given by

$$(\text{Benefit per Retiree}) = \left(\frac{\text{Number in the Labor Force}}{\text{Number Retired}}\right) \cdot (\text{Wage Rate}) \cdot (\text{Tax Rate}).$$

Thus, without changes in the tax rate, more retirees relative to persons in the labor force will mean lower benefits.

These relationships make clear additional features of PAYGO systems that are important in considering possible reforms. First, there is no national saving inherent in the PAYGO system, although current workers may think of promised future benefits as though they were personal saving. Unlike with private saving, no money is set aside today that can be invested and used to support consumption after retirement.

A second feature of PAYGO systems useful in evaluating potential reforms is the rate of return on contributions to ("investment" in) the social security system. The implicit rate of return is the rate of growth of the tax base, that is, the rate of growth of gross domestic product (GDP), which in turn is the product of the growth in the labor force times the real increase in the wage rate. To see this, note that current workers contribute an amount given by the left side of the first equality above, and current retirees receive that amount. However, when current workers are retired, they will receive benefits determined by the tax on future labor earnings. In a mature system, each generation of workers gives up a fraction of its earnings in exchange for the same fraction of earnings (hopefully larger) from the next generation. (In the United States, or example, the Social Security Administration now assumes a long-run GDP growth rate of 1.1 percent.) With a rapidly aging population, however, individual realized rates of return may differ substantially from this norm. Indeed, the future tax base may not be large enough to provide the same level of (future) benefits to current workers that today's workers are providing for current retirees.

Third, like other ways of saving for retirement, personal risk is associated with investment in the social security system. Benefits promised now may not in fact be available in the future. Demographic trends such as those emphasized above may be unanticipated, or may be inadequately accounted for in funding projections, and thus stipulated benefits may be incompatible with future population trends. Even in the absence of demographic changes, the vagaries of the political process can change benefits. Changes two or three decades ago typically increased benefits; more recent changes have typically reduced benefits. McHale (2000) shows that recent reform proposals in many Organization for Economic Cooperation and Development (OECD) countries will substantially reduce the benefits of future retirees in those countries. As explained in Wise (2000), true risk is likely to be greater than McHale's calculations demonstrate.

2.2 Reform

There is growing realization around the world that to avoid financial crisis, social security systems must be changed. How to change the systems, however, has been the subject of considerable debate in many countries. Here we consider different ways that the systems might be reformed, commenting on the economic implications of each. The goals of reform depend in part on the current circumstances in each country and in part

on the individual preferences of political and economic leaders, or on the weight they place on specific goals. The following are a few prominent economic goals:

1. To correct the financial imbalance faced by social security systems. This is a goal shared by all reform proposals.
2. To increase national saving.
3. To increase the economic efficiency of the systems. Perhaps the most important inefficiency in current systems is the implicit penalty on work inherent in plan provisions.
4. To redistribute income, or to maintain income redistribution. This is an important goal in some countries but is much less important in others. Redistribution is a prominent feature of the U.S. system,[4] for example, but not of the German system.

The central economic goal might be put this way: It seems inevitable that the young will have to consume less than they otherwise would to save for their own retirement while at the same time paying the benefits of current retirees. What is the least painful way—the way that requires the least reduction in consumption—to accomplish this goal? With this general focus in mind, we consider three categories of reform: (1) removing the work penalty, (2) incremental reform, and (3) fundamental reform.

Removing the provisions that encourage early retirement could be considered either a specific reform or an important aspect of other reforms. We treat it separately. Incremental proposals, under our categorization, do not change the basic structure of the PAYGO system, but address the financial imbalance of the system by some combination of increased taxes and reduced benefits. Fundamental reform includes various proposals that would change the basic structure of the social security system. Proposals of this type typically involve at least some prefunding of the system, usually through the creation of personal accounts or through government purchase of financial assets on the part of the social security system.

2.2.1 Removing the Work Penalty

The early retirement incentives discussed above are implicit in the plan provisions that determine benefits. The key question is whether the increase in benefits if retirement is delayed is large enough to offset the loss in foregone benefits when their receipt is postponed. Reducing the penalty on continued work at older ages could substantially improve the long-run fiscal balance of social security systems in many countries. This aspect of social security provisions can be important under all reform proposals that maintain a defined benefit component. These incentive effects are largely

4. Liebman (2002), however, shows that features such as spousal benefits and differential mortality offset some of the redistribution implicit in the basic formula and lead to a wide range of rates of return for persons at any given level of lifetime earnings.

eliminated automatically through conversion to a defined contribution system, but may still be present to some extent if benefits are in the form of forced annuitization.[5]

The most important determinant of the tax on work is the early retirement reduction factor—the reduction in benefits if they are taken before the normal retirement age. At one extreme are systems, such as Germany's, in which early retirement (or disability or unemployment) benefits at age sixty are essentially the same as normal retirement benefits at sixty-five.[6] For those who are eligible for benefits at age sixty, there is a strong incentive to retire at sixty. A person who works for an additional year will receive no increase in subsequent benefits to offset the receipt of benefits for one year fewer. Because there is no early retirement reduction, there is also no increase in benefits if their receipt is delayed beyond the early retirement age. Thus the present discounted value of future social security benefits declines.

On the other hand, consider a system such as that in the United States: Benefits at the early retirement age of sixty-two are only 80 percent of benefits at the normal retirement age of sixty-five. In fact, the early retirement reduction is "actuarially fair"; that is, the present discounted value of benefits begun at the early retirement age is roughly equal to the present discounted value of benefits begun at the normal retirement age, or at any age in between. There is no incentive to retire early.

If one moved from a system like that in Germany to one with an actuarially fair early retirement reduction, the fiscal imbalance in the social security system would be improved in two ways: First, benefits for persons who continued to take them before the normal retirement age would be lower. Second, to the extent that persons would work longer—and the Gruber and Wise (1999b) analysis shows that they certainly would in many countries—social security tax receipts would be increased. Or, in terms of the equalities above, the dependency ratio is reduced, social security benefits are reduced, and social security tax receipts are increased. Moreover, by removing the large work penalty, actuarial reduction in early retirement benefits would yield clear gains in economic efficiency.

Many variants might remove the work penalty but do little to improve the financial imbalance of social security systems. For example, early retirement benefits could be maintained and normal retirement benefits in-

5. The reason that even a defined contribution system may have some work disincentives is that there may be forced annuitization of benefit payouts at some common rate. Forced annuitization would imply that the short-lived face lower return on their contributions, and the long-lived a higher rate of return, relative to a system without forced annuitization. This could in turn imply that social security is imposing a tax or a subsidy on work at all ages, including those ages near retirement, providing a small disincentive or incentive to additional work.

6. The German illustrations used in this paper are based on legislation under which most recent retirees left the labor force. Recent legislative changes have changed some provisions, including the early retirement reduction.

creased; or, early benefits could be reduced somewhat and normal benefits increased somewhat. Such reforms would have uncertain financial implications. On the one hand, individuals would work longer, as the evidence in Gruber and Wise (1999b) shows. On the other hand, benefits would be increased for some groups and perhaps lowered for others.

Similar incentives pertain to work beyond the normal retirement age. In this case as well, benefits often are not increased enough to offset their receipt for fewer years when retirement is delayed. That is, the benefit increase is not actuarially fair. This is currently the case in the United States, for example (although this deficiency will be addressed by delayed retirement increases that will be phased in by 2008). In this case there are two effects on the social security balance sheet: If benefits are increased when retirement is delayed, the increase in labor supply will reduce the dependency ratio, thus reducing the system financial imbalance. Benefits for those who delay, however, retirement will be higher. The net fiscal implications for the social security system depend on whether the additional work raises the receipt of social security taxes enough to offset the increase in benefits for those who work longer. However, just like the effect of removing the penalty on work after the early retirement age, economic efficiency is improved by removing the implicit tax on work beyond the normal retirement age. Older workers are free to choose the retirement age most beneficial to them.[7]

2.2.2 Incremental Reform

As emphasized above, actuarial reduction of early retirement benefits would eliminate the work penalty and reduce the financial liability of the social security systems in many countries, without changing the early or normal retirement ages. Suppose that the early retirement benefit reduction (as well as the delayed retirement benefit increase) are actuarially fair. Incremental reforms can reduce the system liability: Benefits can be reduced or tax receipts can be increased. We first consider reduction in benefits.

Reducing Benefits

Social security systems can be brought into financial balance by reducing benefits. In principle, all benefits could simply be cut by a given amount. In practice, however, most reform proposals are much less incisive, for several reasons: to reduce the transparency of reductions, perhaps increasing the political feasibility of reform; to use the reform to change

7. It is perhaps worth noting that a smaller step to reducing the work penalty is to allow recomputation of benefits to reflect possible higher earnings past the early retirement age. This is a feature of the U.S. system, for example, but not of most European systems. Earning at later ages is typically higher than at younger ages. In the United States, benefits are based on the thirty-five highest earning-years, so that additional work may mean higher average earning and thus higher benefits. Adding such a feature would also increase the return to work, and thereby increase work at older ages and reduce the dependency ratio.

the redistribution or incentive features of the system; or to assure that those most reliant on benefits are shielded from cuts.

Increase the Normal Retirement Age. Perhaps the most commonly proposed way to reduce benefits is to increase the normal retirement age. For example, the normal retirement age might be raised from sixty-five to sixty-seven (which is one of the currently planned revisions in the U.S. social security system, for example). In this case, benefits now available at age sixty-five would not be available until sixty-seven. Assuming that early retirement benefits are reduced actuarially, benefits at any age would be lower than they were. Thus, the increase in the normal retirement age is equivalent to a reduction in benefits with the normal retirement age left unchanged. In addition, the reduction in benefits is likely to induce later retirement: To maintain a given standard of living after retirement, a person would have to work longer. In this case, the dependency ratio would be reduced and tax receipts would be increased, assuming actuarial reduction in benefits.[8]

Increase the Early Retirement Age. It is clear from Gruber and Wise (1999a,b) that an increase in the early retirement age would delay the retirement of most individuals who now leave the labor force at the early retirement age. An increase in the early retirement age, from (for example) sixty to sixty-two, would delay receipt of benefits, but the present value of benefits would not change—assuming actuarial reduction in early retirement benefits. Because labor force participation would be prolonged, however, social security tax receipts would be increased.

If there were no early retirement benefit reduction, or the reduction were less than actuarially fair, an increase in the early retirement age would necessarily reduce total benefits. In Germany, for example, persons could receive the same annual benefit, but could not begin to receive benefits until age sixty-two rather than sixty.

Reduce Indexation of Benefits. Benefits are typically based on past wages, although not necessarily on lifetime wages. In most cases, past wages are used to determine benefits at the normal retirement age. Benefits taken at earlier ages are based on the benefits at the normal retirement age. In most countries benefits are indexed to accommodate increases in the cost of living; in the United States, for example, benefits are indexed to a consumer price index (CPI). Another way to reduce benefits is to reduce the

8. The increase in the normal retirement age in the United States, for example, will be accompanied by reduced actuarial adjustments from age sixty-two to sixty-four, put in place to minimize the benefit cut on those aged sixty-two and sixty-three. As a result, Coile and Gruber (2000) find only small net impacts on retirement from such a move, because the reductions in actuarial adjustment reduce the incentive for additional work at the same time that the reduction in benefits increases that incentive.

extent of indexation. Benefit increases might, for example, correspond to CPI increases, less 1 percentage point.

Increase Earning Years. Benefits might also be reduced by changing the formula used to calculate normal retirement benefits. How this might be done depends on the benefit formula. In Italy (before 1993), for example, benefits are based on the five years of earnings just before retirement. In the United States the highest thirty-five years of earnings are used to obtain average lifetime earnings, which are used to determine normal retirement benefits. Benefits can be reduced by increasing the number of years used in this formula. Because the top thirty-five years are used now, earnings in any additional years must necessarily be no greater than the lowest of the currently used thirty-five years. Thus average earnings can be no higher, and would typically be lower, than the current average.

Reduce Indexation of Earnings. Benefits can also be reduced by changing the way that earnings are indexed. In the United States, for example, average indexed monthly earnings are determined by indexing earnings to age sixty-two based on a nominal wage index. The wage index is essentially the sum of productivity gains and price increases, so indexation based on a price index would yield lower average indexed monthly earnings, and thus lower normal retirement benefits.

Increase the Tax on Benefits. Benefits can be reduced by taxing them more heavily. In the United States, for example, the tax on Social Security benefits depends on total income—families with incomes above a given level pay taxes on Social Security benefits. The income level at which Social Security benefits are taxed could be lowered.

Increasing Tax Receipts

Increasing the social security tax rate is a straightforward way to increase receipts. Another way to increase receipts is less direct. Taxes are typically based on wage earnings; but in some countries, such as the United States, earnings are taxed only up to the covered earnings limit. In the United States, this limit has increased substantially over time and continues to increase. If all earnings were taxed, for example, receipts would be increased.[9]

Equivalent to an increase in the social security tax rate is the use of other taxes to pay social security benefits. For example, in the United States there has been considerable discussion of using the budget surplus (which today

9. Although the financial implications for the social security system do not depend on the source of the revenue, the choice of tax used may have different efficiency implications for the economy as a whole. For example, raising the earning limit in the United States could lose revenue for the tax system as a whole.

is largely accounted for by a current surplus in the Social Security trust fund, but may be greater in the future) to add to the Social Security trust fund. Using other tax receipts to pay social security benefits is of course a substitute for increasing the social security tax rate. (Although the two approaches are dollar substitutes, they may be very different with respect to who pays the taxes.) Incremental reform proposals may include a combination of several of these methods of increasing taxes and reducing benefits.

2.2.3 Fundamental Reform

In principle, there are at least two ways to change the current PAYGO system fundamentally: prefunding or introducing individual accounts (or both; see table 2.1). The current PAYGO system incorporates neither change. In principle, the social security system could be taken off-budget and treated much like an employer-provided pension fund. Like private pensions funds, a social security fund could be funded in accordance with future expected benefit payments. Benefits could continue to be paid on a defined benefit (DB) basis, much as they are now—this would be a funded DB system. Similarly, as an accounting matter, individual accounts could be established without prefunding. The "amount" in an individual's account could be based entirely on social security taxes paid by or on behalf of that person; such accounts are sometimes called *notional individual accounts.* The most common fundamental reform proposals, however, involve both individual accounts and prefunding. Some approaches would convert the entire system to one of individual accounts and in so doing prefund the entire system. Other proposals would convert part of the system to one based on personal prefunded accounts, leaving some portion to operate as a PAYGO, DB system.

There are two related economic motivations for prefunding social security. One is that the expected rate of return on these accounts would presumably be much larger than the implicit rate of return on contributions to a PAYGO system. For example, the average real rate of return on equities in the United States since 1926 has been about 9 percent. The average real rate of return on a portfolio of 40 percent bonds and 60 percent equities has been about 5.5 percent. (The U.S. Social Security Administration

Table 2.1 **Reform Possibilities**

	Prefunding	
Individual Accounts	No	Yes
No	Current pay-as-you-go system	Funded defined-benefit system (increased trust fund balance)
Yes	Notional individual accounts	Individual accounts with defined-contribution component

assumes an implicit Social Security return of 1.1 percent.) This suggests that in the long run the system could be funded—and the same benefits provided—with a lower tax rate, if personal accounts were invested in private financial markets. To put it another way, many countries face the prospect of large tax rate increases to fund current PAYGO systems; the required tax increases would be much smaller if the increased tax revenues were invested in the market.

The second purpose suggested for personal accounts is to increase personal saving. As emphasized above, it seems evident that the young in virtually all countries will have to save more. A strictly PAYGO system involves no saving, unlike (for example) private employer-provided or individual retirement saving plans, which are funded by saving today to pay for future retirement benefits. Below we emphasize that at the outset of the transition to such a system, the increased saving (by the young) is used to pay for their own retirement while at the same time paying for those who are retired or will retire under the PAYGO system.[10]

Prefunding the Entire System: Illustrative Calculations

When considering prefunding of the social security system, the transition from a PAYGO to a funded system is a critical issue and has been the subject of substantial analysis. We begin first with a simple example that illustrates the potential gain after the transition, with a fully mature prefunded system in place. To get a picture of the eventual gain from a prefunded system with personal retirement accounts (or a system that is partially prefunded, with a defined contribution [DC] component), consider this simple example: Assume that individuals work from age twenty-five to sixty-five and live in retirement from age sixty-five to eighty-five. Suppose, to simplify further, that persons contribute to social security at age forty-five and receive benefits at seventy-five. If the gross domestic product (GDP) growth rate is 1.1 percent, \$1.00 invested at age forty-five would grow to $(1.01)^{30}$ = \$1.39 by age seventy-five. On the other hand, at a certain 9 percent rate of return, \$1.00 invested in equities would grow to $(1.09)^{30}$ = \$13.28 by age seventy-five. Using these values, \$1.00 invested in equities yields 9.56 times as much as the PAYGO system would. Thus, to fund the system with equity investment (assuming this rate of return) would require only one-tenth as much as the PAYGO tax rate. Similar calculations show that to fund the system using a mixed stock-bond portfolio returning (for example) 6 percent would require less than one-fourth of the PAYGO tax rate. Of course, the market rate of return is uncertain; analysis of the potential risk from this uncertainty is discussed below.

In the transition from the current PAYGO system to a prefunded sys-

10. Feldstein and Samwick (2000) have proposed that under certain assumptions the transition could take place in the United States without an increase in the Social Security tax rate.

tem, however, current workers must pay both for current retirees and for their own personal accounts. To illustrate the transition to a prefunded system, Feldstein and Samwick (1996b, 1997) simulate a gradual phase-in of a funded system in the United States. Their illustrative personal account system provides the same aggregate benefits as the current system. They assume that persons begin to work at age thirty. The cohort that reaches age thirty in 1995 participates in the PAYGO system and begins to participate in the personal account system. Over the next twenty-five years, each cohort that reaches age twenty-five participates in both, but later cohorts participate only in the personal account component; they cease to accrue PAYGO benefits. They begin with a personal-account tax of 2.00 percent. As successive cohorts retire, increasingly larger fractions of benefits are provided by the personal component. The benefits that the personal-account balances provide replace some of the PAYGO benefits. This in turn permits a smaller PAYGO tax the next year, and so forth.

The stream of combined personal account and PAYGO taxes that would be required between 1995 and 2070 is shown in figure 2.8, along with the taxes that would be required to provide benefits under the current PAYGO system. During the transition period, the combined tax rate declines from 14.40 percent to 2.02 percent. Feldstein and Samwick assume that the current PAYGO tax rate would remain at the present 12.4 percent until the Social Security trust fund is exhausted; thereafter the rate increases to 18.25 percent by 2070, as projected by the Social Security Administration. The figure shows that between 1995 and about 2015, employees will pay more than the current tax rate. This area might be thought of as the cost

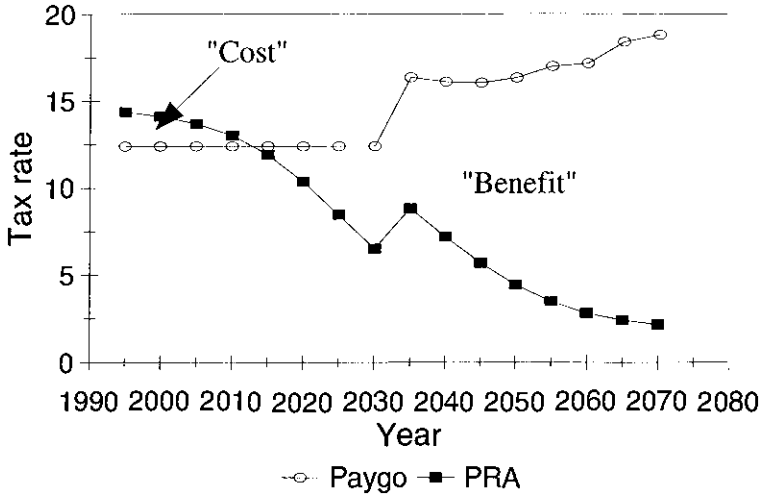

Fig. 2.8 PAYGO versus combined tax rate (by transition year)
Source: Feldstein and Samwick (1996a).

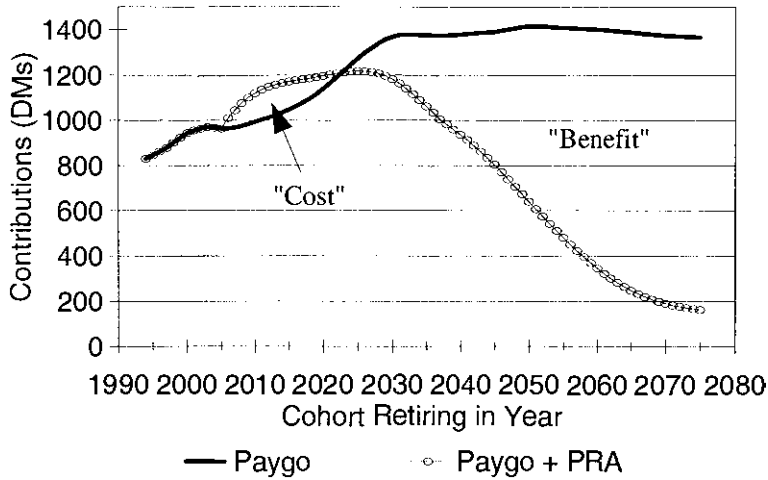

Fig. 2.9 Germany: Contributions (PAYGO versus transition to PRA)
Source: Börsch-Supan (1998).

of the transition to a prefunded system. Thereafter, the tax rate is lower; this area might be thought of as the benefit of the transition. (Whether the benefits outweigh the costs, of course, depends in part on the extent to which one discounts the benefits to future generations compared to the costs of current generations.) Additional discussion of prefunding is presented in Feldstein (1997).

Similar simulations describing the transition to a personal account prefunded system have been made for Germany by Börsch-Supan (1998). The German system is much more generous than the U.S. program and the social security benefits provide more than 80 percent of the preretirement income of retirees. The German population is also aging much more rapidly than the U.S. population. As a result, the unfunded liability of the German system is much greater than that of the U.S. system.

Figure 2.9 shows a transition scenario for German similar to the one above for the United States, but in this case, instead of the tax rate, average individual contributions are compared. The transition begins in the year 2005, when persons who retire (at age sixty, by assumption) will get a PAYGO benefit proportional to the share of their work lives that passed before 2005. The work life is assumed to be forty years; thus, for a person retiring in 2006, 39/40 of the retirement benefit will come from the PAYGO system and 1/40 from the personal account component. A person retiring in 2007 will obtain 38/40 from the PAYGO system and 2/40 from the personal account. From the year 2045 onward no worker will acquire new PAYGO pension rights. The simulated time path of contributions under these assumptions is shown in figure 2.9. A comparison of figures 2.8 and

2.9 shows that the pattern of required contributions (or tax rates) is very similar, reflecting the similar assumptions made in the two analyses. In the United States the ultimate personal account tax rate is about 2 percent compared to the projected PAYGO tax rate of 18.25 percent, a ratio of 0.11. In Germany, the ultimate personal contribution is 163 Deutsche marks under the personal retirement account (PRA) versus 1,368 Deutsche marks under the personal account system, a ratio of 0.12.

We take these calculations for the United States and Germany to be illustrative. Different assumptions would lead to different quantitative results. As long as the return in the market substantially exceeds the PAYGO rate of return, however, the qualitative results would not change. In addition to lower future costs to provide the same benefits, the more transparent relationship between personal account contributions and benefits is likely to dampen the labor supply reduction inherent in redistributive PAYGO systems. These illustrative calculations, however, do not address the importance of uncertain returns in the market; we return to that issue below.

Partial Prefunding and Personal Account Proposals

Several actual proposals combine a DC personal account component with a PAYGO DB component, creating a two-tier system. The contributions to the DC component—Tier 2—could be invested in the market. Some proposals begin by reducing the generosity of the PAYGO system and adding a DC component to it; an alternative is to maintain the current system as it is and add the DC component. We give one example of each, drawn from proposals in the United States. Both are motivated by the realization that future tax rate increases could be replaced by a smaller increase if market-invested personal accounts were introduced.

Among the plans proposed by the Social Security Advisory Council (1997) was a personal security account (PSA). This proposal sets a flat monthly benefit funded by the PAYGO system (Tier 1): $410 for single retirees and $615 for married couples for those with thirty-five years of earnings. These flat rates would be indexed to real wage earnings in the future. To fund the PSA (Tier 2), 5 percent of earnings would be placed in the PSA. The tax rate to support the Tier 1 benefits would be set at 8.92 percent. (Thus, the PAYGO payroll tax rate is reduced from 12.4 to 8.92 percent, and a mandatory 5 percent contribution to the PSA is instituted.) The proposal would be phased in, with gradual adoption of the PSA.[11]

Discussion of social security personal accounts typically refers both to contributions to fund the personal account component, and to taxes to fund the PAYGO component, as *tax rates.* There is a difference between

11. The proposal also includes other provisions to reduce benefits and to increase taxes. For example, the normal retirement age would be increased, and the early retirement age would also be increased gradually from sixty-two to sixty-five.

them, however. Perhaps a personal account contribution is better thought of as *forced saving,* if it is mandatory, or *personal saving,* if it is not. On the other hand, the PAYGO tax conforms more closely to a typical tax: It can be used to support a broader social program than the personal account component can.

Schieber and Shoven (1999) have suggested a variant of the PSA plan: lowering the current payroll tax rate to 9.9 percent and introducing a mandatory 5 percent contribution to an individual account. In addition, they set the flat Tier 1 benefit somewhat higher—$450 instead of $410. Feldstein and Samwick (1998a) have also proposed a two-tier system, which takes advantage of the current budget surplus to adopt personal accounts. In addition to the current PAYGO tax, individuals would contribute 2 percent of earnings—up to the U.S. Social Security limit—to a personal account. When benefits are taken, part of the gains from the personal account are offset by a reduction in the Tier 1 (current system) benefits. Their proposal is to guarantee benefits at least equal to those under the current system. The contribution is treated as a cashable income tax credit: if the contribution is greater than the tax bill, the excess is received as a tax refund from the Internal Revenue Service. The contributions are invested in the private market. The benefits from the personal account would be in the form of an indexed life annuity, such as the current U.S. Social Security benefits. However, for every dollar of Tier 2 benefits, Tier 1 benefits would be reduced by 75 cents. Thus the concept is that no one would receive lower benefits under this two-tier system than they do at present, and the government would capture much of the gain from market investment of personal accounts to support the current PAYGO system.

2.2.4 Summary of Economic Implications

We consider first the proposals discussed above. Then we comment on the possibility of investing PAYGO-system contributions in the market.

Proposals Discussed Above

An important feature (and perhaps the most important economic inefficiency) of most current PAYGO, DB social security systems is the work penalty. (As mentioned below, high social security tax rates have more-general labor supply reduction effects, an inefficiency made greater by the departure of older persons from the labor force, which increases the social security taxes on those still working.) The implicit tax on work can be eliminated by changing the benefit formula under the current DB structure. The most important change would be the introduction of an actuarially fair, early retirement benefit reduction. This inefficiency is largely removed under a DC (personal account) system. Indeed, even an unfunded notional account system would largely eliminate this inefficiency.

Removing the implicit tax on work reduces the future burden on the young; it reduces the future reduction in consumption that they will have

to incur to pay future social security benefits. Indeed, longer participation in the labor force increases national output as well as national saving. Inducing older workers to leave the labor force—as current systems do—increases the tax on the young (workers) and may in fact induce them to work less, further reducing national output.

It is worth pausing to emphasize that *economies are not boxed.* Numerous anecdotal comments suggest that provisions to induce older workers to retire were introduced to make room for younger workers to enter the labor force. We have not, however, attempted to determine whether there is convincing evidence that this was in fact the motivation for current provisions. Regardless of whether the claim is true, reducing economic output by reducing the labor supply of older workers can only make the financial problems of social security systems worse. Economies grow and can absorb increasingly larger numbers of workers. Reducing the labor supply of older workers can only reduce economic output in the long run.

Incremental reforms—to reduce benefits and increase social security taxes—can alleviate the financial imbalance of the PAYGO system, but will do little to increase national saving. In addition, incremental reforms may be only a temporary fix, with the systems as open to future financial crises as the current ones are. On the other hand, redistribution is an important feature of some social security systems. A key feature of the U.S. system, for example, is that relatively higher benefits are given to persons with low lifetime earnings. Incremental reform maintains this redistribution.

Fundamental reform proposals, with a DB personal account component, would likely increase personal saving. Poterba, Venti, and Wise, in fact, have written a series of papers on the saving effects of 401(k) and individual retirement account (IRA) plans in the United States and find that the vast majority of contributions represent net new saving. Although some difference of opinion continues, we believe the weight of evidence heavily supports their conclusion, which they summarize in Poterba, Venti, and Wise (1998c). This evidence suggests that social security personal accounts would likely not substitute much for personal saving either. (Indeed, a large fraction of persons who would be covered by such accounts in the United States have no personal saving to reduce.)

In addition, funds in personal accounts are less likely than funds in a government trust fund to be offset by increases elsewhere in the government budget, and national saving would be increased as well. During the transition period, the new saving funds the transition. In a mature system, the PSA saving is used to provide individual retirement benefits. In addition, investment in the equity market would yield greater expected asset accumulation at retirement than the accumulation under the implicit return on current social security contributions. The expected cost of providing given benefits would be smaller—thus, the expected future financial burden on the young would be reduced.

There are two principle concerns about such plans: One is that the redis-

tribution that is an important part of some PAYGO systems may not be maintained. The other is that the risk associated with market investments could reduce the benefits of some participants, compared to current PAYGO DB systems.

A good deal of conceptual and empirical work has been directed to these interrelated issues in the United States. In most cases the empirical evaluations and proposals consider the likelihood of maintaining benefits greater than those provided under the current system. Feldstein, Ranguelova, and Samwick (2001) show that for a typical person with average earnings, a personal account system with a 6 percent contribution rate would stand a very high chance of providing benefits higher than those provided by the current U.S. system. They show that this would also be true for the typical wage earner under a mixed system with a personal account system (with a 2.3 percent saving rate) on top of the current system.

Perhaps more relevant are the calculations that Feldstein and Liebman (2002) make for a representative sample of social security participants with essentially the full range of family status and earnings histories. They show that under a pure personal account system with a 9 percent contribution rate and historical rates of market return (5.5 percent), 94 percent of participants would have higher benefits than those provided by a 15.4 percent contribution rate to the current PAYGO system.[12] Qualitatively similar results are obtained under a politically more realistic system that maintains the current PAYGO tax rate, combined with a supplemental 3 percent contribution rate to a personal account. Even so, the relative increase of benefits would be greater for those with the highest earnings, and those with lower earnings would be more likely to receive lower benefits. Feldstein and Liebman then show that the Supplemental Security Income program puts a lower floor on benefits such that virtually no participants would receive benefits lower than those provided by the two programs together, and that, through government "redistributive" contributions to personal accounts, the mixed system can achieve the same level of progressiveness as the current system. They also show that under very low rates of return, based on historical standards, very few participants would receive benefits much lower than those provided by the current system.

The two proposed programs discussed above also rely on a benefit floor to maintain benefits at least as great as under the current system. Feldstein and Samwick (1998c) do this by explicitly guaranteeing benefits equal to those under the current PAYGO system. The Schieber and Shoven (1999) plan sets a floor on benefits, to be funded by a PAYGO DB system, but does not guarantee benefits above the floor. Schieber and Shoven show, however, that under historical rates of return a 5 percent contribution to a personal account would be very unlikely to lead to lower benefits than

12. This is the required tax rate projected by the Social Security Administration to fund Old Age Survivors Insurance (OASI) benefits for persons retiring in 2075.

under the current system. As emphasized above, in considering risk, it is important to keep in mind that current PAYGO systems present substantial individual risk as well.

The administrative cost of managing personal accounts could also be an important constraint on realized market returns. There has been a good deal of debate about this issue in the United States. Much of the available evidence is presented in Shoven (2000). Our evaluation of this evidence suggests that administrative costs are nontrivial, but would not be nearly large enough to offset the difference between market returns and the implicit return on Social Security contributions in the United States.

Trust-Fund Market Investment

An alternative to individual accounts is to invest social security contributions—under the DB system—in the market, much as is done with private pension fund contributions. (For example, such a proposal was for some time part of President Clinton's plan for the United States.) The hope is that the greater return from market investment of the trust fund would allow the system to meet future obligations with smaller tax rate increases than would otherwise be required.

In principle, such a plan could allow future liabilities to be met without increasing the social security tax rate, or without forcing the young to save more through personal accounts. In particular, it aims to avoid the transition cost of prefunding. It also would minimize administrative costs, which will presumably be considerably larger for a large number of small personal accounts.

Such proposals also try to address the difficult political trade-offs between individual control and government "protection." Consider annuitization. One motivation for social security is that individuals, left to their own ends, may not save enough for their old age, which also suggests paying benefits in the form of an annuity rather than as a lump sum. For perhaps similar reasons, personal account proposals also suggest annuitization of assets at retirement. This, of course, takes some control away from the individual, limiting the extent to which these accounts are strictly "personal." Similarly, typical personal account proposals have in mind that some limits would be placed on personal account investments. Investment of the trust fund in equities avoids these tensions.

Compared to personal accounts, however, this approach also presents important limitations. One is that it does nothing to increase national saving. Although such a scheme would likely increase the return on social security contributions, it would increase national saving for retirement only if resources that would otherwise be consumed are added to the trust fund—and retained in the fund until they are paid out as benefits. Otherwise, simply investing existing trust fund assets in the market would only induce asset swapping between the private sector and the social security trust fund, and would achieve no incremental saving. Unlike personal ac-

counts, this proposal does not increase the saving that is set aside by today's workers to pay for future retirement benefits. That is, by trying to avoid the pain of increased saving—which might include the transition cost to a funded system—it also forgoes the gain.

A second important limitation of such a system is political intrusion. With investment of contributions in the market, the government could ultimately control an important fraction of the private capital market, providing an opening for politically motivated investment decisions. Additionally, with the accumulations kept in a trust fund rather than in personal accounts, there is significant risk that the trust fund would be "raided" during periods of future government deficit. That is, given the inherent difficulty that politicians have with leaving surpluses untouched, investing the trust fund could simply increase the amount of money they might be tempted to spend. Funds in personal accounts are further removed from the control of politicians and therefore less likely to be raided in times of budget pressures. In theory, of course, independent institutions (such as the Federal Reserve Board in the United States) might be established to deal with such problems. In practice, however, the effectiveness of this insulation is questionable, particularly in countries without a strong history of independent central banks.

2.2.5 Other Retirement Support

In many countries the social security system is the principle source of retirement benefits. In other countries the social security system is only one of the important sources of retirement support. In the United Kingdom and the Netherlands, for example, employer-provided pension plans are a key source of benefits. The same is true in the United States. In these countries, some retirees receive defined benefits in the form of annuities from employers as well as from the social security system. Indeed, in some countries—such as the United States—the employer-provided benefits are often integrated with social security benefits. The incentive effects of these private DB plans are very similar to those described above for social security programs, as shown by Kotlikoff and Wise (1988, 1989). Stock and Wise (1990a,b) Lumsdaine, Stock, and Wise (1990, 1991, 1992, 1994), and Wise 1997show that the effects on retirement are very similar as well. Indeed, Lumsdaine, Stock, and Wise (1997) show that social security and employer-provided DB systems may interact in important ways. Thus it may be important to consider public and private plans jointly.

The most dramatic change in retirement saving in the United States is the conversion to individual retirement saving plans (IRAs, 401[k] plans, and other), which are essentially the same as a voluntary version of personal social security accounts. Individuals must decide how much to contribute to the accounts, how to invest the contributions, and how to withdraw funds after retirement. In 1980, almost 92 percent of pension plan contributions were to traditional employer-provided plans, and about 64

percent of these contributions were to conventional DB plans. Today, almost 60 percent of contributions are to personal retirement accounts, including 401(k), IRA, and other plans. Including employer-provided (non-401[k]) DC plans, more than 76 percent of contributions are to plans controlled in large measure by individuals. Poterba, Venti, and Wise (1998a, b, 1999, 2000) show that for persons retiring three decades from now, personal assets in 401(k) plans alone are likely to be substantially greater than social security plan wealth. It is perhaps not an exaggeration to say that the personal control of retirement saving is progressing more quickly than any resolution of the debate about social security personal accounts. Universal 401(k) coverage would indeed look much like a social security system with personal accounts. The rapid spread of private personal accounts should inform and affect the discussion of social security personal accounts. A large fraction of employees already are used to and know a great deal about such accounts. In addition, the evidence on the saving effect of personal retirement accounts in the United States has been summarized by Poterba, Venti, and Wise (1998c) and shows that the vast majority of contributions to these accounts represents net new saving.[13] It is likely that personal social security accounts would have a similar saving effect.

2.2.6 Political Constraints on Action

Although social security reform has occurred in many countries—Chile and Mexico, for example—the political process in many countries makes reform extremely difficult. Although this is not the place to consider in detail the enormous importance and complexity of this issue, it seems important to at least highlight it. Political action seems difficult no matter how large the problem or how imminent the crisis. Although many proposals have been made by economists or legislators with varying political views, no reform is likely in the near future. In particular, no party wants to take the risk of proposing reduced benefits. In many European countries, where the financial crisis is much greater than in the United States, reform seems at least as difficult to obtain and perhaps no nearer to taking place. Here we have given little attention to this important matter, concentrating instead on potential reforms and their economic consequences.

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13. The referenced paper summarizes the results of a long series of papers on this issue. Others have put forth a different view, but we believe that the weight of the evidence supports the view expressed in this summary.

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Comment Herbert Hax

Gruber and Wise present a clear and comprehensive analysis of the fundamental problems many pension systems face today, and of the political obstacles to farsighted reforms. In particular, they have worked out the two decisive shortcomings of a pay-as-you-go (PAYGO) system of the type practiced in Germany. The first is that such systems are highly sensitive to changes of the *dependency ratio* (number of retirees to number of participants in labor force); this problem is aggravated by the second weakness, the inherent incentive for early retirement.

In this case we are discussing pension systems with mandatory membership. At the risk of stating the obvious, I wish to make clear at the outset why mandatory membership in a pension system is regarded as necessary. The first and most convincing reason is that in a modern society no one is left to starve; everyone is guaranteed a certain subsistence level through public welfare. This concept is connected with moral hazard; individuals with low income in particular might neglect saving for old age and rely solely on welfare payments. A second reason may be that the pension system is used as an instrument of redistribution—for instance, by financing pensions of those with lower incomes in part through higher contributions of the more wealthy. The German system of redistribution favors families with children. A third reason may be that a PAYGO system is not viable without mandatory membership, although this is more an argument against PAYGO systems than one in favor of mandatory membership.

I will not discuss here whether the pension system is a suitable means for redistributing wealth, which is regarded as desirable. One of the reform models currently being discussed in Germany provides a high degree of redistribution by granting equal pensions to everyone, financed by taxes based on income; an advantage of this system is that it offers a solution for the moral hazard problem with a minimum of mandatory contributions. The present system in Germany is less redistributive insofar as pensions depend in some way on the contributions paid by retirees during their working lives.

Under certain circumstances, redistribution may have undesirable incentive effects, but in principle we should accept redistribution so far as it is explicitly wanted and is justified by a political value judgment. However, it seems that many people are unaware that some pension systems have unwanted distribution effects that are not based on any recognized value judgment; these intergenerational distribution effects are inevitably connected with a PAYGO system. In a stationary world in which the dependency rate and productivity are constant, each generation would during its working years pay, in form of contributions, the exact amount of pension

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payments they would later receive; the rate of return would be zero. Because many relevant parameters change over the course of time, however, some generations may have high returns and others low or even negative ones. This not only is an offense to fairness, but may also have a negative effect on the political acceptance of the system when members of a generation feel that they are treated unfairly. This is why pension systems in several countries, including Germany, are facing a grave crisis.

Unwanted intergenerational distribution effects can be avoided only in a funded system. A pension system may be called *funded* if the implicit debt resulting from accrued pension claims is covered by a capital stock. A system may be fully or partially funded depending on the degree of coverage. A fully funded system is not necessarily actuarially fair. It may provide redistribution within each generation, even in the form of income-dependent contributions and equal pensions; it can, however, reliably preclude any unfair distortion of wealth among generations. In principle this is also possible in a partially funded system, to the degree that shifts in wealth from one generation to another can be avoided by fluctuations of the fund corresponding to fluctuations of implicit debt. In a partially funded system, however, the degree to which implicit debt is covered will always be arbitrary, and discretionary interventions from the side of short-term–oriented politicians cannot be ruled out.

To summarize my comments thus far, I add that, quite apart from other advantages of funded systems (such as positive effects on saving and capital formation), they have the merit of establishing fair intergenerational distribution and thereby safeguarding the pension system against potentially destructive stress.

Gruber and Wise refer to political constraints that, although reforms have been recognized as necessary and urgent, often stand in their way. To illustrate this, I will give some comments on the situation in Germany.

As Gruber and Wise point out, a grave default of the German system is that it provides false incentives for early retirement by penalizing continued work. It may seem paradoxical, but the widespread political opinion in Germany is that incentives for older workers to retire at younger ages are not wrong at all. The argument behind this opinion is that high unemployment in Germany is due to a shortage of jobs and that the adequate cure can only be a reduction of labor supply. More precisely, there are two related arguments:

- Because jobs are disposable only in a limited number, they should be distributed more evenly among applicants, which can be brought about by reducing individual working time (weekly or yearly working hours) as well as the working period during lifetime.
- Because older people are much more frequently affected by unemployment than younger people, early retirement may be preferable to (and, for the society as a whole, no more costly than) unemployment.

It is easy to detect the flaws in this kind of argument. The demand for labor is mistakenly regarded as constant, and one grave consequence is that policy measures to enhance labor demand—including legal reforms to provide more flexibility in the labor market—are neglected. Furthermore, the incentive to retire at an earlier age is established not only for those who would be unemployed in any case, but also for others: the still large majority of those who have jobs. This results in a waste of human capital, and may even have an adverse effect on employment if employees with special qualifications, who are not easily replaced, choose early retirement.

We should not deny that unemployment among older workers is a serious problem and cause for increasing concern. The main reason seems to be the accelerating process of technological and economic innovation, which goes along with more rapid obsolescence of human capital. In many professions, continuous renewal of human capital is essential for employees to meet changing demands. The problem of older workers is probably not so much that their ability to learn deteriorates, but that with approaching retirement the motivation to invest in new human capital is weakened. However, earlier retirement is not an adequate solution; its effect would only be an earlier onset of the weakening of motivation.

The solution of labor market problems is more than the pension system can cope with. The joint approach of labor market policy and reform in the pension system, as favored by influential institutions in Germany, leads down a wrong path, particularly if it takes place at the expense of other, more promising reforms in the labor market.

Although the merits of funded systems are recognized by the great majority of experts today, many politicians show great reluctance to accept this insight; they have a marked preference for a PAYGO system. The plausible explanation is that it is easy and (in the short term) very attractive to enter into a PAYGO system and very difficult and time-consuming to get out of it. At the beginning the PAYGO system seems to offer an easy solution for problems that otherwise might cause trouble. The German experience offers a good example: When East Germany joined the Federal Republic in 1990, some politicians were full of praise for the PAYGO system, into which East Germany could be integrated without further ado. Had there been a funded system, a long transition period would have been inevitable, and in the meantime it would have been necessary to find some other way to finance old age payments in East Germany.

Today we in Germany strongly feel the shortcomings of the PAYGO system, but politicians are repelled by the long period of transition into a funded system, during which (for some time at least) a higher load of contributions from taxpayers must be borne. The reaction of politicians is to resort to easier expedients, such as financing pension payments not only out of the contributions to the pension system but partly out of other taxes. This does not restore intergenerational fairness, of course, but it

makes the system less transparent and can thereby lessen dissatisfaction and tension, at least in the short run. Only very recently there seems to be a growing insight that such expedients offer only a way from one crisis to the next. As the public is more aware than ever of the critical situation of the pension system, it may be that chances for fundamental reform are not as poor today as they were some years ago. There is some hope that the models discussed by economists will be of more than academic interest.

Discussion Summary

Jeroen Kremers remarked that all the suggestions in the paper lean in the direction of reform toward a funded system and posed the question of whether more funded is better, or whether one should be aiming for an optimal mix of a funded and a pay-as-you-go (PAYGO) system—for example, one that allowed smoothing tax rates over time. *Ignazio Visco* also inquired about the relevance of a multipillar system and asked what weights the authors would give to PAYGO mandatory, and voluntary funded elements, respectively. *David A. Wise* responded that it is difficult to define the optimal mix and that it would probably vary across countries. He suggested that a defined benefit system might be responsible for providing a floor of benefits that could contribute to the assurance that in converting to a partially funded system people would not lose. *Eytan Sheshinski* remarked that one problem with incremental reform is the lumpy nature of costs involved in reform for setting up personal accounts and the like. These costs would not be dependent on the size of accounts, and since they were significant (as could be seen from a number of countries like the United Kingdom and Chile), this called for a drastic change rather than an incremental one.

Pierre Pestieau raised the issue of redistribution and whether it will be possible to have redistribution in a system like the one the paper proposes. *Martin Feldstein* reported on work by Jeffrey Liebman that reveals that there is much less actual redistribution in the U.S. system than appears from the formulas, in significant part because low-income workers tend to die at relatively lower ages than higher-income workers, and they are therefore less likely to receive benefits at all or else will have fewer years of benefits. He suggested that the focus in the context of pension reform not be on redistribution per se but on reducing the risk of poverty in old age. *David A. Wise* remarked that one could achieve any amount of redistribution in a funded system by setting it up in a particular way.

Pierre Pestieau noted that the principal nature of the problem of pension reform is a political one. He held that the problem in itself is not aging, but all the entrenched interests that paralyze any kind of reform. He argued that there would be no problem with aging if there were a social

planner who had all control over reform. *Axel Börsch-Supan* agreed that the political economy is the most conspicuously absent part of the framework presented in the paper. He referred to the debate in Germany on whether saving should be voluntary or mandatory in the transition to a funded pillar. On the one hand, the aim was to avoid myopia, adverse selection, and higher administrative costs related to a privately funded system; on the other hand, polls showed that the solidarity with the current system was very small, particularly among the young generations, and he argued that it is extremely important to increase support for the system. He concluded that it is arduous to design a voluntary transition without losing the advantages of decreasing costs and running into the problems that can be seen in the United Kingdom. *David A. Wise* acknowledged the importance of political issues and suggested that they be addressed by demonstrating that a funded system would produce benefits that will be no less than under the PAYGO system, and will likely be more.

Jeffrey Liebman commented on the proposition in the paper that a funded system is supposed to increase national saving, whereas changes within the PAYGO systems could not be expected to do so. He noted that from an economic perspective this is not entirely clear, because introducing some sort of individual accounts could cause people to shift much of their existing saving and not add to what is already saved. On the other hand, he said, the prospect of a deteriorating PAYGO system that ultimately will result in benefit cuts or higher taxes would also induce people to increase saving. *Rolf Langhammer* pointed to the possibility that the income effect of a higher rate of return dominates the price effect of current consumption relative to future consumption, and cited the experience of a number of emerging-market countries and developing countries where higher rewards per unit of saving have not fueled private saving but have lowered private saving.

Pierre Pestieau remarked that the emphasis on the effects of pension reform on national saving present in the writings of many North American authors is not adequate in the European context, where insufficient national saving is not much of a problem. *David A. Wise* replied that the required reduction in the consumption of the young in Europe is at least as great as it is in the United States and that, consequently, the question of how to accomplish this task with the least pain to the young applies at least as much in Europe as it does in other countries.

Horst Siebert pointed out that there is not only a link between the pension system and unemployment insurance but a much closer link between the pension system and the welfare state, resulting from the fact that there is an income floor provided by the social welfare system. The level of this floor was, of course, different across countries; in the case of Germany, it was around 50 percent of the worker's income for singles and around 70 percent for married couples. If in such a situation the relative benefit

level—that is, the replacement ratio in the PAYGO system—were reduced to create room for a funded pillar, this income floor would quickly be hit. In that case, when benefits out of the pension system after forty or forty-five years of contribution were similar to those of social welfare payments, very strange incentive effects would result. According to Siebert, the problem of redesigning the old age pension system is also a question of redesigning the aspiration level that has been defined by the welfare state, part of which is the right to retire early without an actuarially fair cut in benefits. He concluded that part of the problem of pension reform in Europe is the history of the welfare state, which poses some severe restraints for an approach of switching to system which is at least partially funded.

Eytan Sheshinski asked whether there is a good argument not to increase the early retirement age at the same time that the nominal retirement age is increased, as has been the case in the United States. Another point he made in that context was that early retirement is only one of a number of options available to people. Others include disability and the welfare system, so that there is effectively a three-way margin. Accordingly, any analysis of the incentives to delay retirement should take all these other programs into account. *Ignazio Visco* reported that, according to OECD estimates, effective implicit tax rates on working beyond the age of 55 that take into account the cumulation of incentives inherent in the various welfare programs are generally high in European countries, at between 50 and 60 percent. In Italy before the recent reform it had even been 80 percent. *Laurence J. Kotlikoff* remarked that the U.S. House of Representatives has just voted to repeal the earnings test on the receipts of benefits for workers aged sixty-five to seventy and that also in the Swedish reform there is some evidence of reducing disincentives to work longer years, indicating the possibility of a trend here. While he stressed the importance of the notion that one of the major values of having a defined contribution system is that it naturally does not present these labor supply disincentives, he emphasized that going from an unfunded to a funded system is not sufficient in order to achieve a more generationally balanced system. Reforms of this kind often meant no more than a reduction in implicit debt and a simultaneous increase in explicit government debt, so that workers were left with lower payroll taxes in the future but higher taxes to cover the interest on the explicit debt. Such a policy would not lower the burden on future generations.

A. Lans Bovenberg wondered about the causality of the correlation between the effective tax rate on work and early retirement shown in figure 2.5. He pointed out that in many countries early retirement programs have been the result of a weak position of workers in the labor market, and that this suggests a correlation between labor market policies in general and early retirement programs. From that he concluded that without a general reform of inadequate labor market policies in Europe, early retirement

programs will not lose their significance. As an example of developments moving in the right direction, he referred to the Netherlands, where labor market policies have improved and now, as a consequence of an increasingly tight labor market, people are starting to question these programs. He reported that the average retirement age is already moving up and the long-term trend is reversed, not so much because early retirement programs are changed but more because labor market policies in general have been improved. *Ignazio Visco* added that labor market reform that would increase the participation rates of older workers or the participation rates of other groups, like women, might contribute to the alleviation of the financial balance of the public pension schemes, at least temporarily. *David A. Wise* criticized the habit of taxing the old to remove them from the labor force in order to provide work for the young as being founded on the wrong assumption about the economy. He contended that unemployment should be addressed through macroeconomic policies and not the social security system. The latter policy would reduce the size of the economy and increase tax rates on the young, thus reducing labor supply further. Referring to the issue of causality, he noted that there is evidence of a significant relationship between changes in the rules and changes in retirement—for example, in Germany and France, where changes in the social security systems in the early 1970s had an enormous effect almost immediately. This, according to Wise, would be very difficult to explain by reversed causality.

A. Lans Bovenberg questioned the proposition that it would not matter greatly whether a pension system would be financed by a social security tax or other taxes. He maintained that there is an important difference in the sense that a social security tax tends to be paid by the young only, while all other taxes also tend to be shared by the elderly. Changing the way the social security system is financed would create the possibility of reducing intergenerational redistribution and actually enhance intragenerational redistribution by ensuring that the richer elderly also contribute to the PAYGO system. Such a reform, he argued, could make the system more sustainable.

George de Menil asked for a clarification with respect to figure F5, where he suspected some special factors at work, as it can be observed that the effective tax rate on work in Germany at age sixty-five drops from 40 percent to 5 percent before rising again with the retirement effects. On the whole, he argued, this would mean a huge incentive to work longer. *Laurence J. Kotlikoff* added the question of whether the numbers in this figure include only the implicit tax associated with the pension system or all taxes on labor supply. *David A. Wise* answered that the rates are relative to net earnings after income tax and the like. He added that the peculiarity in the German system was essentially of no relevance, merely a quirk in the system, and that no one in Germany works at age sixty-five in any case.