



PUBLIC FINANCE

A CONTEMPORARY APPLICATION OF THEORY TO POLICY

sixth edition



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Social Security and Social Insurance

Learning Objectives

After reading this chapter, you should be able to

Discuss the Social Security system and how it is financed by payroll taxes in the United States.

Explain how the Social Security retirement system differs from private pension systems and how Social Security retirement benefits are computed.

Describe the concepts of gross and net replacement rates for retirees and how these rates vary for Social Security pensions with preretirement earnings and other factors.

Examine the intergenerational aspects of the Social Security system and how changing demographic factors, Social Security tax rates, and changes in gross replacement rates affect the effective return on taxes paid into the system by retirees.

Analyze the impact of the Social Security system on work incentives and labor force participation of the elderly.

Estimate the possible impact of the Social Security system on savings rates in the United States.

Discuss social insurance provided by the Medicare system of health insurance for the elderly and unemployment insurance in the United States.

Nearly one of every four dollars spent by the federal government each year is used to provide Social Security pensions. In 1996, more than 43 million U.S. citizens received Social Security pensions. The amount spent for such pensions is likely to grow rapidly in the next century as the elderly fraction of the population eligible for pensions increases. The elderly (65 and older) accounted for 11 percent of the U.S. population in 1980, and are forecasted to account for about 25 percent of the U.S. population by the middle of the twenty-first century. As the number of retirees increases relative to the total population, the Social Security system will have greater demands placed on it to support a larger number of elderly persons who, thanks in part to improved health care, will live longer. The social insurance system of the United States and other economically developed nations will be challenged by the aging of populations. As the proportion of the population over the age of 65 increases, and the ratio to tax-paying workers to retirees declines, either tax rates will have to increase or benefits to recipients will have to decline to avoid ruinous increases in government budget deficits later in the twenty-first century. We will look at these challenges to social insurance and Social Security in this chapter and consider some alternatives for reforming existing systems.

Social Security is the most expensive federal government program. In 1993, for the first time, Social Security surpassed national defense as the government program absorbing the most resources. The Social Security Act of 1935 remains one of the most significant and enduring mandates for government activity in the United States. Originally proposed by President Franklin D. Roosevelt as part of his New Deal, the act provided, for the first time in the United States, a system of compulsory taxation to finance pensions to the aged and the disabled and their survivors, and unemployment benefits to workers (in most occupations) who, laid off from their jobs, are temporarily out of work. The system is designed to ensure adequate income security to individuals during periods of unemployment, in the event of disability, and in old age. The pension system is financed through a tax on payrolls, up to a certain limit for each worker's annual wages. The tax is split between the workers and the employers. The proceeds of the payroll tax are earmarked for a special trust fund to be used to finance pensions for the aged. An additional payroll tax finances health insurance for people older than 65, and a tax paid only by employers finances unemployment insurance benefits.

Social insurance and Social Security programs provide income and health benefits financed by taxes to eligible individuals. Compared to major European countries, the United States was relatively tardy in passing social insurance legislation. The first social security legislation had been enacted in Germany in 1889. Similar plans were established in the United Kingdom in 1908; in France, 1910; in Sweden, 1913; and in Italy, 1919. Social insurance in the United States is still not as comprehensive as it is in some other countries. More than 140 countries have some form of social security system today, many of them providing sickness and maternity benefits (national health insurance) and family allowances (subsidies for child expenses, most often payable to families with two or more children). The first national health insurance system was established in 1912 by the United Kingdom.

Social Security pensions have had a profound effect on the well-being of the elderly in the United States. The average age of retirement of Americans has fallen sharply since 1965. From 1970 to 1987, the average real income of the elderly increased by 28 percent while the average real income of the rest of the population increased by only 10 percent. On average, the elderly are less likely to be poor than the rest of the population. Research on the economic status of the elderly in the United States suggests that they are at least as well-off as the nonelderly and their living standards might in fact be much better than the nonelderly.¹ Social Security, which accounts for an average of 40 percent of the earnings of the elderly in the United States, has vastly improved the economic status of the aged.

This chapter shows how social insurance programs, particularly those that aid the elderly, operate in the United States. The economic effects of the benefit programs on incentives to work and save are highlighted.

Social Security in the United States

Social Security in the United States is a rubric that includes many programs benefiting diverse groups of citizens. In general, **social security and insurance programs** include government-provided pensions, disability payments, unemployment compensation, and health benefits. As pointed out in the previous chapter, many of the government assistance programs for the poor in this country are administered by the Social Security Administration. This chapter confines the discussion exclusively to social insurance and pension programs administered under the Social Security Act. This category of expense includes a multitude of other programs, such as railroad retirement, public employee retirement, disability insurance, and worker's compensation. However, the most important programs from the point of view of public policy are (1) old-age, survivors, disability, and insurance (OASDI)—the system of government-supplied pensions; (2) Medicare (HI)—the system of health insurance for the elderly; and (3) unemployment insurance (UI). This chapter emphasizes government pension programs.

Eligibility for benefits payable under the Social Security system and other social insurance programs is usually contingent on paying a tax or having that tax paid on one's behalf by virtue of employment in a job for which coverage is required. In the United States today, self-employed individuals are required by law to pay Social Security taxes for the pension program (OASDI) and for Medicare (HI) and thereby are covered by the Social Security system. The taxes paid are in accordance with the provisions of the Federal Insurance Contribution Act (FICA), established to finance Social Security pensions, and are usually deducted from employee wages and salaries. In addition, employers also pay the tax based on their payrolls. In 1997, the tax rate was 7.65 percent for workers and 7.65 percent for employers. The combined rate

¹Michael D. Hurd, Research on the Elderly, "Economic Status, Retirement, and Consumption and Saving," *Journal of Economic Literature* 28, 2 (June 1990): 565-637.

INTERNATIONAL VIEW

Social Security throughout the World

Social security is a general term for a number of programs established by governments to insure individuals against interruption or loss of earning power and to meet costs resulting from marriage, maternity, children, sickness or injury, unemployment, or death.

The most common form of social security protection is the replacement of a portion of income resulting from retirement. Most nations have social security old-age pension systems similar to those in the United States. However, some countries pay retirees a fixed pension that is not related to prior average earnings as are Social Security pensions in the United States. Other nations do not provide pensions but instead give a large lump-sum payment to workers on retirement, which is equal to a refund of the employees' and employers' contribution to a fund plus the accumulated interest on those contributions.*

Unemployment insurance is not as common as social security old-age pensions. As of the early 1990s, only about 40 nations had unemployment insurance programs. Most of these nations were industrialized and had well-organized labor markets. In less-developed nations, the family, and in some cases the tribe or community, have informal mechanisms for providing support to the unemployed. However, in many of these less-developed nations, labor markets are not developed and much of the work is carried on within the household through subsistence farming.

Other programs that are common to social security programs throughout the world, but not available as part of the U.S. Social Security system, are universal health insurance and systems of allowances to families to assist them with the expenses of rearing children. The U.S. government does provide the elderly and the poor with health insurance. However, in many nations including Great Britain and Canada, health insurance is provided universally to all citizens as part of the system of social security. Many nations also supplement

their health insurance programs to pay medical costs with sickness and maternity benefits. These programs offer cash benefits to replace earnings lost as a result of short-term illness or maternity leaves.

Some nations offer citizens a lump-sum "demogrant" payment, which is a flat cash payment to citizens irrespective of their income, employment, or wealth. These payments are basic no-strings-attached subsidies designed to help all citizens, but they generally account for a higher percentage of the incomes of the poor than the rich. The United States does not have a similar program, but it does provide cash assistance to the poor through various means-tested programs such as TANF and SSI (see Chapter 7).

Family allowances are regular cash payments for families with children. In some nations, this form of social security protection includes grants for birth expenses, for schooling, and for prenatal, maternal, and child care services. The family allowance system originated in several European nations in the 1920s and 1930s. As of the early 1990s, more than 60 countries had family allowance systems that subsidized the cost of having and nurturing children. The programs typically consist of monthly payments to families with children irrespective of the family's income and wealth. Some systems, such as that of Italy, pay allowances for an unemployed dependent spouse, but most begin payment only with the arrival of the first child. The payments commonly terminate when the child reaches a certain age—usually between 14 and 18 years (although in some nations the payments terminate as early as age 5). In nations desiring to increase their population, no limit is placed on the number of children that can be covered with the allowances. For example, as of the late 1980s, Canada gave family allowances in excess of \$30 Canadian per month per child. Some nations, however, reduce the payment per child as the family size increases. Although

the United States does not have a family allowance program, in 1997 Congress enacted a tax credit program for middle-income families with children below the age of 16. This program will provide benefits of up to \$500 per child for families below certain income levels beginning in 1998.

As the twenty-first century approaches, many of the social security systems around the world are under stress because of demographic change. Government-financed pensions represent a vast public enterprise in most nations. In almost all cases, the pay-as-you-go social security pensions systems require higher tax rates to pay benefits at promised levels when the ratio of the working-age population to retirees declines. In the United States, this support ratio has declined from 7.1 workers for each retiree in 1950 to only 4.7 workers per retiree in 1990. By the year 2020, projections indicate that there will only be 3.3 workers per retiree in the United States. In other nations, particularly those with very low birth rates like Japan, projections indicate that there will be only 2 workers paying taxes to support each retired worker by the year 2020!

The aging of the population will become more severe in Japan and in Western Europe by the middle of the twenty-first century. In 1990 for most industrialized nations the number of people aged 65 and older averaged 20 percent of the number aged 20 to 64. For most nations, the ratio of older people to those of working age will stabilize at around 40 to 45 percent by 2030 based on most recent projections. However, Japan, Germany, France, and Italy will have ratios of nearly 50 percent and higher if current trends do not change.

By far the nation in the worst position is Italy—a country where the ratio of those 65 and older to those of working age is expected to climb to 66.7 percent by 2050. By contrast, the projected ratio of those over 65 to the working population in the United States is projected to be only 37 percent by 2050—still high but much lower than that for Italy. If all those over 65 retire in Italy at that time and start receiving pensions, only one-third of the

population would remain to work to support the remaining two-thirds. The situation could be even worse for Italy because the retirement age in that country has typically been well below 65 for much of the postwar era! The consequences of aging for tax rates and budget deficits could therefore be catastrophic for Italy and other nations by the mid-twenty-first century unless pensions systems are reformed.

The table below shows ratios of people age 65 and older to those age 20 to 64 for seven leading industrial nations of the world.

RATIO OF PEOPLE AGE 65 AND OLDER TO PEOPLE AGE 20 TO 64 (IN PERCENT)

	1990	2010	2030	2050
Japan	19.3	35.8	48.7	60.1
Germany	23.6	32.9	53.8	57.5
France	23.4	27.2	43.1	48.4
Italy	24.3	33.8	52.4	66.7
United Kingdom	26.7	28.6	42.8	45.8
Canada	18.6	22.9	43.6	46.5
United States	20.8	21.3	35.7	37.0

SOURCE: Congressional Budget Office, based on data from the Social Security Administration and from Eduard Bos, My T. Vu, Ernest Massiah, and Rodolfo A. Bulatao, *World Population Projections, 1994–1995 Edition* (Washington, D.C.: International Bank for Reconstruction and Development/World Bank, 1994).

Declining death rates combined with low birth rates spell trouble for many social security pensions systems throughout the world. As the populace ages, the cost of financing pension benefits at any given per capita level implies higher taxes imposed on relatively fewer workers. This problem has led some nations to seek alternatives to the traditional pay-as-you-go government pensions plans. For example, Chile in the 1970s forecast that a whopping 65 percent tax rate would be required

(continued)

INTERNATIONAL VIEW (CONTINUED)

on earnings of workers to finance social security benefits at promised replacement rates to workers in the future. To avoid the incentive problems that would result from such high tax rates, Chile took the radical step of privatizing its social security pension system. It accomplished this by mandating retirement contributions into special accounts and then allowing private pension plans to compete for the right to manage these accounts. Older workers in Chile were given the option to remain in the old system and receive pensions at the promised replacement rates or to receive a bond equal in value to their past contributions to be invested in the new privatized system. Most workers opted out of the old system. The new system has been quite successful in that it has resulted in an annual real return on retirement contributions of 12 percent![†] This is much better than the 2 per-

cent average return that U.S. workers can expect on their retirement contributions.

Other countries have also begun to partially or totally privatize their social security retirement systems. Argentina and Peru have followed Chile in moving to a privatized system of saving for social security retirement pensions. Mexico and Sweden have schemes to partially privatize their social security systems. Australia, while maintaining its basic social security system, is mandating employer-provided retirement savings accounts for workers in the same way that governments mandate health insurance for workers.

*See U.S. Department of Health and Human Services, Social Security Administration, *Social Security Programs throughout the World* (Washington, D.C.: U.S. Government Printing Office, periodically issued).

[†]See Gary S. Becker and Isaac Ehrlich, Social Security: Foreign Lessons, *The Wall Street Journal*, March 30, 1994.

therefore was 15.3 percent and was levied on wages up to \$65,400 per year per worker for OASDI. The maximum amount of wages per worker subject to the Social Security payroll taxes is adjusted for inflation each year. The HI tax (2.9 percent total) has no maximum earning limit.

To be eligible for benefits, a worker must have worked and paid the tax on a certain minimum amount of earnings. Forty quarters of coverage (ten years of covered work) qualifies a worker for Social Security retirement benefits. The monetary amount of the pension that a worker receives depends on previous earnings history, marital status, dependents, and the amount of time that Social Security taxes have been paid by the worker.

Unemployment insurance benefits are financed by a special tax on payrolls levied on employers alone. They are administered by state governments, and some variation in eligibility and benefits paid exists among the states. On average, however, the unemployment benefits equal about one-half of the wages previously earned, up to a certain limit. Benefits are usually paid for a maximum period of 26 weeks; however, they can be extended automatically during a period of high unemployment. In periods of deep recession and other extraordinary circumstances, Congress can enact legislation that extends benefits for even longer periods. Benefits are available to all workers who, through no fault of their own, involuntarily lose their jobs and whose previous employers paid unemployment insurance taxes on the workers' behalf. No means test is required to be eligible for benefits.

Social insurance and Social Security pensions are transfer programs open to all workers regardless of their income. However, the way in which benefits are paid can affect the income distribution somewhat, because they are distributed according to the worker's wages. Low-income workers receive benefits that are higher proportions of their preretirement earnings than higher-income workers or workers for whom nonwage sources of income are relatively important. All workers in jobs covered by the Social Security system must pay the Social Security tax, as must their employers, regardless of their own personal circumstances or evaluation of the program's future benefits.

The Social Security Retirement System

Pay-As-You-Go versus Fully Funded Pension Systems

The government-supplied retirement benefits under Social Security are financed in a radically different manner than are the benefits under most private retirement systems. A **fully funded pension system** is one in which benefits are paid out of a fund built up from contributions by, or on behalf of, members in the retirement system. The dollar value of the fund must equal at least the discounted present value of pensions promised to members of the system in the future.

A member of a fully funded private pension system contributes monthly to the pension plan (or the employer contributes along with or instead of the employee). When the workers retire, they receive a pension based on the amount of contributions (a form of saving) plus the return earned (net of administration costs) on those contributions over the period of time the money was held (and invested) by the retirement system.² The administrators of fully funded retirement systems invest the funds of the pension system in various financial obligations, seeking to obtain reasonable rates of return on the fund while balancing the return earned with any risks associated with their investments.

The Social Security retirement system uses revenues collected from the payroll tax to provide pensions for the aged, the disabled, and their survivors eligible for benefits.³ The **Old-Age, Survivors, and Disability Insurance (OASDI)** program is a **tax-financed pension system**; retirement benefits are financed through taxes levied on the working population.

A **pay-as-you-go pension system** is one that finances pensions for retired workers in a given year entirely by contributions or taxes paid by currently employed workers. Because the bulk of payroll taxes collected to finance Social Security pensions

²This is called a *defined-contribution pension plan*, under which the worker (or the employer) contributes a certain amount per year and receives a pension based on the contributions, the earnings of the pension fund, and the fund's payout experience. *Defined-benefit plans* promise the employee a certain pension. To be fully funded, these plans must collect contributions to finance a fund that will amass adequate earnings to pay the promised pensions.

³Taxes collected from any portions of Social Security pensions subject to the federal income tax are also used to finance Social Security retirement benefits.

in recent years has been used to pay pensions of currently retired workers, the Social Security system has been characterized as a pay-as-you-go retirement system. A special trust fund invests revenue in federal government securities. However, in the 1970s and early 1980s, the amount in this fund equaled less than two months of annual pension benefits. In recent years, the Social Security retirement system has been one that is financed by directly transferring taxes collected from those working to those who are retired. The Social Security pension system represents an implicit contract between workers and retirees. It is this "contract" that keeps the system functioning.

As the twenty-first century approaches, the Social Security trust fund will begin to grow because of increases in the payroll tax collections and other changes in the Social Security system made in 1977 and 1983. Without these changes, the Social Security system would have been unable to pay promised pensions benefits from payroll taxes. As the trust fund builds up, some current workers will be contributing not only to finance the pensions of currently retired workers but also to fund their own future retirement benefits.

The Social Security trust fund is projected to increase until sometime in the first quarter of the twenty-first century. Thereafter, as the proportion of retirees in the population increases, revenues taken into the fund are projected to fall below outlays from the fund, and the trust fund will begin to decline. From now until the time the trust fund is depleted, the U.S. Social Security system will not be strictly on a pay-as-you-go basis. If it were to return to such a basis, payroll tax rates could be reduced from their scheduled levels until about the first quarter of the twenty-first century. However, these rates would be much higher later on in the twenty-first century if the system were to remain pay-as-you-go.

Currently, workers who are paying the payroll tax expect that future generations of workers also will be taxed in a similar way so that when they retire, they too will receive a pension under Social Security. In simple terms, the Social Security system pays benefits today only because of the government's ability to tax and because of the willingness of individuals to agree collectively to such taxes in exchange for the promise of future retirement benefits.⁴

How Retirement Benefits Are Computed under Social Security

The monthly pension benefits that a particular worker receives upon retirement depend on a benefit formula used by the Social Security Administration. Such personal information as a person's earnings history and age are considered. The formula calculates an employee's **average indexed monthly earnings (AIME)**, which are based on the worker's average monthly earnings (on which payroll taxes are paid). The 35 years of highest actual earnings prior to retirement, adjusted for changes in the general price level each year, are used in the formula. In effect, AIME is a measure of

⁴To the extent to which a private pension system is not fully funded, it too might be forced to use pay-as-you-go means of finance or forgo paying full promised benefits to retirees. For a discussion of private pensions and their problems, see Bruno Stein, *Social Security and Pensions in Transition* (New York: Free Press, 1980).

workers' real average taxable monthly earnings, up to a certain maximum, over a lifetime in jobs covered by Social Security benefits. The formula varies with the worker's age of retirement.

After AIME has been calculated, it is used in another formula to determine a worker's *primary insurance amount* (PIA). This represents the basic monthly pension for which a worker who is retiring at 65 is eligible. The amount then is adjusted according to the worker's actual age at retirement, marital status and dependents, and other personal circumstances.

The Social Security pension for which a person qualifies is considered an earned right. This means that it is paid regardless of the worker's wealth and nonlabor income. However, retired workers between 62 and 69 years of age are subject to an **earnings test**, which reduces Social Security benefits by \$1 for each \$3 of earnings (for those between 65 and 69) over a certain maximum amount of earnings that is adjusted each year. For example, the maximum earnings amounted to \$13,500 per year in 1997. This implies that if a worker earns enough wages in a given year, the Social Security pension benefit will become zero. Workers younger than 70 earning more than the maximum permissible wages are considered as delaying retirement. For these workers, AIME is adjusted upward to allow a higher monthly retirement benefit after the worker actually does retire after age 70.

Social Security benefits are also paid to a worker's family under certain circumstances. Dependent spouses older than 65 are entitled to one-half a worker's basic monthly benefit. In addition, in most cases, widows and widowers receive the amount to which their spouse would have been entitled. Benefits are also paid to dependent children of retirees.

Workers who have 20 quarters of their past 40 quarters of earnings in a job covered by the Social Security system are eligible for disability pensions if they become severely disabled. These pensions are also available for disabled workers younger than 31 if they have worked a certain number of quarters after turning 21. These pensions require proof of disability and are paid after a five-month waiting period.

The Gross Replacement Rate

A useful measure of the standard of living allowable under Social Security retirement benefits compared with that enjoyed prior to retirement is the extent to which these benefits replace preretirement earnings. The **gross replacement rate (GRR)** is the worker's monthly retirement benefit divided by monthly earnings *in the year prior to retirement*:

$$(8.1) \quad \text{GRR} = \frac{\text{Monthly Retirement Benefit}}{\text{Monthly Labor Earnings in the Year Prior to Retirement.}}$$

Table 8.1 shows 1996 gross replacement rates for three typical workers who retired at 65 in January 1996. The average earner has had average earnings in relation to all retiring workers covered by Social Security pensions in the year of retirement.

TABLE 8.1

GROSS REPLACEMENT RATES UNDER SOCIAL SECURITY (PERCENT FOR WORKERS RETIRING AT AGE 65 IN JANUARY 1996)

Worker Status	Gross Replacement Rate
Low Earner ^a	58.0
Average Earner	41.7
Maximum Earner ^b	24.5

^aEarnings equal 45 percent of average earner.

^bEarnings equal the maximum wage taxable for Social Security purposes.

SOURCE: Office of the Actuary, Social Security Administration.

The low earner had earnings equal to 45 percent of the amount earned by the average earner. The maximum earner had earnings equal to the maximum taxable wage, which was \$65,400 in 1997.

Notice how the gross replacement rate declines with the level of earnings in Table 8.1. A single, low-earner worker who retired at 65 in 1996 with gross earnings of \$925 per month in 1996 would be eligible for a \$537 monthly pension. The gross replacement rate for this worker is therefore 58 percent. The average earner retiring in 1996 had annual earnings of \$24,708 in 1996 and received a monthly Social Security pension of \$858. The gross replacement rate for the average earner was therefore 41.7 percent. Finally, the replacement rate for the maximum earner was only 24.5 percent.

Workers with dependent spouses older than 65 have higher gross replacement rates than do single workers with the same income because their Social Security pensions are adjusted upward. For example, a low earner with a dependent spouse would enjoy a gross replacement rate close to 90 percent of preretirement earnings.

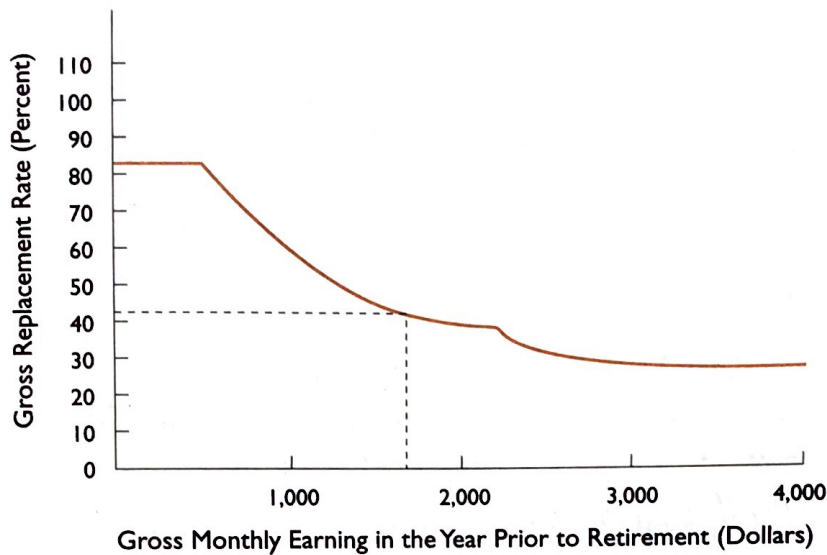
Two-earner households receive benefits based on the earnings histories of both spouses (with a floor on the benefits available to the one spouse with lower earnings equal to 50 percent of the benefits due the spouse with higher earnings). For example, a two-earner household in which both earners retired at 65 in January 1996, and both received the maximum possible monthly benefit, would have a monthly pension of \$2,496, assuming that both are receiving the maximum possible monthly Social Security benefits. This represents twice the maximum single pension of \$1,248 per month.

Social Security pensions are based on "need" as well as earnings histories. Adjustments for family size reflect the underlying belief that married couples and households with dependents will require greater retirement income than single-person households. Therefore, two workers with identical earnings histories may well receive pensions of different amounts based on their marital status and the number of dependents they support.

Social Security pensions also have a redistributive element built into their calculation. The pensions are designed to provide higher benefits, as a proportion of preretirement income, to lower-income workers relative to higher-income workers. Therefore, for workers with earnings histories over the same number of years, the

FIGURE 8.1

HOW GROSS REPLACEMENT RATES FOR SOCIAL SECURITY PENSION RECIPIENTS VARY WITH PRERETIREMENT EARNINGS



Gross replacement rates decline with monthly preretirement earnings. In 1996, the average earner enjoyed a gross replacement rate of 42 percent, shown by the dashed line.

gross replacement rate for the worker with higher average wages earned will be lower than that for the worker earning less over his lifetime. Figure 8.1 shows that gross replacement rates decline steadily with monthly preretirement earnings.

The Net Replacement Rate: A Better Measure of the Generosity of Social Security Pension Benefits

The gross replacement rate underestimates the extent to which Social Security pension benefits replace a retiree's actual disposable earnings. Disposable income is gross income less taxes paid on those earnings. Social Security pension benefits are non-taxable for most retirees.⁵ Therefore, for most workers, the entire Social Security pension is disposable income.

A better measure of the generosity of the pension benefits is the **net replacement rate (NRR)**:

$$(8.2) \quad \text{NRR} = \frac{\text{Monthly Social Security Pension Benefits}}{\text{Monthly Labor Earnings after Payment of Taxes in the Year Prior to Retirement.}}$$

⁵Workers whose income plus one-half of their Social Security pensions exceeds \$25,000 (\$32,000 for married couples who file joint returns) do pay income tax on a portion of their Social Security pensions. Income taxes collected on Social Security pensions are used to finance Social Security benefits. As of 1996, as much as 85 percent of pensions for these workers were subject to income tax.

Net replacement rates are higher than gross replacement rates. To see this, consider the case of the average earner. This worker is likely to have paid a total of 20 percent of labor earnings in federal and state (and possibly local) income taxes and Social Security payroll taxes in 1996. Assume that the retiree with average earnings has no income other than a Social Security pension. This worker's monthly preretirement earnings were \$2,059 in 1996. Taxes due on these earnings would therefore be \$412 per month.

The average earner in 1996 with no dependent spouse would have received a monthly Social Security pension of \$858. Therefore, the net replacement rate would be

$$(8.3) \quad \text{NRR} = \frac{\$858}{\$(2,059 - \$412)} = \frac{\$858}{\$1,647} = 52\%,$$

which exceeds the 41.7 percent gross replacement rate for the worker shown in Table 8.1. Net replacement rates decline with monthly preretirement earnings in a fashion similar to that shown for gross replacement rates in Figure 8.1.

Other Pension Income and the Well-Being of the Elderly

Social Security pensions are the most important source of income to the elderly. Nearly 60 percent of the elderly rely on Social Security pensions to provide at least half of their income. Less than half of the elderly has income from government or private pensions. In 1990, for example, private and government pensions amounted to only 18 percent of the income of the elderly. Income from past saving accounted for 26 percent of income of the aged in 1990.⁶

Most studies of the rate of growth of income for the elderly show that, on average, they have fared very well since 1967. The average rate of growth of real household income for households headed by a person older than 65 from 1967 to 1984 was 42.4 percent. During the same period, real income in families headed by the nonelderly grew by only 10.7 percent. Undoubtedly, the well-being of the elderly has increased relative to the rest of the population since 1967, and the growth of Social Security pensions and increases in the replacement rates for those pensions during that period have helped improve the economic status of the elderly in the United States. After adjustment for size of household and other factors that affect the budgets of the elderly relative to the rest of the population, many studies conclude that, on average, the elderly in the United States are now at least as well off as the nonelderly, using income as a measure of well-being.⁷

Cost-of-Living Adjustments

Since 1972, the Social Security pensions received by retired workers have been directly indexed to consumer prices. The retirement benefits of the elderly therefore are protected against erosion by inflation. This implies that, unless the method of

⁶See John A. Turner and Daniel J. Beller, eds., *Trends in Pensions 1992* (Washington, D.C.: Department of Labor, Pension and Welfare Benefits Administration, 1992).

⁷Hurd, 578.

calculating benefits is changed, the retiring worker will have the net replacement rate obtained in the year of retirement maintained in real terms over the full period of retirement. Nominal benefits will increase with the rate of inflation.

The method of indexing retirement benefits is often criticized as being overgenerous, because many claim the consumer price index is based on a basket of goods more typical for young rather than elderly households. In particular, changes in mortgage interest rates, included in the index as an estimate of housing costs, might have little impact on the elderly.

Other sources of income to the elderly are also likely to vary with the price level. For example, the value of government-provided medical care through the Medicare program also increases with inflation. Further, some private pensions are indexed for inflation, and for elderly homeowners, inflation increases the return on their investments in their homes. In short, inflation erodes but little of the income of the elderly.

In 1997, a special government commission studying the way inflation is measured in the United States concluded that the Consumer Price Index (CPI) overstates inflation by about 1.1 percent. If this is the case, then the indexation of Social Security benefits in the United States by means of the CPI has been, on average, increasing the real value of pensions to the elderly, not just compensating them for the effects of inflation on the purchasing power of their pensions.

This new conclusion about the CPI in 1997 is leading many economists and politicians to push for adjustments in the formula for indexing Social Security pensions. Naturally, the elderly, and such special-interest groups that represent them such as the American Association of Retired Persons (AARP), oppose such changes.

If the rate at which pension benefits is indexed is reformed, the elderly would still be compensated for inflation but at a lower rate. Initially, the change would be small. For example, if current inflation is 3 percent, then a 1.1 percent decline in the indexing rate would mean that pensions would increase by only 1.9 percent annually to adjust for inflation. The average monthly pension check would decline by \$8. However, over time, the reduced rate of indexation would compound. Assuming steady 3 percent inflation, reduction in the annual indexation rate by 1.1 percent would reduce the average check by \$100 compared to what it would otherwise be in ten years. In other words, reducing indexation is a way to reduce the replacement rate for pensions. On the other hand, this would reduce government spending and contribute to lower future government budget deficits.

CHECKPOINT

1. How are Social Security pensions financed in the United States? Is Social Security a fully funded pension system?
2. How is eligibility for Social Security pensions determined? What factors will influence a retiree's Social Security pension?
3. How do gross and net replacement rates of Social Security pensions vary with preretirement income in the United States?

The Return to Workers: How Do Pension Benefits Compare with the Taxes that Workers Pay?

What is the rate of return to retirees who pay Social Security taxes over their lifetimes? In other words, if the total Social Security taxes paid by the worker and his employer had been invested, what rate of interest would produce the stream of retirement benefits for which the retiree is eligible? This return varies from worker to worker, depending on the worker's earnings history and personal circumstances. However, it is interesting to perform this calculation in the aggregate to see how the ability of a pay-as-you-go retirement system, which pays benefits in excess of the taxes paid by workers, depends on certain economic variables.

To calculate the average rate of return to retirees as a percentage of their taxes requires a number of simplifying assumptions. First, assume that the payroll tax rate on workers' wages is fixed over time. Also assume that the size of the work force is constant. Finally, assume that the rate of inflation is zero.

In a pay-as-you-go system, the taxes paid by workers in any one year go directly into the pockets of retired workers. Given the assumptions, the annual increase in aggregate taxes collected, and therefore total pensions paid, equal the annual growth of labor earnings subject to the Social Security tax. This is because in any given year revenue available to pay benefits will be tW , where t is the Social Security tax rate and W is total aggregate labor earnings subject to the tax. With t fixed, revenues available to pay pensions will increase only if W increases. The growth of revenues therefore depends on the annual rate of growth of labor earnings subject to taxation.

Adjusting for inflation, the rate of growth of wages per worker in the United States has averaged about 2 percent per year since the Social Security system has been in operation. This is the average return on taxes paid that workers can expect, provided that the size of the work force and tax rates are fixed. Because net replacement rates vary with preretirement income, some workers receive a higher return and some a lower return.

However, until the late 1970s, retiring workers were able to enjoy a much higher average return on the taxes they paid during their lifetimes because during that period the number of workers paying Social Security payroll taxes steadily increased. In addition, the tax rates paid by workers were steadily increased by Congress. From 1950 to 1975, the segment of the U.S. population older than 16 rose at an annual rate of 1.4 percent, labor force participation rates of workers increased, and Social Security taxes were levied on workers in many new industries and jobs and on the self-employed as these workers were made eligible for pension benefits.

Until the late 1970s, on average, workers who were retiring under the Social Security system received a relatively high return on their taxes paid compared with what they could have earned, on average, had their Social Security taxes been invested in a fully funded system. More generous Social Security benefits, and their indexing for inflation, were enacted into law in the 1970s and financed by a growing amount of taxable wages earmarked to finance benefits and only modest increases in tax rates paid by workers.

From 1950 to 1975, the average return that a conservative portfolio manager could have earned, in real terms, on a fully funded pension system was about 5 per-

cent. This is based on real (adjusted for inflation) yields of about 8 percent on common stocks and 3 percent on high-grade corporate bonds. A less conservative portfolio (one subject to more risk) could have earned considerably more. A common estimate of the postwar real rate of return in the corporate sector is about 12 percent through 1976.⁸

Martin Feldstein has estimated that the real rate of Social Security tax receipts (excluding the portion of the tax used to finance health benefits for the elderly) grew 10.4 percent per year from 1950 to 1975.⁹ This compares very favorably with the 12 percent achievable on a conservative portfolio in the corporate sector over the same period. (Social Security taxpayers bore little risk over this period, because they were guaranteed a pension by the taxing power of the federal government.)

This favorable past performance of the Social Security system is not likely to be repeated in the future. Any future increase in Social Security receipts to pay pensions over and above the value of taxes paid will be limited to the annual growth rate of real wages. This is because taxable wages are no longer growing through increases in the number of workers covered. Most economists predict that this rate will be no more than a mere 2 percent in real terms.

Intergenerational and Distributive Effects of Social Security

An interesting intergenerational aspect of Social Security benefits is the inevitable result of starting up a pay-as-you-go retirement system. Workers who reached retirement age in the early years of the Social Security system received a better deal than do workers currently retiring and those who will retire in the future. This is because the first workers who received pensions had not paid Social Security taxes over their entire working lives. For example, Ida Fuller of Brattleboro, Vermont, the first Social Security pension recipient in the United States, paid approximately \$22 in Social Security taxes over her lifetime. Fuller died at the ripe old age of 99, after collecting a grand total of approximately \$20,000 in Social Security benefits—not a bad return on \$22!

Workers who retired through 1990 have paid taxes over a long period when tax rates under Social Security were quite low. For example, workers who had median earnings and who had retired in 1971 earned pension benefits three times greater than they could have enjoyed had their Social Security taxes paid over their lifetimes been returned to them at 6 percent interest on retirement.¹⁰ A middle-income person who retired in 1970 with no dependents received a pension with a discounted present value of \$25,000 more than the taxes paid during the retiree's lifetime—a good deal! However, a person in the exact same circumstances retiring in the year 2020 will pay \$88,000 more in taxes over a lifetime of work than the discounted present value of the Social Security pension received at that time—a bad

⁸Martin Feldstein, "Facing the Social Security Crisis," *The Public Interest* 47 (Spring 1977): 88–100.

⁹*Ibid.*, 91.

¹⁰Donald Parsons and Douglas Munro, "Intergenerational Transfers in Social Security," in *The Crisis in Social Security*, ed. Michael J. Boskin (San Francisco: Institute for Contemporary Studies, 1977).

PUBLIC POLICY PERSPECTIVE

The Rise and Fall of Gross Replacement Rates under Social Security Pensions

Social Security began as a program with modest gross replacement rates for retirees. During the period from 1937 to 1970, the gross replacement rate for a worker earning the average wage ranged from 30 to 35 percent. As a result of the Social Security Amendments of 1972, Congress instituted a procedure to index Social Security benefits to the rate of inflation. Prior to 1972, Congress periodically adjusted the benefit formula used to determine pensions to reflect changes in the price and wage levels.

Unfortunately, the formula used to adjust benefits beginning in 1972 had a flaw that caused benefits to rise more quickly than intended. The error resulted in a substantial increase in real pension benefits. In other words, the flaw more than compensated retirees for inflation!

To correct the error, the Social Security Amendments of 1977 reduced replacement rates by instituting a new formula, which became effective in 1982. However, before the correction was made, gross replacement rates had climbed for all retirees to levels much higher than those initially used by the Social Security system. A worker without dependents

retiring with average earnings of all retirees in 1981 was enjoying a gross replacement rate of 55 percent. The net replacement rate for workers with dependent spouses earning average wages prior to retirement rose to an astounding 96 percent in 1981.

As a result of the 1977 amendments, gross replacement rates for workers with average wages prior to retirement were reduced. By 1993, the gross replacement rate for a worker with average earnings prior to retirement fell to 44 percent. Decreases in income tax rates in the 1980s also reduced the gap between the gross and net replacement rates that prevailed in the 1970s. Under current legislation, the gross replacement rate for retirees with average earnings of all retirees in a given year will stabilize at about 42 percent. This gross replacement rate is one-third more generous to retirees than the 30 to 35 percent replacement rate that prevailed from 1937 to 1970. As a consequence, the economic well-being of the elderly as a group in the United States has improved drastically since 1970. Today, the elderly are less likely to be poor than the rest of the population.

deal!¹¹ Workers who are entering the labor force now will pay high tax rates earmarked for current Social Security benefits during their entire careers. In addition, some of those taxes will be used to build up the trust fund to prepare for the increase in Social Security outlays in the future, as the proportion of retirees in the population increases. This makes the Social Security system a much poorer deal on average for workers today than it has been for their parents and grandparents.

Finally, the way in which Social Security gross replacement rates vary with family status and income also affects the benefits received by retired workers. In general, as the analysis of replacement rates has shown, Social Security retirement benefits compared with taxes paid are a better deal for low-income workers than for upper-income workers. In addition, married workers with dependent spouses are better off

¹¹ See Michael D. Hurd and John B. Shoven, "The Distributional Impact of Social Security," in *Pensions, Labor, and Individual Choice*, ed. David A. Wise (Chicago: University of Chicago Press, 1985) 193–215.

than single workers or workers with employed spouses eligible for their own Social Security benefits.

The Social Security system then affects the distribution of income by transferring income from workers to retirees, from single workers to married workers with dependent spouses, and from high-income workers to low-income workers.

Demographic Change and the Future of Social Security

Maintenance of gross replacement rates at legislated levels has required sharp increases in payroll tax rates since 1970 to provide the revenue for current and future pensions. The tax increases will result in the Social Security trust fund growing until the end of the first quarter of the twenty-first century. This means that the Social Security system will be less of a pay-as-you-go system for current workers, who will pay taxes not only to finance the pensions of current retirees but also to accumulate reserves that will pay some of their own pensions. However, as the second half of the twenty-first century is approached, the Social Security trust fund will be drawn down rapidly, because payroll tax revenues will fall short of expected outlays for pensions at that time. By the mid-twenty-first century, the fund is forecast to have a large negative balance, which could require that more tax revenues be devoted to paying pensions at that time.

The basic problem is that the proportion of retirees relative to the working population has been, and will continue to be, increasing. Since 1957, the birthrate in the United States has fallen. In 1990, there were 4.7 workers for each retiree in the United States. Demographic projections by the Social Security Administration indicate that by the year 2030 there will be only 2.8 workers for each retiree.

From 1967 to 1973, changes in legislation sharply increased Social Security benefits by more than 70 percent (see the accompanying Public Policy Perspective). The expansion of Social Security benefits paid to retirees led to concerns that the system would have difficulty in meeting its future commitments. But given the political popularity of the system and the fact that the system's ability to pay benefits is based on the taxing power of the federal government, fears of the system's collapse are unwarranted.

The solution was new legislation that sharply increased both the maximum taxable wages per worker and the tax rate applied to wages for the collection of the Social Security payroll tax. In 1977, Congress passed a number of significant amendments to the Social Security Act, allowing these tax increases along with certain changes in the way in which Social Security benefits will be calculated in the future, to reduce replacement rates. Additional reforms enacted by Congress in 1983 accelerated the rate of increase of Social Security taxes; increased the tax rates applied to self-employment income; and placed new federal employees under coverage of Social Security, thereby subjecting these workers' wages to Social Security taxes. In addition, the changes decreased the benefits to early retirees and increased the bonus paid to workers delaying retirement. The retirement age at which the retiree is eligible for full benefits will be raised gradually from 65 to 67 beginning in 2003. By the year 2027, the retirement age will have reached 67.

The intergenerational aspects of a Social Security retirement system can be understood better with the analysis of some basic accounting relationships involved in a pay-as-you-go retirement system. This analysis also shows clearly how aging of the population affects the tax rate necessary to finance Social Security pensions on a pay-as-you-go basis.

In any given year, the tax rate, t , applied to taxable wages must be sufficient to pay the benefits promised to retirees based on existing replacement rates that year. Assume that each year the system taxes wages so as to generate just enough to pay pensions and neither accumulate a surplus in the trust fund nor run a deficit. It follows that the tax rate must equal the ratio of Social Security pensions paid that year to total wages subject to taxes that year.

Total Social Security benefits can be thought of as average Social Security benefits per recipient, B , multiplied by the number of Social Security recipients, R . Total taxable wages are average taxable wages, W , multiplied by the number of workers in the labor force, L :

$$t = (B \times R)/(W \times L).$$

We can also write this ratio in the following way:¹²

$$t = B/W \times R/L.$$

The fraction B/W is the average level of Social Security benefits divided by average wages, a measure of the average replacement rate for current retirees. The fraction R/L , the ratio of the number of retirees to the labor force, is the *dependency ratio* for the nation—a measure of the number of retirees who must be supported, on average, by each worker:

$$t = \text{Average Replacement Rate} \times \text{Dependency Ratio}.$$

In the early years of the U.S. Social Security system up to, say, the mid-1960s, both the average replacement rates and the dependency ratio were low compared to current levels. Consequently, Social Security pensions could be financed with relatively low tax rates compared to current levels. As replacement rates rose in the 1970s and demographics worked to increase the dependency ratio, tax rates had to rise to continue to finance Social Security benefits promised to retirees. As dependency rates rise dramatically in the next century, tax rates for a pay-as-you-go system of financing Social Security pensions will also have to rise to maintain benefits at constant replacement rates.

The dependency ratio as of 1997 in the United States is 0.29. By the year 2030, the dependency ratio is expected to be 0.5, meaning that there will be only two work-

¹²These formulas are from Edward M. Gramlich, "Different Approaches for Dealing with Social Security," *Journal of Economic Perspectives* 10, 2 (Summer 1996): 55–66.

ers for each retiree in the nation. Given current replacement rates, this implies that the combined employee-employer tax rate allocated to pay Social Security pensions, which was about 12 percent (excluding the Medicare portion of the payroll tax) in 1996, would have to rise to 17 percent by the year 2030 and could climb to as much as 20 percent by the year 2070!

Further, as we have showed, the equilibrium average rate of return on a worker's Social Security taxes in the future will be equal to the real rate of growth of real wages, projected to be between 1 and 2 percent. If tax rates to finance Social Security pensions grow, then the return to workers will fall still more. The *money's worth ratio* for Social Security is the ratio of the discounted present value of pension benefits for workers to the discounted present value of taxes paid. When this ratio falls below 1, then Social Security will cost workers more than they will get from it. The money's worth ratio for U.S. workers retiring in the early twenty-first century will be less than 1 for all but the lowest-income workers.¹³ For individual workers, the burden of paying taxes for the pensions of retirees will therefore exceed their own benefits for all except the lowest-wage workers. If the tax rate is increased as the dependency ratio increases, the money's worth ratio will continue to fall so that Social Security will become a "bad deal" for all younger workers. As this occurs, conflicts between the old and the young could develop, and unless the system is reformed, support for Social Security will decline. This is why reform of the Social Security system is becoming urgent. Given projected dependency ratios, tax rates will have to rise substantially in the future, or government budget deficits will have to increase, unless replacement rates are lowered. It remains a political choice to be made either today or in the future as to whether or not we wish to allocate more of our resources to pay pensions of the elderly than we do today.

The Rise of Security Tax Rates

Both Social Security tax rates and the maximum level of wages per year subject to those tax rates have already been increased substantially since 1983. Unless reforms are enacted, these rates will have to rise still more in the future as the population ages and dependency ratios increase if the Social Security trust fund is to continue to raise enough funds each year to pay at least that year's pension benefits.

Table 8.2 shows the tax rate schedule and maximum taxable wages per worker for selected years from 1937 to 1996. The combined employee-employer tax rate has nearly doubled since 1966, totaling 15.3 percent in 1996. This tax rate includes a 2.9 percent combined employer-employee tax that finances health insurance for the elderly (Medicare). The maximum taxable wages per worker for OASDI have increased from \$3,000 in 1937 to \$65,400 in 1996. Starting in 1991, the maximum taxable wages for the health insurance tax (HI) was increased above that for OASDI. Beginning in 1994, *all labor earnings*, without limit, have been subjected to a 2.9 percent HI tax. The maximum taxable wages per worker are indexed with the rate of inflation. The

¹³See Gramlich, 58.

TABLE 8.2

SOCIAL SECURITY TAX RATES, MAXIMUM TAXABLE WAGES, AND TAXES, SELECTED YEARS, 1937-1996

Year	Basic OASDHI Tax Rate	Combined Employer-Employee Tax Rate	Maximum Taxable Wages per Worker	Maximum Tax Based on Combined Tax Rate
1937	1.00%	2.00%	\$ 3,000	\$ 60.00
1957	2.25	4.50	4,200	189.00
1967	4.40	8.80	6,600	528.00
1977	5.85	11.70	16,500	1,930.50
1978	6.05	12.10	17,700	2,141.70
1979	6.13	12.26	22,900	2,807.54
1981	6.65	13.30	29,700	3,950.10
1983	6.70	13.40	35,700	4,783.80
1984	7.00	14.00	37,800	5,292.00
1985	7.05	14.10	39,600	5,583.60
1987	7.15	14.30	43,800	6,263.40
1988	7.51	15.02	45,000	6,759.00
1990	7.65	15.30	51,300	7,848.90
1997	7.65	15.30	65,400 ^a	10,006.20 ^b

^aAutomatically adjusted upward each year. Excludes earnings subject to additional HI tax.

^bDoes not include HI tax (2.9%) levied on earnings in excess of \$65,400 per year.

SOURCE: Social Security Administration.

sharp tax increases are designed to ensure that the Social Security Administration can continue to pay benefits based on existing replacement rates.

Many workers currently have more payroll taxes for Social Security withheld from their wages than they pay in federal income taxes. For example, a married worker earning \$20,000 per year in 1996 would have had \$1,530 withheld in payroll taxes that year. The same worker could expect to pay only slightly more than \$1,000 in federal income taxes that year.

Table 8.2 shows the combined maximum tax paid by both employees and employers. The employer's share of tax is paid out of compensation that the worker could otherwise receive as wages. Almost all of the portion of the tax paid by employers represents a cost in terms of forgone wages to employees. The combined employee-employer tax of a worker earning \$65,400 in 1996 was \$10,006.20. A married couple with each spouse earning the maximum taxable wages therefore will have their salaries generate nearly \$20,000 in payroll tax revenue in 1996—enough to pay the Social

Security pension of a typical high-income worker with a dependent spouse in that year! The Medicare (HI) tax has no limit.

If demographic and economic growth projections are correct and if replacement rates for Social Security pensions remain as currently legislated, then the proportion of GDP devoted to Social Security pensions will increase through the first half of the twenty-first century. The initial Social Security legislation was passed during the height of the Depression of the 1930s. Economic conditions and the general quality of life in the United States have changed drastically since that time. In view of the financial problems anticipated by the Social Security retirement system in the future, many economists have begun to reassess some of the basic assumptions underlying government-supplied retirement benefits financed by compulsory taxation.

Government-supplied retirement systems can be viewed as a means of forcing citizens to save for their own retirement. By forcing workers to pay Social Security taxes in exchange for the promise of retirement benefits at some point in the future, the government in effect assures the public at large that the elderly will have at least some minimal means of support after their working years. This frees children from the necessity and worry of supporting their parents in their old age and reduces the probability that the elderly will require additional government assistance. An underlying presumption behind this justification for the Social Security system is that a substantial number of workers will fail to set aside an adequate amount of savings to support themselves in their old age.

If current replacement rates are maintained, many workers at or below the median income level might find that at retirement their real income rises relative to their wages earned when they were 30 to 50 years old. This might seem a pleasant state of affairs if it were a costless development. However, workers typically have more expenses in their middle years, when they are raising families and furnishing households. Many workers might not realize how high the replacement rates are and how much the increased tax burden that they bear to finance Social Security benefits to others reduces their own real incomes during their working years.

As noted, recent legislation has been passed to raise the retirement age to 67 by the year 2027. An increase in the retirement age at which a worker becomes eligible for full Social Security benefits is equivalent to a reduction in replacement rates.

Changes in the replacement rates are likely to be unpopular with persons who are approaching retirement. The elderly are a potent and effective political force. Elderly people have more leisure time and probably are more likely to vote than younger citizens. They also have more time to inform themselves about current political issues. In future years, demographic change will result in the elderly constituting an ever-increasing percentage of the total population, as the children of various postwar "baby booms" reach old age. This effect might be even more pronounced if the life span of the elderly is lengthened as a result of medical advances. As the median voter ages, political support for reducing Social Security benefits might prove difficult to pass by majority rule. Some nations, such as Chile, have privatized their social security systems to deal with the problem of an aging population (see International View).

CHECKPOINT

1. What influences the average rate of increase in funds collected to pay Social Security pensions?
2. Why are Social Security pensions on average a much worse deal for workers who will be retiring in the next ten years than they were for their parents?
3. Why are demographic change and declining economic growth rates likely to increase the share of GDP allocated to pay Social Security pensions throughout the first half of the twenty-first century?

The Impact of Social Security on Savings and Work Incentives

Among the issues of greatest concern in the recent upsurge of criticism against the Social Security system is the impact of government-supplied retirement benefits on incentives to save and work. This is an area of considerable controversy and disagreement. Although economic theory suggests that a pay-as-you-go system of retirement distorts both savings and work choices, no conclusive evidence confirms this nor does any measure the actual effect. The impact of Social Security retirement benefits on economic incentives is the combined effect of its influence on the choices of both recipients of benefits and those who finance the benefits. Those who pay the payroll taxes to finance Social Security pensions and other benefits will have their economic choices influenced by Social Security taxes. Those already receiving Social Security benefits, or who are close to receiving such benefits, likewise have their choices influenced by the system. The analysis of work incentives in this chapter considers only the effect of Social Security benefits on the work incentive of the elderly eligible for pensions.

Work Incentives

Social Security affects the size of the work force by influencing the willingness of workers and spouses to participate in the labor force and by controlling the age of retirement. Social Security benefits reduce the incentive that older workers might have to work beyond the age of 65. In many cases, net replacement rates for workers with dependent spouses are more than 85 percent of previous earnings and tend to be supplemented with benefits from private pensions. Little financial incentive to work beyond the age of 65 exists for workers who realize net replacement rates close to 100 percent. Since 1961, male workers have had the option to retire at age 62 with reduced benefits. Women have had this option since 1956. Many workers have taken advantage of this alternative since it was first introduced, apparently because they value the three extra years of benefits and leisure time more than the reduction in annual benefits.

Also, an annual earnings test can affect the amount of benefits received, regardless of the amount to which the retiree is entitled. Although the reduction of Social

Proposals to Reform Social Security

In January 1997, the Advisory Council on Social Security, appointed in 1994, issued a report on the long-range financial status of the Social Security pension system in the United States. Although members of the commission agreed that something must be done to prepare for the flood of retirees expected by the mid-twenty-first century, they could not agree on a single solution. Instead, they offered three alternative policies for improving the finances of the system. Still other critics have offered other solutions. Whatever is done—and something will have to be done—there will be a difficult trade-off between providing existing benefits to those already retired and attempting to continue providing benefits to those who will retire in the future without raising taxes to outrageous levels or running catastrophic budget deficits.

The proposals to reform the system represent various mixes of reforms that could allow portions of Social Security payments by workers to be invested in corporate stocks while retaining portions of the existing system. A key issue in implementing any reform is transition to the new system. The Social Security system is now based on workers paying taxes to support retirees receiving Social Security pensions. If current workers are allowed to divert some of what they would otherwise pay in taxes to their own individual investment accounts to provide retirement income for themselves based on the performance of these investments, then there will be fewer funds to pay the pensions of existing retirees. Because Social Security is on a pay-as-you-go basis, any reallocation of existing tax collections at current tax rates to individual retirement accounts means less available to pay current pensions. This trade-off implies that transforming Social Security from a government-financed, pay-as-you-go, *defined-benefit* plan to a privatized *defined-contribution* plan will leave some middle-aged workers out in the cold. These workers would not have time to build up their own

accounts before retiring and would also lose the benefit of taxation of current workers to pay their pensions.

Let's look at the three options proposed by the Advisory Council.

Option 1: Maintain Benefits

The least radical proposal is to preserve Social Security in its current form with only slight reductions in replacement rates for retirees by more inclusive taxation of Social Security benefits along with large-scale investment of Social Security tax proceeds in corporate stocks. Currently, 50 to 85 percent of Social Security benefits are taxed for taxpayers with incomes above certain amounts. This proposed system would fully tax the portion of Social Security benefits in excess of previously paid employee payroll taxes.

This plan also recommends investing up to 40 percent of Social Security tax collections in the stock market in an attempt to raise the rate of return on the system above the projected rate of growth of wages of between 1 and 2 percent per year. This plan would help the system if the real return on stocks, which historically has been much higher than 2 percent, remains at those levels. The funds would be invested in an enormous index-type mutual fund that invests in a bundle of stocks such as those represented by the Dow Jones Average to prevent political manipulation of the funds. Such a fund would eventually have a trillion dollars invested.

Finally, the proposal recommends an increase in the payroll tax of 1.6 percentage points in 2045 to keep the tax collections from Social Security sufficient to pay the pensions of the large cohort of retirees expected at that time.

This plan addresses the long-term problems of Social Security without radically changing the pension system or substantially cutting the replacement rates for current and

(continued)

PUBLIC POLICY PERSPECTIVE (CONTINUED)

future retirees. It will generate additional funds to pay pensions only if the return on stocks substantially increases the income of the Social Security trust fund.

Option 2: Individual Accounts

This option raises the retirement age at which full benefits can be claimed under Social Security and reduces the replacement rate for upper-income workers. This approach would create individual accounts equal to 1.6 percent of covered payrolls under Social Security. These accounts would be held and administered by the Social Security system, and individuals would be free to choose how to invest the funds in these accounts among stock and bond mutual funds. The pensions that individuals would receive from the individual accounts would be based entirely on the amounts they contributed and the investment performance of their funds. The remainder of the pensions would come from regular Social Security formulas. This approach amounts to a 1.6 percent increase in taxes on payrolls to finance defined-contribution retirement accounts that would then supplement regular Social Security pensions, whose replacement rates would decline, especially for upper-income workers. The plan would also accelerate the increase in the retirement age at which full Social Security pensions are paid to 67 starting in the year 2011 and would adjust this retirement age in the future with changes in longevity of the population.

This plan will give individuals some additional control over their Social Security retirement pensions and possibly allow them to get higher returns to improve the money's worth of the program. It would, however, raise tax rates to accomplish this objective.

Option 3: Personal Security Accounts

This is the most radical proposal that would move more in the direction of privatizing Social Security than the individual account approach. Under this approach, the 10 percentage points of the payroll tax that are allocated to finance retirement benefits would be split. The portion paid by employers, amounting to 5 percent of taxable payrolls, would be allocated to a Social Security trust fund dedicated to pay a guaranteed flat benefit to all retirees amounting to about two-thirds of the poverty threshold income (about \$400 per month). In effect, this would guarantee all workers a minimal tax-financed pension. The 5 percentage points of payrolls paid by employees would be allocated to an individual "personal security account" for each employee. This proposed account would be managed privately through investment companies in the same way that individual retirement accounts and other defined-contribution pension plans are managed by the private sector today. The accounts would provide retirement support to workers that would vary with the amount contributed and the performance of their investments over time. When a worker retires, the fund's assets

Security retirement benefits, with earnings, had been moderated somewhat since the passage of the 1977 and 1983 amendments, the effects still can significantly influence the older worker's incentive to work.

For example, in 1996, retired workers aged 65 to 69 could earn \$13,500 per year with no reduction in benefits. The amount of retiree earnings exempt of the earnings test is indexed with the rate of inflation. The maximum permissible earnings is somewhat less for retirees less than 65. After the maximum earnings of \$13,500 are achieved, retirees' Social Security benefits will be reduced by \$1 for each \$3 of earnings for those older than the normal retirement age but less than

would be his or her personal property to do with as chosen: provide an annuitized retirement income, liquidate in a lump sum, or leave as part of an estate. The retirement age at which full benefits could be claimed would be increased to 67 in 2011 and thereafter adjusted for changes in longevity.

The problem with this approach is one of transition. As the 5 percentage point of tax is removed from financing current pensions to provide future individual retirement income, a large deficit in the ability to finance the pensions of current retirees would develop. Those at or near retirement age would be in trouble because they would have paid payroll taxes at high rates all their working lives to finance Social Security pension for their parents while their children would have the bulk of their payroll taxes allocated to pay for their own retirement!

To prevent some retirees from falling through the cracks, a transition scheme would have to be developed for which all workers close to retirement (say, age 55 and above) would be covered by the rules of the present Social Security system while all workers under the age of 25 would be on the new system, where their pension would consist of a future flat benefit plus the return on their personal security accounts. Workers between the ages of 25 and 55 could then have pension benefits based partly on the present system and partly on the return from their own personal security accounts. This complicated scheme would probably require a supplementary tax to finance the retirement benefits of workers over

the age of 55 at the time the plan is enacted. Eventually, the transition would be complete sometime in the twenty-first century, and the transition tax could be eliminated.

The advantage of the privatization scheme is that it could increase the return to Social Security tax payments from the current implicit rate of about 2.5 percent to as much as 9 percent if the historical differential between the return on stocks and other assets holds up in the future. This means that a given amount of taxes paid would generate higher pension levels to future retirees. However, some analysts dispute whether this return would hold up, given the flood of new money into the stock market, and also argue that the high cost of administering to small accounts could reduce their net return substantially.

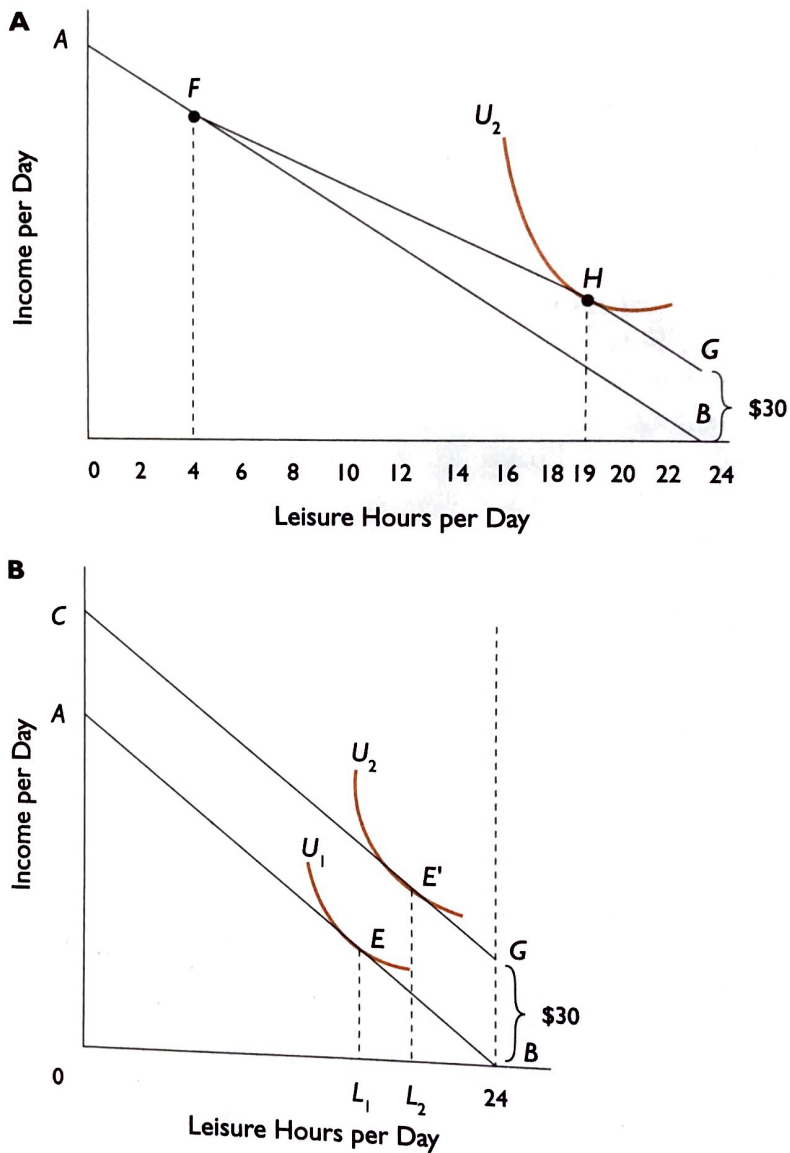
Any full or partial privatization scheme will be successful in alleviating the problems of Social Security only if it ultimately raises the rate of national saving. The current system is likely to require a payroll tax in the year 2045 that is as much as 5 percentage points higher than the one we have today. To prevent high future tax increases, the nation must either increase the return to national saving in Social Security assets, reduce the number of eligible beneficiaries for full pension benefits (by raising the retirement age), or reduce the replacement rate for retirees (e.g., cost-of-living adjustments could be reduced). All these are likely to be tough political choices that we will have to confront as we move into the next century.

70. The earnings test is not applied to workers older than 70. Retired workers also must pay Social Security payroll tax and federal and state income taxes on their earnings.

Figure 8.2 shows the impact of Social Security pensions and the earnings test on workers' incentives. The worker's leisure time per day is plotted against income, given the wage rate per hour for the worker. Each graph shows a retired worker's indifference curves for income and leisure and the income-leisure budget line. The slope of the income-leisure budget line is equal to w , where w is the net wage that the worker can earn.

FIGURE 8.2

SOCIAL SECURITY PENSIONS AND THE WORK-LEISURE CHOICE



The worker whose budget line and indifference curves are shown in **A** is subject to the earnings test. This worker encounters a substitution effect when he works more than five hours per day. Given his preferences, he is in equilibrium at point **H**. The worker whose choice to work is shown in **B** is not subject to the earnings test. His work-leisure choice is not affected by a substitution effect unfavorable to work.

In Figure 8.2A, the distance **BG** represents the worker's daily pension benefits, which for a worker with average income would be, say, approximately \$30 per day. This would be his income if he took 24 hours per day in leisure. Assume that a typical worker could earn up to \$30 per day without being subject to the earnings test. Assuming that the worker could find employment at \$6 per hour, on average he could work five hours per day without having his pension reduced. This

would occur at point H , which corresponds to 19 hours of leisure and 5 hours of work per day. Daily income at point H will be \$60, which equals \$30 in wages and approximately \$30 of pension benefits. If the worker works more than an average of five hours per day, his Social Security pension, BG , will be reduced by \$1 for each \$3 of earnings. If, for example, $BG = \$30$ per day, the worker who earns \$120 per day would have his Social Security pension reduced to zero. This is because after the \$30 per day not subject to the earnings test is deducted, the worker would have \$90 in earnings. This would reduce his pension by the full \$30 per day. Because this worker who earns \$6 per hour would have to work 20 hours per day (leaving only 4 hours of leisure per day) to have his pension benefits reduced to zero, it is unlikely that the worker would lose all his pension. If the worker chose to work a standard eight-hour day, he would earn \$48 per day, on average. Because these earnings are \$18 more than the wages not subject to the earnings test, his pension would average $\$(30 - 18/3) = \24 per day, and his gross daily income would average \$48 in earnings plus \$24 in pension benefits, or \$72. The number of hours of work that would reduce the worker's pension to zero would be less if the worker's hourly wage were higher.

Pension benefits allow the worker some income equal to the distance BG even without work. This results in an income effect that increases the demand for leisure. In addition, after a certain point the earnings test reduces the net wage that the retiree can earn until $(24 - L^*)$ hours per day are devoted to work. This decrease in the net wage results in a substitution effect that is also unfavorable to work. In Figure 8.2A, the worker is in equilibrium when eligible for pension benefits at point H . At that point, the worker takes 19 hours in leisure and therefore works, on average, only 5 hours per day, up to the point at which the earnings test begins. This result depends on worker preferences and wage rates. A worker with weaker preferences for leisure or a higher net wage works more hours even though additional work will reduce Social Security benefits. Finally, a worker with strong desires for leisure might be in equilibrium at point G . This worker would drop out of the labor force and enjoy 24 hours per day of leisure.

Naturally, the number of hours of work per day at which the pension benefits will fall to zero depends on the worker's pension per day relative to the wage the worker can earn. For workers with low pensions relative to their hourly wages, the point F in Figure 8.2A would lie further to the right and would therefore correspond to more leisure and less work per day. Workers with strong desires for work or money income might actually be in equilibrium on the section AF of the budget line, at which they forgo their Social Security pension completely and remain in the labor force working full time.

Figure 8.2B shows the impact of Social Security pensions on the work choices of a retiree older than 70, not subject to the earnings test. The worker is in equilibrium at point E prior to retirement. When this worker retires, the budget line shifts up, parallel to itself, from AB to CG . The worker's income is increased by the same amount, BG , independent of the hours worked. Here there is only an income effect, which is unfavorable to work. Because there is no substitution effect, the worker has the greater incentive to work, other things being equal, than would be the case if the earnings test applied. The worker is in equilibrium at point E' , at which he continues to work $(24 - L_2)$ hours per day. Workers with stronger preferences for leisure might choose to drop out of the labor force.

Participation of the elderly in the labor force has declined steadily since 1940, when 59.6 percent of men aged 65 to 69 were in the labor force. In 1997, only 16.5 percent of men 65 and older were in the labor force. It is impossible to attribute all or even part of this decline to the availability and increase in Social Security benefits. Clearly, the decline was influenced by the increased availability of private pensions and the general trend since 1940 to increasing real income. It is likely, however, that Social Security pensions and other benefits played a significant part in the reduced work incentive of the elderly. A number of empirical studies have provided some evidence of the effect of Social Security benefits on retirement choices and labor force participation. These have indicated a very strong negative relationship between labor force participation and the availability of Social Security benefits.¹⁴ Similarly, others have found strong association between increased Social Security benefits and coverage and the declining labor force participation of older workers.¹⁵

The U.S. income tax system also results in high rates of taxation for persons older than 65 who choose to continue working. In addition to being subjected to the earnings test, which results in a reduction in Social Security pension benefits to workers younger than 70, retirees who work also must pay payroll taxes and regular income taxes on their earnings. In addition, elderly workers who earn more than \$25,000 if they are single, or \$32,000 if they are married, who still have Social Security pensions (as would be the case for workers older than 70) will pay income tax on one-half to 85 percent (depending on their total income) of their Social Security benefits. For some retired workers, a dollar of earnings will result in both taxes and loss of Social Security benefits that will exceed the dollar of earnings! This results in very little incentive for the elderly to work. Only those elderly who enjoy working and are willing to work for much less than their gross compensation actually choose to remain in the labor force.

Saving Incentives

Among the most serious criticisms of the Social Security system is the assertion that it significantly reduces the rate of saving and capital formation in the economy. This could reduce both economic growth and the potential of the economy to provide jobs and raise incomes. The basic concern is that a pay-as-you-go system of retirement pensions has created the illusion that the tax contributions are placed in a trust fund and invested to provide retirement benefits to workers who belong to the system. As previously emphasized, the tax contributions of workers have been paid by and large directly to existing retirees until recently. The opportunity cost of such a system of paying pension benefits is the forgone return to capital that could have been earned had the taxes collected been invested in a true trust fund.

¹⁴Joseph F. Quinn, "Microeconomic Determinants of Retirement: A Cross-Sectional View of White Married Men," *Journal of Human Resources* 12 (Summer 1977): 329-346.

¹⁵Michael J. Boskin, "Social Security and Retirement Decisions," *Economic Inquiry* 15 (January 1977): 1-25. For a summary of recent studies on retirement decision, see Hurd, 590-606.

In effect, those who pay Social Security taxes receive as their return a claim not against any capital asset but against the earnings of future workers who will finance the current worker's pension when she retires. This line of reasoning remains correct even though the Social Security trust fund will grow substantially in the future, because much of the growth of the trust fund will be interest credited to its account by the U.S. Treasury. This interest will not constitute net income to the federal government because the credit of interest income to the fund will be offset by a debit of interest to the Treasury. When, however, the interest buildup is drawn on to pay cash benefits to retirees in the twenty-first century, the Treasury will have to use general fund revenues to pay out the benefits. Unless economic growth permits such revenues to be allocated without a general tax increase, the federal government might have to choose between increasing tax rates, cutting other government programs, or cutting Social Security replacement rates to meet its commitments.

Although the effects of Social Security retirement benefits on saving are not clear-cut even in theory, the worker's incentive to save is affected in two different ways. First, the promise of a pension ensures an income for the worker's retirement years, thereby reducing the necessity of saving for old age. Second, by enabling the worker to retire earlier and discouraging work after retirement, Social Security increases the retirement years of the worker. This provides incentives to save more in order to provide the resources to finance various activities associated with a greater period of non-work and more leisure time.¹⁶ In the United States since the end of World War II, the percentage of national income saved (in the aggregate) has been remarkably stable. Evidence is still scanty and somewhat conflicting, so no consensus has yet emerged among economists as to the actual effects of the Social Security system on saving.

The most controversial of the studies was conducted by Martin Feldstein and first published in 1974.¹⁷ Feldstein's empirical work showed a significant impact of Social Security "wealth" (current value of promised pensions) on the rate of saving. Subsequent research by Leimer and Lesnoy found an error in Feldstein's calculation and concluded that the impact of Social Security wealth on saving could not be verified.¹⁸

The Asset-Substitution Effect

The promise of a Social Security pension results in what Feldstein calls an **asset-substitution effect**, reducing the incentive to save. In addition, the Social Security tax directly reduces the worker's income so that the ability to save is reduced, and this in turn lowers the rate of saving still further.

¹⁶Another effect also might increase saving. If Social Security retirement benefits did not exist, and if the law provided for public assistance to the elderly poor, incentives might exist to avoid saving for one's old age so as to be eligible for a means-tested poverty benefit at the time of retirement. The existence of Social Security pensions offsets the incentive to avoid saving so as to be eligible for public assistance at retirement.

¹⁷Martin Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," *Journal of Political Economy* 92 (September–October 1974): 905–926.

¹⁸Dean R. Leimer and Selig D. Lesnoy, "Social Security and Private Saving: New Time-Series Evidence," *Journal of Political Economy* 90 (June 1982): 606–629.

Figure 8.3 illustrates the asset-substitution effect for two cases. In Figure 8.3A, a worker's indifference curves for consumption per year prior to retirement and consumption per year after retirement are drawn. If no government retirement system exists, the worker must save to provide retirement income. The line AB shows the worker's opportunity to give up annual preretirement consumption for annual postretirement consumption. The slope of the line reflects the rate of interest that the worker can earn. In the absence of a retirement system, the worker whose indifference curve U_1 is illustrated in Figure 8.3A is in equilibrium at point E . At that point, he gives up CB of annual preretirement consumption each year, which is saved to provide annual postretirement consumption of R per year.

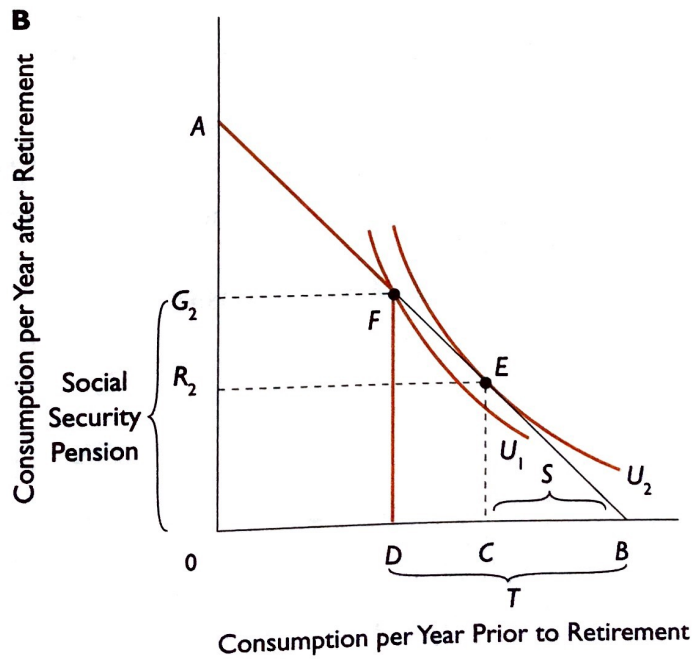
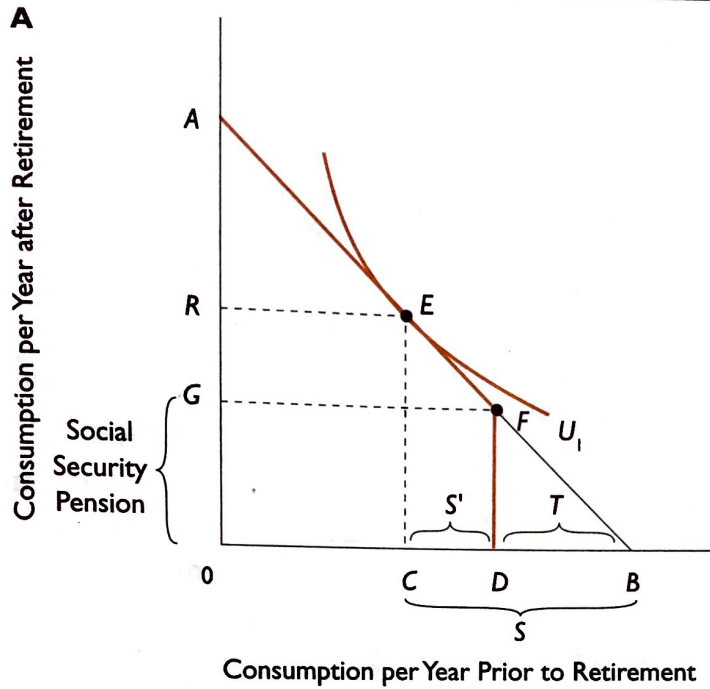
Now suppose that the government institutes a payroll tax of T dollars per year and promises the worker a pension of G per year at retirement. Assume that this tax is less than the amount the worker would otherwise save annually for retirement ($S = CB$). The distance DB represents the tax T . The payroll tax reduces the maximum amount of current annual consumption to OD per year but guarantees the worker an annual pension at retirement of OG even if the worker does not save. The worker's opportunities to trade current consumption for saving for retirement is now described by AFD . The worker whose indifference curves are illustrated in Figure 8.3A is still in equilibrium at point E . However, he now is saving only CD per year. The reduction in saving from CB to CD represents the asset-substitution effect. The worker saves less because he is promised a pension of G even in the absence of any saving. In addition, the payroll tax reduces the person's current income, further reducing the ability of the worker to save. However, this worker is no worse off because he still enjoys OC of current consumption and postretirement annual consumption of OR . The annual retirement income is equal to the government pension plus GR , from the worker's annual savings of CD .

Figure 8.3B shows the case of a worker who is made worse off as a result of the Social Security system. This worker would be in equilibrium at point E , where S per year is saved to provide postretirement annual consumption of R_2 . For this worker, the annual payroll tax, T , exceeds the amount that she normally would save for retirement. However, this tax guarantees the worker a pension of G_2 per year, which is greater than the R_2 income her savings would have financed. The worker's opportunities for allocating consumption between preretirement and postretirement years are now represented by AFD . The government pension system does not give the worker the opportunity to give up part of her pension for more current consumption. The worker's highest level of well-being is now at point F , at which she receives utility level U_1 , less than the U_2 that would be possible without Social Security benefits. This worker's saving falls to zero because the payroll tax of T per year and the overgenerous government pension (relative to the worker's preferences) remove both the incentive to save for retirement. Also, an excess burden exists in this case due to the distortion between preretirement and postretirement consumption. This distortion results in the loss in well-being, from U_2 to U_1 , for the worker.

In both cases, the reduction in saving by workers causes a decline in the rate of saving in the economy. This is because a pay-as-you-go government pension system

FIGURE 8.3

THE ASSET-SUBSTITUTION EFFECT



In **A**, the annual Social Security tax, T , reduces annual savings from S to S' . In **B**, the annual Social Security tax exceeds annual saving. For this worker, saving falls to zero. He is worse off than if no Social Security system existed and he were allowed to retain enough current income to save for retirement. His utility level is reduced from U_2 at point E without Social Security to U_1 at F with Social Security.

does not replace lost private saving with government saving. Instead, the payroll taxes collected from individual workers are used to finance the postretirement consumption of retired workers. The result is a net reduction in savings.

The Induced-Retirement Effect

The negative impact of the asset-substitution effect on saving could be offset, however, by other possible effects of the Social Security retirement system. The **induced-retirement effect** results from the fact that Social Security benefits and the earnings test for such benefits tend to provide incentives for early retirement and less work during retirement years. This in turn provides incentive for workers to save more for a more lengthy period of retirement.

Feldstein has argued that the asset-substitution effect outweighs the induced-retirement effect. If this is true, the resulting reduction in saving reduces investment and tends to make capital scarcer than it would otherwise be. The scarcity of capital results in workers having fewer machines and other tools to work with than they would otherwise have. This reduces their productivity and results in lower wages than they would otherwise be earning.

It now is generally agreed that Feldstein's original model overestimated the reduction in saving caused by the asset-substitution effect of Social Security wealth. Subsequent research by Alicia Munnell found the induced-retirement effect for increased saving being roughly offset by the asset-substitution effect of Social Security wealth on reduction in saving. Munnell points out, however, that participation of the elderly in the labor force might increase in the future; this would result in a decrease in the reliance on saving to finance retirement. This could increase the relative importance of the asset-substitution effect and cause a net reduction in saving attributable to the existence of Social Security pensions.¹⁹

The Bequest Effect

Further analysis by Robert J. Barro suggests a theoretical basis for believing that Feldstein's asset-substitution effect is offset by still another influence of Social Security pensions on saving incentives.²⁰ Barro argues that strong incentives exist for parents to leave bequests to their children. This is the **bequest effect**. Social Security is in effect an agreement between generations to finance retirement by taxes on the working population. The transfer from the working population to the retired population, inherent in tax-financed Social Security benefits, increases the capability of the retired generation to put aside funds for bequests to their children. Barro believes that the existence of Social Security pensions provides incentives for the elderly to increase their saving to provide bequests to their children. He has also argued that Social

¹⁹Alicia H. Munnell, *The Future of Social Security* (Washington, D.C.: The Brookings Institution, 1977), Chapter 6.

²⁰Robert J. Barro, "Are Government Bonds Net-Worth?" *Journal of Political Economy* 82 (November/December 1974): 1095-1117.

Security pensions decrease the need for children to make payments to support their retired parents. This tends to increase their saving over their working life.²¹

Others have argued that the uncertainty over the future of the Social Security system due to its financial difficulties and the decline in the expected return on tax contributions is likely in the future to increase incentives to save for retirement. To the extent to which the yield on Social Security wealth declines in the future and market interest rates rise above the return on Social Security, increased saving will result. The net effect of the existence of government-supplied retirement benefits on saving remains indeterminate.

CHECKPOINT

1. How are Social Security pensions affected when retirees younger than 70 have earnings from work?
2. Explain why both the income and substitution effects of Social Security pensions are unfavorable to work incentives.
3. Why is it difficult to predict the effect of Social Security pensions on saving?

Health Insurance for the Elderly: Medicare

The elderly have had government-supplied health insurance benefits since 1965, when amendments to the Social Security Act were passed. Under this health insurance plan, called **Medicare**, the elderly are covered by hospitalization insurance, which is financed by a special payroll tax amounting to a combined rate of 2.9 percent for employees and employers in 1997 on all labor income.

Medicare is a two-part program (A and B) of health insurance for persons older than 65 and some disabled workers. Medicare also pays for dialysis and kidney transplants for victims of renal disease no matter what their age. Part A of Medicare is a program of hospital insurance financed by a special payroll tax, the proceeds of which go into the Medicare Hospital Insurance (HI) Fund. Hospital benefits are subject to a deductible and cover only services that are considered medically necessary. Only reasonable charges are paid, and in some cases, Medicare patients end up paying part of the costs of covered services. Part B of Medicare is supplementary medical insurance for doctor's services, diagnostic tests, and some home health care services.

The supplementary medical insurance program under Part B is voluntary and is available to all Americans older than 65 who can purchase the coverage at subsidized rates. The monthly premium for Medicare Part B covers only about one-fourth of the costs of the program, with the remainder financed by federal revenues. The program pays 80 percent of covered services with certain maximum payments per medical service.

²¹Robert J. Barro, *The Impact of Social Security on Private Saving* (Washington, D.C.: American Enterprise Institute, 1977).

Why should government provide medical insurance to the elderly? One reason is the “adverse selection problem.” *Adverse selection* is a process by which persons who have the greatest probability of obtaining benefits seek to obtain insurance and conceal information about their adverse conditions. In general, insurance companies can pool risks to avoid large payouts due to adverse selection by covering large groups rather than by offering their services to individuals. However, individuals who are no longer employed or do not belong to a clearly definable, insurable group will have to pay higher premiums, because insurance companies must protect themselves from high payouts that might result from adverse selection. Private insurance companies therefore might be reluctant to provide health insurance to the elderly on an individual basis because of the adverse selection problem. This provides a basis for government to pool insurance risks by providing compulsory insurance for a large group such as the elderly and financing the costs through taxation. The argument for government supply of medical insurance is therefore based on the presumption that government can provide such coverage to large groups at a lower cost than can be achieved if the insurance were provided through the market.

Expenditures under the Medicare program in 1996 were \$175 billion, equal to 11 percent of total federal spending in that year and 2.4 percent of GDP. A modest amount of deductible expense must be incurred by the recipient before benefits are paid. Hospitalization benefits are paid for stays of up to 90 days for each benefit period. In effect, Medicare operates like a private health insurance program, providing benefits to all its enrollees independent of their ability to pay for medical services.

Medicare, like its companion program for the poor, Medicaid, discussed in Chapter 7, encourages the consumption of medical services by reducing the price of such services to patients. The effects of government subsidization of consumption of medical services are analyzed in Chapter 7. As pointed out there, upward pressure on the price of medical services to those not covered by the public health plan can result from medical subsidies, and an excess burden will arise from the subsidy when it induces recipients to consume medical services beyond the point at which marginal benefit equals marginal cost.

The Medicare program and other issues in government provision of health care are discussed in greater detail in the following chapter.

Unemployment Insurance

Benefits from **unemployment insurance**, which provides income support for those temporarily out of work because they have been laid off or have lost their jobs for reasons other than misconduct or a labor dispute, are managed by individual states. Each state has its own separate trust fund; however, tax collections to support the program, as well as the trust funds, are managed by the federal government. Unemployment insurance was enacted into law as part of the original Social Security Act of 1935. Unemployment insurance is financed by a payroll tax levied entirely on employers on taxable wages up to a maximum of \$7,000 per worker. The tax rate paid by each employer is based in part on the firm’s layoff experiences, with firms that

have relatively higher numbers of layoffs paying higher tax rates. This tax is collected by the federal government, but most of the funds are returned to the states, which administer the unemployment insurance program. The individual states levy their own unemployment taxes on wages. The taxable wage base varies by state, but in no case is it less than the federal taxable wage base of \$7,000 per year. State unemployment tax rates also vary considerably. In 1991, 37 states had a taxable wage base for unemployment insurance that was higher than the federal tax base; the taxable wage base ranged as high as \$22,400 (in Alaska).

Unlike medical insurance, unemployment insurance benefits are not commonly provided by private insurance firms. Unemployment insurance can increase the risk of unemployment. It is after all difficult to determine whether a worker actually is blameless for losing a job. In addition, workers in industries in which unemployment is most probable are likely to demand a disproportionate share of such insurance. Little private unemployment insurance is available, perhaps because the adverse selection problem prevents this service from being profitably supplied by private sellers.

Unemployment insurance benefits vary from state to state, with some states replacing as much as two-thirds of the worker's previous wages and paying dependent allowances. However, in recent years benefits paid have been declining and now average only 35 percent of previous earnings, not keeping pace with inflation rates. Gross replacement rates have declined on average from 50 percent to the current average of 35 percent. Normally, benefits last for a maximum of 26 weeks. However, since 1970, it has been possible to extend benefits for another 13 weeks automatically if the unemployment rate exceeds a certain level or during a recession. In times of exceptional unemployment, Congress has the power to extend unemployment insurance benefits for even longer periods. The average period of unemployment for U.S. workers, however, is only eight weeks, so workers seldom collect benefits for the full period.

Unemployment insurance mainly benefits workers who are laid off or who lose their jobs when businesses shut down or reduce the scale of their operations. Unemployment insurance benefits are not available to new entrants or reentrants into the labor force. For example, a college student who graduates and enters the labor force to look for a job is classified as unemployed until he or she finds a job. However, even if it takes this new entrant into the labor force a year to find the job, the graduate is not eligible for unemployment insurance benefits.

Unemployment insurance is one of the automatic stabilizers in the federal budget. Its designers expected the system to maintain aggregate demand in periods of recession, when the demand normally falls due to unemployment.

Unemployment benefits are available to all workers who are covered by unemployment insurance, or about 88 percent of the work force. The benefits received are positively related to previous earnings. Since 1986, unemployment insurance benefits have been fully taxable as personal income under the federal income tax.

In recent years, the proportion of the unemployed actually receiving unemployment insurance benefits has declined substantially. For example, in early 1990 only about one-third of the unemployed was collecting unemployment insurance benefits. In 1975, on average, three-quarters of the unemployed collected such benefits. The

reason for the decline is that the contemporary economy includes more service workers and part-time workers, and many of these workers change jobs frequently. The workers do not stay in one job long enough to become eligible for UI benefits. In addition, state governments now require workers to work longer and earn more wages before they can collect benefits. Even though nearly 90 percent of workers are covered by unemployment insurance benefits, the proportion of workers who actually work in covered jobs long enough to get those benefits has been declining.

Research on the economic effects of unemployment insurance has concentrated on its impact on the duration of unemployment. Some have argued that the availability of generous unemployment insurance benefits subsidizes unemployment and job search by workers who lose their jobs, and therefore this availability lengthens the period of unemployment desired by workers.

As was the case for Social Security retirement benefits, the net replacement rate is a key factor influencing the choices of those receiving unemployment insurance benefits. One study found that a 10 percentage point increase in the replacement rate increased the duration of unemployment by $1\frac{1}{2}$ weeks.²²

However, unemployment insurance benefits have not kept up with inflation since the 1970s. Average benefits paid have declined to only about one-third of previous earnings. In fact, the low current replacement rates under unemployment insurance have led to widespread criticism that the program no longer effectively cushions the costs of unemployment. The decline in net replacement rates is likely to reduce the duration of the unemployment period.

Although unemployed workers are required to register for employment at local offices of the various state employment services, they cannot lose their unemployment benefits unless they refuse the offer of a suitable job. It is, however, difficult to force unemployed workers to accept jobs that pay considerably less than their previous jobs or that have substantially poorer working conditions. For most workers therefore the registration requirement is merely a formality that requires them to spend a certain amount of time waiting in lines to receive their benefits. Workers have some control over the amount of time they remain unemployed. Their incentives to search for work and to accept lower-paying jobs depend on their replacement rates, the duration of unemployment insurance, and the availability (during their unemployment) of such subsidiary benefits as food stamps relative to what they could earn on a new job. The decline in replacement rates since 1970 is likely to have increased incentives for the unemployed receiving unemployment insurance benefits to search for new jobs. The length of the period of job search associated with unemployment, however, has some positive aspects in that in many cases it allows workers to find higher wages and more stable employment.²³ We cannot therefore conclude that reduction in the duration of unemployment is necessarily a good thing.

²²See Bruce D. Meyer, "Unemployment Insurance and Unemployment Spells," *Econometrica* 58, 4 (July 1990): 757-789.

²³For a review of studies on the effects of unemployment insurance, see Anthony B. Atkinson and John Micklewright, "Unemployment Compensation and Labor Market Transitions: A Critical Review," *Journal of Economic Literature* 29 (December 1991): 1679-1727.

CHECKPOINT

1. How does the Medicare program operate in the United States?
2. Why does “adverse selection” make it difficult or expensive for the elderly to obtain private health insurance?
3. How does the unemployment insurance system operate in the United States? Why has the proportion of the employed who actually receive such benefits been declining in recent years?

Summary

The Social Security Act of 1935 is the basis for most forms of social insurance in the United States today, including government-supplied retirement benefits, disability and survivors insurance, health insurance for the elderly, and unemployment insurance. Social insurance is more comprehensive in many European countries, where health insurance, family allowances, and maternity benefits are supplied to all residents and financed through tax contributions.

The Social Security retirement system is tax financed and has been on a pay-as-you-go basis. Benefits are financed by a payroll tax on both employees and employers on wages paid up to a certain maximum amount per worker. Because of increases in tax rates, the Social Security trust fund has begun to grow, with the result that current workers will be paying taxes for a portion of their own pensions as well as those of current retirees. However, the trust fund will rapidly decline as the second half of the twenty-first century is approached.

The gross replacement rate measures the percentage of preretirement earnings replaced by pension benefits. This rate tends to decline with preretirement income. The net replacement rate is the percentage of preretirement after-tax earnings replaced by pension benefits.

Demographic changes anticipated in the twenty-first century have necessitated increases in Social Security taxes to finance benefits to future retirees at existing replacement rates. The amendments to the Social Security Act, passed by Congress in 1977 and 1983, scheduled significant increases in the payroll tax that will finance Social Security retirement benefits.

The return earned on Social Security by retirees, given rates of taxation to finance benefits, depends on the rate of growth of the taxable wages. In turn, the growth of taxable wages depends on the growth of labor force subject to Social Security taxes and the growth of real wages, with the latter being dependent on productivity. Little growth is expected in the labor force during the next few years; the rate of productivity growth is expected to be no more than 2 percent. Given the increased ratio of retirees per worker expected in the future and the indexing of retirement benefits with the rate of inflation, payroll tax rates have risen to finance current and future Social Security pensions.

Considerable concern has been expressed about the impact of Social Security retirement benefits on incentives to work and save. The availability and structure of Social Security benefits can discourage the elderly from working. The earnings test for retired workers between the ages of 62 and 70 reduces retirement benefits per dollar earned, after a certain allowable amount of earnings.

The effect of Social Security retirement benefits on saving is controversial. Because Social Security guarantees workers a pension, the incentive to save for retirement is diminished. On the other hand, insofar as Social Security benefits enable the worker to retire early, the incentive to save, and thus to provide for a longer period of retirement, is increased. The net effect on saving is indeterminate. The actual impact of the Social Security system on saving has not been unequivocally determined by empirical research.

Other forms of social insurance in the United States include health insurance for the elderly and unemployment benefits for workers. Medicare

subsidizes medical expenses incurred by persons older than 65. Unemployment insurance is available to workers who are laid off their jobs. The replacement rate averages about 35 percent of previous wages. Because unemployment insurance subsidizes those workers who are between jobs, concern has been expressed about its impact on the length of unemployment desired by workers.

A Forward Look

The next chapter presents a discussion of health and medical expenditures in the United States and discusses the role of government in providing health benefits. The current system of provision of health insurance in the United States is discussed and the costs and benefits of an expanded government role in the provision of health insurance services are analyzed.

Important Concepts

Social Security and Insurance Programs

Fully Funded Pension System

Old-Age, Survivors, and Disability Insurance (OASDI)

Tax-Financed Pension System

Pay-as-You-Go Pension System

Average Indexed Monthly Earnings (AIME)

Earnings Test

Gross Replacement Rate (GRR)

Net Replacement Rate (NRR)

Asset-Substitution Effect

Induced-Retirement Effect

Bequest Effect

Medicare

Unemployment Insurance

Questions for Review

1. What are the basic distinctions between social insurance and government assistance programs for the poor?
2. How do Social Security benefits increase the incomes of low-income workers relative to upper-income workers? Discuss the distinction between the net and gross replacement rates for workers. What does a net replacement rate of 100 percent imply about the standard of

living of a retiree relative to preretirement earnings?

3. What are the fundamental differences between fully funded and pay-as-you-go tax-financed retirement systems? How can the Social Security system continue to pay pension benefits even if its trust fund is depleted?
4. Under what conditions will the growth of tax revenues to pay Social Security benefits equal the rate of growth of labor earnings in the economy? Why have payroll tax rates been increased in recent years?
5. How can lowering replacement rates or increasing the retirement age affect the Social Security tax rate?
6. Many economists assert that Social Security pensions redistribute income from single workers to married workers with dependent spouses and from high-income workers to low-income workers. Why is this likely?
7. Use indifference curve analysis to show how the availability of Social Security pensions and the application of the earnings test are likely to decrease hours worked and labor force participation of the elderly.
8. Use indifference curve analysis to show how a pay-as-you-go Social Security retirement system can decrease a worker's savings per year from a positive amount to zero. Under what circumstances will the system make a worker worse off than would be the case if there were no such system?
9. In what sense are Social Security pension benefits based on "need"?
10. How can the bequest effect and the induced-retirement effect offset the asset-substitution effect?

Problems

1. A middle-income worker with a dependent spouse older than 65 will retire in January 2000. In the year prior to retirement, her gross monthly earnings are \$1,500. Her Social Secu-

rity pension benefit is \$1,000 per month. Prior to retirement, she was subject to total taxes on her labor earnings amounting to 20 percent. Calculate her gross and net replacement rate. Suppose the cash value of Medicare subsidies that she expects to receive during retirement amount to \$2,000 per year. Recalculate the replacement rates including the Medicare benefits.

2. Suppose the real rate of growth of wages subject to Social Security taxes is expected to average 1 percent per year during the next 40 years. Assuming that the Social Security tax rate remains constant, prove that the average return on Social Security taxes paid into the Social Security trust fund also will be 1 percent. Explain why workers with high incomes can expect negative returns on their Social Security taxes during this period.

3. Use the data from Problem 1 to plot the worker's daily money income–leisure trade-off line. To do so, calculate her daily pension and assume 150 working hours in a month. Assume that the worker is allowed to earn \$8,000 per year before her Social Security benefits are reduced by \$1 for each \$3 of labor earnings. Show how it is possible for the retiree to be indifferent between not working at all and working enough to give up all her Social Security benefits.

4. Use indifference curve analysis to show how the Social Security pension system can reduce annual consumption for some workers who have strong preference for current versus future consumption. What factors will influence the effect of the Social Security system on an individual's well-being and savings rate?

Suggestions for Further Reading

Congress of the United States, Congressional Budget Office. *Baby Boomers in Retirement: An Early Perspective*. Washington D.C.: U.S. Government Printing Office, September 1993. An analysis of how the baby-boom generation is likely to fare in retirement compared with their parents.

Detlefs, Dale R., and Robert J. Myers. *Guide to Social Security*. Louisville, KY: William M.

Mercer–Meidinger-Hansen, Inc. A concise booklet explaining the nuts and bolts of the Social Security system. Revised annually.

Peter A. Diamond. "Proposals to Restructure Social Security." *Journal of Economic Perspectives* 10, 2 (Summer 1996): 67–68. Extensive discussion of issues in Social Security reform including analysis of reforms in Chile, Sweden, and other nations.

Edward M. Gramlich. "Different Approaches for Dealing with Social Security." *Journal of Economic Perspectives* 10, 2 (Summer 1996): 55–66. A review and analysis of recent proposals to reform the Social Security system in the United States.

Hurd, Michael D. "Research on the Elderly: Economic Status, Retirement, and Consumption and Saving." *Journal of Economic Literature* 38, 2 (June 1990): 565–637. A review and summary of many research articles on the economics of aging, retirement decisions, and the impact of Social Security pensions on choices.

Munnell, Alicia H. *The Future of Social Security*. Washington, D.C.: The Brookings Institution, 1977. A good overview of the Social Security system, with analysis of the effect of the system on saving.

Rejda, George E. *Social Insurance and Economic Security*. 3d ed. Englewood Cliffs, NJ: Prentice-Hall, 1988. A comprehensive analysis of the many social insurance programs commonly provided by industrial nations.

Stein, Bruno. *Social Security and Pensions in Transition*. New York: The Free Press, 1980. A comprehensive analysis of both government and private pension systems. Discusses the history of the Social Security system, the development of private pensions, and the basic problems faced by both types of retirement systems. The book is written well and does not require a strong background in economics.

Internet Resources

<http://www.ssa.gov>

This is the home page of the Social Security administration. You can browse this site to obtain data on current Social Security programs including

pensions, disability insurance, and other programs. With proper personal identification, you can even obtain information on your own payment of Social Security taxes (the Social Security Administration might refer to these as “contributions” but they are simply payroll tax payments made by you and your employers). If you are close to retirement, the site can also provide information on your prospective retirement benefits.

<http://www.dhhs.gov>

This is the home page of the Department of Health and Human Services. If you access the Health Care Financing Administration, you can obtain data and information on both the Medicare and Medicaid programs.