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## **Federal Employees' Retirement System: The Role of the Thrift Savings Plan**

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# Federal Employees' Retirement System: The Role of the Thrift Savings Plan

## Summary

Prior to 1984, civilian federal employees did not pay taxes to Social Security, nor were they eligible for Social Security benefits. Federal employees were instead covered by a separate pension plan called the Civil Service Retirement System (CSRS). The 1983 amendments to the Social Security Act (P.L. 98-21) required federal employees first hired after 1983 to participate in Social Security. Because the CSRS was not designed to coordinate with Social Security, Congress directed the development of a new retirement plan for federal workers. The result was the Federal Employees' Retirement System (FERS) Act of 1986 (P.L. 99-335). The FERS has three elements: (1) Social Security, (2) the FERS basic retirement annuity (a *defined benefit* plan), and (3) the Thrift Savings Plan (a *defined contribution* plan).

The FERS basic retirement annuity is determined by three factors: (1) the *salary base*, (2) the *accrual rate*, and (3) the employee's *years of service*. The salary base is the average of the highest three consecutive years of pay. Under FERS, the accrual rate is 1.0% of the salary base per year of service. A worker with 30 years of service will have accrued a pension benefit equal to 30% of the average of his or her highest three consecutive years of pay. The Thrift Savings Plan (TSP) is a *defined contribution* retirement plan similar to the "401(k)" plans provided by many employers in the private sector. The income that a retired worker receives from the Thrift Savings Plan will depend on the balance in the account. In 2004, employees covered by FERS can make voluntary contributions equal to the lesser of 14% of pay or \$13,000. Employee contributions of up to 5% of pay are matched by the federal government. Federal workers covered by CSRS also can participate in the TSP, but they receive no matching contributions from their employing agency.

One measure of retirement income adequacy, called the *replacement rate*, is the ratio of first-year retirement income to the worker's salary in the last year of employment. For an employee retiring at age 62 after 30 years of service, the FERS basic annuity will provide first-year retirement income equal to 32% of final salary. Social Security replacement rates decline as a worker's income increases because the Social Security benefit formula is "tilted" in favor of low-wage workers. Because of this tilt, higher-wage federal workers need to contribute more to the TSP in order to reach the same rate of income replacement as lower-paid workers can achieve from just the FERS retirement annuity and Social Security. For a federal worker retiring at age 62 at the GS-4 level after 30 years of federal employment, monthly Social Security benefits will replace an estimated 25% of final salary. For a worker retiring at the GS-15 salary level, Social Security will replace just 14% of final annual pay.

The TSP is a key component of FERS, especially for workers in the middle and upper ranges of the federal pay scale. These workers are unlikely to achieve adequate retirement income — as measured by the replacement rate — from just Social Security, the FERS basic annuity, and the government's automatic contribution of 1% of pay to the TSP. Even at a modest annual rate of return of 6.0%, income from the TSP can replace about 44% of final pay for a worker who contributes 10% of pay over 30 years.

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# Federal Employees' Retirement System: The Role of the Thrift Savings Plan

Pensions for civilian federal employees are provided through two programs, the *Civil Service Retirement System* (CSRS), which was established in 1920, and the *Federal Employees Retirement System* (FERS), which began operating in 1987. Prior to enactment of the *Social Security Amendments of 1983* (P.L. 98-21), federal employees were not covered by Social Security. Because the Social Security system needed additional cash contributions to remain solvent, the 1983 amendments mandated coverage for civilian federal employees hired in 1984 or later. Congress recognized, however, that CSRS provided some of the same benefits as Social Security. Moreover, enrolling federal workers in both plans would have required payroll deductions equal to more than 13% of employee pay. Consequently, Congress directed the development of a new federal employee retirement system with Social Security as the cornerstone, and which would incorporate many features of the retirement programs typical among large employers in the private sector.

The result of this effort was the Federal Employees' Retirement System Act of 1986 (P.L. 99-335). FERS consists of three elements: (1) Social Security, (2) the FERS basic annuity (a *defined benefit* plan), and (3) the Thrift Savings Plan (a *defined contribution* plan). FERS now covers all federal employees whose initial federal employment began on or after January 1, 1984, as well as employees who voluntarily switched from CSRS to FERS during "open seasons" held in 1987 and 1998.<sup>1</sup> Of 2,595,000 participating federal and Postal Service employees in March 2003, 1,825,000 (70%) were covered by FERS and 770,000 (30%) were covered by the Civil Service Retirement System.

## Defined Benefit and Defined Contribution Retirement Plans

**Two Types of Retirement Plans.** Retirement programs generally can be classified as either *defined benefit* plans or *defined contribution* plans. A defined benefit plan typically pays a pension based on *years of service* and some measure of *average salary* during those years. Social Security is a defined benefit pension plan in which years of service are counted as the 35 years of highest earnings and the measure of salary is the worker's average indexed monthly earnings during those 35 years. Both CSRS and the FERS basic retirement annuity are defined benefit plans. With each year of service, the worker accrues pension benefits equal to a percentage of average pay during his or her three highest consecutive years of earnings. To determine the amount of the retirement annuity, this percentage is multiplied by the number of years that the employee was covered by the plan. For example, a worker

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<sup>1</sup> Relatively few employees who were covered by CSRS chose to switch to FERS. Only about 5% of eligible employees switched in 1987 and fewer than 2% switched in 1998.

covered by FERS accrues retirement benefits at the rate of 1.0% for each year of service. Over a 30-year career, this would yield a retirement annuity equal to 30% of an employee's "high-3" average pay.<sup>2</sup>

A *defined contribution* plan is like a savings account maintained by the employer on behalf of each participating employee. The employer contributes a specific dollar amount or percentage of pay into the account, which is usually invested in stocks or bonds. In some plans, the amount that the employer contributes depends on the amount the employee contributes from his or her pay. When the worker retires, the amount of retirement benefits that he or she will receive depends on the balance in the account, which is the sum of all the contributions that have been made plus interest, dividends, and capital gains (or losses). The retiring worker usually has the choice of receiving these funds in the form of a life-long annuity, a series of fixed payments over a period of years, or a lump sum. The Thrift Savings Plan (TSP) is a defined contribution plan.<sup>3</sup>

An important characteristic of a defined contribution plan is that the employer has no financial obligation beyond its commitment to make contributions to each employee's retirement account. In these plans, it is the *employee* who bears the investment risk. If the contributions made to the account by the employer and the employee are insufficient, or if the securities in which the account is invested lose value or increase in value too slowly, the employee risks having an income in retirement that is not adequate to maintain his or her desired standard of living. Although the employee bears the risk of investment losses in a defined contribution plan, he or she also reaps the reward if investment returns produce more retirement income than was expected.

## **The Basic Retirement Annuity Under FERS and CSRS**

### **Retirement Age and Service Requirements Under FERS and CSRS.**

Under FERS, a worker who has at least 30 years of federal service is eligible for an immediate, unreduced retirement annuity at age 55. This age is scheduled to increase beginning with workers born in 1948, eventually reaching age 57 for federal employees born in 1970 or later. An employee with 20 or more years of service can retire with an immediate, unreduced annuity at age 60, and an employee with at least five years of service can retire at age 62. For employees covered under CSRS, the earliest retirement age is 55 for employees with 30 years of service, 60 for those with 20 years of service, and 62 for employees with at least five years of federal service.<sup>4</sup>

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<sup>2</sup> Workers who retire at age 62 or older with 20 or more years of service are credited with an accrual rate of 1.1% for each year of service.

<sup>3</sup> The Thrift Savings Plan is a "cash or deferred arrangement" as defined at I.R.C. §401(k).

<sup>4</sup> Members of Congress and congressional staff can retire with an immediate, unreduced annuity at age 50 after 20 years of service or at any age after 25 years of service. Special early-retirement rules also apply to federal law enforcement officers, firefighters, air traffic controllers, and nuclear materials couriers.

Under FERS, employees (or former employees) who have completed 10 or more years of government service can elect to receive a reduced retirement annuity at age 55. For those who choose this option, their benefit is permanently reduced by 5% for each year below age 62 at the time the annuity begins. An employee who retires at 55 with fewer than 30 years of service will have his or her annuity reduced by 35% below the amount that would have been paid if the individual were age 62 or older. CSRS has no provision for early retirement with a reduced benefit, except for special circumstances such as when an agency is implementing a reduction in force.

Of the 38,999 federal employees covered by CSRS who retired under normal, voluntary rules in 2002, 52% were between the ages of 55 and 59. They had an average of 34.4 years of federal service.<sup>5</sup> Thirty percent of federal workers who took normal retirement under CSRS in 2002 were age 62 or older. The average age of all federal workers covered by CSRS who retired in 2002 under normal, voluntary retirements was 60 years. Their average length of service was 32.5 years. Because relatively few employees hired before 1984 elected to switch to FERS, those who have been retiring under FERS have tended to be those who joined or rejoined the federal work force relatively late in their careers. In FY2002, 11,150 federal employees retired with immediate annuities under FERS. Their average age was 62.6 years, and their average length of service in the federal government was 16.4 years. The average length of service for workers retiring under FERS will rise over time as the proportion of federal employees who spent their entire careers covered by FERS continues to increase.

**Determinants of FERS and CSRS Annuity Amounts.** Both CSRS and the FERS basic retirement annuity are defined benefit pension plans. The amount of the pension benefit in both plans is determined by multiplying three factors: the *salary base*, the *accrual rate*, and the number of *years of service*, as is shown in the following formula:

$$\text{pension amount} = \text{salary base} \times \text{accrual rate} \times \text{years of service}$$

**Salary Base.** Many defined benefit plans use salary earned in the years immediately preceding retirement (called “final average pay”) to determine the initial amount of a pension. Earnings generally rise over time as a worker’s experience and productivity increase, so the years just before retirement usually will be the years when a worker’s earnings are highest. Defined benefit plans in the private sector typically base the retirement annuity on the average of a worker’s last five years of earnings.<sup>6</sup> In both CSRS and FERS, the salary base is the average of the three highest consecutive years of federal pay, sometimes called “high-3 pay.”<sup>7</sup>

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<sup>5</sup> “Normal, voluntary” retirements exclude those occurring due to disability, involuntary and voluntary retirements resulting from reductions in force, and mandatory early retirement for federal law-enforcement officers, firefighters, and air traffic controllers.

<sup>6</sup> If earnings rise each year, the average of the five highest years of pay will be lower than the average of the three highest years.

<sup>7</sup> This calculation is based on nominal (current) dollars rather than indexed (constant) dollars.

**Accrual Rate.** The *accrual rate* is the percentage of the salary base that a worker earns in pension benefits for each year of service. Under FERS, benefits accrue at the rate of 1.0% per year. A worker with 30 years of service will have accrued a pension benefit equal to 30% of the FERS salary base, which is the average of the worker's highest three consecutive years of pay.<sup>8</sup> Employees with 20 or more years of federal service who retire at age 62 or later are credited with a FERS accrual rate of 1.1% for each year of service, resulting in a higher replacement rate. For example, a worker covered by FERS who retires at 61 with 29 years of service would receive a FERS annuity equal to 29% of high-3 average pay. Delaying retirement by one year would increase the annuity to 33% of high-3 average pay.

Federal employees covered under CSRS accrue pension benefits at rates that increase with length of service. Under CSRS, benefits accrue at the rate 1.5% for each of the first five years of service; 1.75% in years six through 10; and 2.0% for each year of service after the 10<sup>th</sup> year.<sup>9</sup> This results in a retirement annuity equal to 56.25% of the CSRS salary base for a worker who retires with 30 years of service.

**Early Retirement, Social Security and the "FERS Supplement".** Congress intended FERS to be a complete retirement package comprising three components: Social Security, the FERS annuity, and the Thrift Savings Plan. Because Social Security retirement benefits cannot begin before age 62, Congress included in this package of benefits a temporary source of income for federal workers who retire before age 62. This *FERS supplement* is paid until age 62 to workers who retire at age 55 or older with at least 30 years of service, or at 60 with at least 20 years of service. The FERS supplement is equal to the portion of the Social Security benefit to which the worker will be entitled at age 62 that is attributable to the worker's years of FERS coverage.

**Cost-of-Living Adjustments (COLAs).** Cost-of-living adjustments protect the purchasing power of retirement benefits from being eroded over time by inflation. COLAs increase the *nominal amount* of retirement income, but they do not affect the *real value* of this income, provided that the measure of inflation used to determine the COLA is an accurate measure of price increases in the economy. COLAs have been in effect since 1962 for CSRS and since 1963 for military retirement. Retirement benefits paid under both of these programs are fully indexed

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<sup>8</sup> Under FERS, Members of Congress, congressional staff, and certain public safety workers accrue benefits at the rate of 1.7% per year for the first 20 years of service and 1.0% per year for service over 20 years. These rates yield a pension equal to 34% of the FERS salary base after 20 years of service and 44% after 30 years of service, provide that both the age and length of service requirements for retirement with a full FERS annuity have been met.

<sup>9</sup> Under CSRS, initial benefits are capped at 80% of high-3 average salary. Members of Congress and congressional staff accrue benefits at the rate of 2.5% for each year of service. This yields an annuity equal to 75% of the CSRS salary base after 30 years of service. Certain public safety workers accrue benefits at 2.5% per year for up to 20 years of service and 2.0% per year for service beyond 20 years.

for inflation, as measured by the Consumer Price Index for Wage and Salary Workers (CPI-W).<sup>10</sup>

To reduce costs, Congress limited the indexing of the basic retirement annuity under FERS. The FERS basic annuity is fully indexed for inflation under 2% per year but only partially indexed for inflation in excess of 2%. If the CPI-W increases by 2% or less, the FERS monthly benefit is increased by the percentage increase in the CPI-W. If the CPI-W increases by 2% to 3%, the increase in the FERS annuity is limited to 2%. If the CPI-W increases by more than 3%, the increase in the FERS annuity is equal to the rise in the CPI-W minus one percentage point. COLAs under FERS are limited to retirees who are age 62 or older, annuitants under age 62 who retired because of a disability, and survivor annuitants.

## Retirement Income Adequacy

**The “Replacement Rate.”** One of the fundamental goals of a retirement plan is to enable a worker to maintain a standard of living in retirement comparable to that which he or she had while working.<sup>11</sup> The adequacy of retirement income is often measured by calculating the ratio of retirement income to the worker’s salary in the last year of employment. This measure, called the *replacement rate*, is expressed by the following ratio:

$$\frac{\text{annual retirement benefits}}{\text{annual pre-retirement wages}}$$

Because retirees do not have the expenses that are associated with having a job, most people are able to maintain their previous standard of living with less income than they had while working. Most financial analysts agree that retirees typically will need between 60% and 80% of their pre-retirement income (adjusted for inflation) to maintain their accustomed standard of living in retirement.<sup>12</sup> Workers who had low-wage jobs generally need a replacement rate near the high end of this range because a relatively high proportion of their income is spent on non-discretionary items such as food, clothing, shelter, health care, and taxes.

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<sup>10</sup> Under both CSRS and FERS, COLAs are effective in January each year, based on the percentage increase in the CPI-W in the most recent third quarter (July-Sept.) since the previous third quarter. In 1994, 1995, and 1996, COLAs for civil service annuitants were delayed from Jan. until Apr. to achieve budgetary savings.

<sup>11</sup> Generally, adequate retirement income can be achieved from a single pension (plus Social Security) only by workers who have spent most of their working careers with one employer. The *Tax Reform Act of 1986* requires (in most cases) employees to become fully vested in pension benefits after five years of service. Thus, it is easier than it was previously for workers to accrue small pension benefits from a number of jobs over the course of their careers.

<sup>12</sup> President’s Commission on Pension Policy, *Coming of Age: Toward a National Retirement Income Policy* (Washington: GPO, 1981), and U.S. General Accounting Office, *Federal Pensions: Thrift Savings Plan Has Key Role in Retirement Benefits*, HEHS-96-1, Oct. 1995.



**Replacement Rates Under CSRS and FERS.** CSRS replaces 56.25% of *high-3 average pay* for a worker who retires after 30 years of federal employment.<sup>13</sup> The FERS basic retirement annuity was designed to replace a lower percentage of pay than the CSRS annuity (33% of high-3 average pay for a worker retiring at 62 with 30 years of service) because FERS participants also receive income from two other sources — Social Security and the Thrift Savings Plan. Social Security benefits are based on the individual’s earnings (indexed to inflation) over a 35-year period. The amount of retirement income provided by the Thrift Savings Plan will depend on the amount that was contributed to the TSP each year and the investment gains or losses of the funds into which the TSP contributions were deposited.

## The Thrift Savings Plan: An Integral Component of FERS

The Thrift Savings Plan (TSP) is a *defined contribution* retirement plan similar to the “401(k)” plans provided by many employers in the private sector.<sup>14</sup> The TSP is a key component of FERS, especially for workers in the middle and upper ranges of the federal pay scale, because these workers are unlikely to achieve adequate retirement income (as measured by the replacement rate) from the combination of Social Security, the FERS basic annuity, and the federal government’s automatic contribution of 1% of pay to the TSP. The TSP also adds an important element of *portability* to federal retirement benefits that is absent under CSRS. Workers who leave the federal government for jobs in other sectors of the economy can leave their money in the TSP — where it will continue to accrue interest, dividends, and capital gains according to the performance of the funds in which they have chosen to invest — or they can “roll over” their TSP funds on a tax-deferred basis into another tax-qualified retirement savings account such as an IRA or a 401(k). All TSP participants are immediately vested in their contributions to the plan, federal matching contributions, and any growth in the value of their investment from interest, dividends, and capital gains. Participants are fully vested in the 1% agency automatic contributions to the TSP after three years (two years for congressional employees and executive-branch political appointees).

**P.L. 106-398** (October 30, 2000) allows uniformed military personnel on active duty or in the ready reserve to participate in the TSP under the same terms and conditions as civilian federal employees. **P.L. 106-361** (October 27, 2000) allows “rollover distributions” into the TSP from other tax-qualified retirement savings plans, such as those authorized for private for-profit firms under Section 401(k) of the tax code and for private non-profit organizations under Section 403(b). This law also allows employees to begin making tax-deferred contributions to the TSP

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<sup>13</sup> The total replacement rate under CSRS may be higher for CSRS-covered employees who participate in the TSP. Employees covered by CSRS may contribute to the TSP, but they are not eligible for agency matching contributions.

<sup>14</sup> “401(k)” refers to the section of the Internal Revenue Code that authorizes deferral of income taxes until the time of withdrawal for contributions to certain kinds of savings plans and for the interest and dividends on those contributions. According to the Bureau of Labor Statistics, 51% of full-time employees in private-sector establishments worked at firms that sponsored defined contribution retirement plans in 2003.

immediately upon becoming employed by the federal government. Employees continue to be ineligible for a government match on their contributions to the TSP until the second open season after they are hired, a delay of 6 to 12 months after the date of hire.

**Employee and Agency Contributions.** Federal agencies contribute an amount equal to 1% of base pay to the TSP for each employee covered by FERS, whether or not the employee chooses to contribute anything to the plan. In 2004, workers covered by FERS can make voluntary contributions of as much as 14% of pay up to a limit of \$13,000, which is set by the Internal Revenue Service according to a formula established by Congress.<sup>15</sup> Contributions to the TSP are made on a pre-tax basis, and neither the employee's contribution nor any investment earnings that accrue to it are taxed until the money is withdrawn from the account. In addition, employee contributions of up to 5% of pay are matched by the federal government, according to the schedule shown in **Table 1**. Federal workers covered by CSRS also may participate in the TSP, but their total contribution is limited to 9% of pay in 2004, and they receive no matching contributions from their employing agency.

**Table 1. Government Matching Rate on TSP Contributions by FERS Participants in 2004**  
(as a percentage of salary)

Employee <sup>a</sup>	Government	Total
0.0%	1.0%	1.0%
1.0	2.0	3.0
2.0	3.0	5.0
3.0	4.0	7.0
4.0	4.5	8.5
5.0	5.0	10.0
6.0	5.0	11.0
7.0	5.0	12.0
8.0	5.0	13.0
9.0	5.0	14.0
10.0	5.0	15.0
11.0	5.0	16.0
12.0	5.0	17.0
13.0	5.0	18.0
14.0	5.0	19.0
<b>Maximum</b>	<b>14.0%</b>	<b>19.0%</b>

a. Subject to a maximum \$13,000 in 2004 under I.R.C. §402(g).

<sup>15</sup> Maximum annual salary deferrals are set forth at I.R.C. §402(g).

**Increase in Allowable Thrift Savings Plan Contributions.** Prior to July 1, 2001, employees covered by FERS could contribute the lesser of 10% of pay or the maximum tax-deferred contribution permissible under section 402(g) of the Internal Revenue Code. **P.L. 106-554** (December 21, 2000) increased the maximum allowable employee contribution to the TSP by one percentage point each year for five years. The percentage-of-pay limits on contributions to the TSP then will be eliminated, and employee contributions will be subject only to the limits applicable under IRC § 402(g). Beginning in July 2001, employees covered by FERS were allowed to contribute up to 11% of pay to the TSP, and employees covered by CSRS were allowed to contribute up to 6% of pay to the TSP. The maximum permissible contribution will rise by one percentage point each fiscal year until reaching 15% for FERS and 10% for CSRS in FY2005. In FY2006, the percentage-of-pay limits will be eliminated, but, the contribution limits under IRC § 402(g) will continue to apply.

The contribution that the TSP will make to a federal employee's retirement income depends on the value of the account at retirement. The value of the account in turn depends on the worker's salary during his or her federal service, the percentage of salary contributed to the TSP, the number of years over which investment earnings accrued to these contributions, and the performance of the funds into which the employee directed the contributions. Currently, participants in the TSP can deposit their contributions into one or more of five funds:

- The "C" fund is a common stock index fund invested in stocks of all of the corporations that are represented in the *Standard and Poor's 500* index. These corporations comprise most of the largest and best-known companies in the United States. Because the prices of stocks can both rise and fall, the value of a TSP account that is invested in the "C" fund might increase or decrease over time. Over the 16 years from 1988 through 2003, the "C" fund earned an average annual rate of return of 12.1%.
- The "F" fund, or "Fixed Income Index Investment Fund," is invested in a bond index fund that tracks the performance of the Shearson Lehman Brothers Aggregate (SLBA) bond index. These securities consist of government bonds, corporate bonds, and mortgage-backed securities. Like the "C" fund, the securities purchased by the "F" fund may fluctuate in value. Thus, there is a risk that contributions to this fund may lose value in some years. From 1988 through 2003, the "F" fund earned an average annual rate of return of 7.9%.
- The "G" fund consists of U.S. government securities and pays interest equal to the average rate of return on long-term U.S. government bonds. The "G" fund is considered to be the safest of the TSP funds because the principal is guaranteed not to decline in value. Over the 16 years from 1988 through 2003, the "G" fund earned an average annual rate of return of 6.8%.
- The "S" fund (Small Capitalization Stock Index Fund) invests in a portfolio of common stocks that matches the stocks in the *Wilshire*

4500 index. The average annual rate of return on the *Wilshire 4500* from 1988 through 2003 was 12.4%

- The “T” fund (International Stock Index Fund) invests in the common stocks of foreign corporations represented in the Morgan Stanley Capital Investment *EAFE* (Europe, Australia-Asia, Far East) index. The average annual rate of return on the *EAFE Index* from 1988 through 2003 was 5.3%

**TSP Withdrawal Options.** A retiring employee can withdraw funds from the TSP immediately or at a later date. There are four ways that an employee may withdraw funds from the TSP:

- as a life annuity,<sup>16</sup>
- in a single “lump-sum” payment,
- in a series of monthly payments, either for a fixed number of months or in a fixed dollar amount, until the account is depleted, or
- partly as a lump sum, and partly as an annuity or series of payments.<sup>17</sup>

Section 72(t) of the Internal Revenue Code imposes an additional tax equal to 10% of any amount withdrawn before age 59½, unless the individual has retired at age 55 or older. There is no tax penalty for withdrawals taken before age 59½ if the payments are based on life expectancy, or are made through an annuity. The Internal Revenue Code requires that withdrawals, called “required minimum distributions,” must begin by April of the year after an individual reaches age 70½ unless he or she is still working.

**TSP Participation Rates and Investment Returns.** As of September 2003, there were 3.2 million active and retired participants in the Thrift Savings Plan, including both current and former civilian employees and members of the armed services. Among civilian federal employees who were covered by FERS, 88% of those who were eligible to participate in the TSP made payroll contributions in 2003. Among employees enrolled in CSRS, 67% participated in the TSP in 2003.

As of November 30, 2003, assets invested in the TSP totaled \$124.6 billion. The “C” fund held assets of \$53.5 billion; the “G” fund held assets of \$53.4 billion; and the “F” fund held assets of \$10.8 billion. The “S” fund held assets of \$5.2 billion and the “T” fund held assets of \$1.7 billion. As a share of TSP assets, the “C” fund and “G” fund each held 42.9% of the total, the “F” fund held 8.7%, the “S” fund held

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<sup>16</sup> A life annuity is a contract between the individual and a financial institution, usually an insurance company, in which the individual exchanges a lump sum for a guaranteed stream of monthly payment for the rest of his or her life, and often for the lifetime of a surviving spouse. The insurance company invests the lump sum and uses the earnings of the investment as well as the principal to make the payments to the annuitant, which are based both on the estimated rate of return from the investment and actuarial estimates of the annuitant’s remaining life expectancy.

<sup>17</sup> The annuity or series of payments must begin at the time the lump sum is paid.

4.2% and the “T” fund held 1.4% of total assets in the TSP. The share of total TSP assets held in each fund reflects both the historical rates of return among the funds and the distribution of contributions among the funds by participating employees.

Among FERS-covered employees, the average TSP account balance in 2003 was \$45,000. The median TSP account balance for FERS participants in 2003 was \$31,000. Among CSRS-covered employees the average TSP account balance in 2003 was \$29,000. The median TSP account balance for CSRS participants in 2003 was \$22,000.

**Table 2. Annual Rates of Return for Thrift Savings Plan Funds**

Year	G Fund	C Fund	F Fund	S Fund <sup>a</sup>	I Fund <sup>a</sup>
1988	8.8%	11.8%	3.6%	20.5%	26.1%
1989	8.8	31.0	13.9	23.9	10.0
1990	8.9	-3.2	8.0	-13.6	-23.6
1991	8.1	30.8	15.7	43.5	12.2
1992	7.2	7.7	7.2	11.9	-12.2
1993	6.1	10.1	9.5	14.6	32.7
1994	7.2	1.3	-3.0	-2.7	7.8
1995	7.0	37.4	18.3	33.5	11.3
1996	6.8	22.8	3.7	17.2	6.1
1997	6.8	33.2	9.6	25.7	1.6
1998	5.7	28.4	8.7	8.6	20.1
1999	6.0	21.0	-0.8	35.5	26.7
2000	6.4	-9.1	11.7	-15.8	-15.2
2001	5.4	-11.9	8.6	-2.2	-21.9
2002	5.0	-22.1	10.3	-18.1	-16.0
2003	4.1	28.5	4.1	42.9	37.9
<b>1988-2003</b>	<b>6.8%</b>	<b>12.1%</b>	<b>7.9%</b>	<b>12.4%</b>	<b>5.3%</b>

**Source:** Federal Retirement Thrift Investment Board. Returns are net of TSP expenses.

a. Actual rates of return for S and I Funds since May 2000. Rates of return for Wilshire 4500 Index and the EAFE Index, respectively, before May 2000.

## Illustrations of the TSP’s Role in Providing Retirement Income Under FERS

The following tables illustrate the role of the TSP in assuring an adequate income during retirement for federal employees covered by FERS. Each table shows the annual salary in the year before retirement for four employees: one at the GS-4 level, one at GS-8, one at GS-12, and one at GS-15. The salaries shown are the estimated pay at step 8 of the pay grades in the year 2033 (**Tables 3 and 4**) or 2023 (**Tables 5 and 6**), assuming that future federal salary increases average 3.9% per year. The salary amounts are expressed in their 2004 dollar equivalents, based on an assumed future inflation rate of 2.8% per year. The tables show the estimated

replacement rates during the first year of retirement for each of three sources of retirement income: the FERS basic retirement annuity, Social Security, and the annual income provided by converting an employee's Thrift Savings Plan into a level, single-life annuity.<sup>18</sup>

*Within* each of the four tables, two factors are varied: pay grade and the employee contribution to the TSP. Final salaries and retirement income replacement rates are shown for each of four illustrative pay grades. The replacement rate is shown for employees who make no contribution to the TSP, and thus receive only the agency automatic 1% contribution; for workers who contribute 5% of pay, and therefore receive a 5% contribution from their employing agencies; and for workers who contribute 10% of pay, which results in the same 5% agency contribution as would a 5% employee contribution.

*Across* the four tables, two factors are varied: the assumed rate of return on funds invested in the TSP, and years of service at retirement. The results in **Table 3** and **Table 5** are based on a nominal rate of return on investment of 6.0% per year. In **Table 4** and **Table 6**, the results are based on a nominal rate of return of 8.0% per year. Because the rate of inflation is assumed in these estimates to average 2.8% per year, the real rate of return on investment is 3.2% in **Table 3** and **Table 5**, while in **Table 4** and **Table 6** the real rate of return on investment is 5.2% per year. In **Table 3** and **Table 4**, the replacement rates have been estimated for a federal employee who retires on December 31, 2033 at age 62 after 30 years of service under FERS. In **Table 5** and **Table 6**, the replacement rates have been estimated for an employee who retires on December 31, 2023 at age 62 after 20 years of service under FERS.

The results presented in each of the following tables assume that the employee contributed the same percentage of pay to the TSP over the length of his or her entire career. The tables illustrate the effects of career-long employee contribution rates of 0%, 5%, and 10%. **Table 3** and **Table 4** show the replacement rates after a 30-year career, assuming nominal rates of return on investment of 6.0% per year and 8.0% per year, respectively. Obviously, actual rates of return on an employee's TSP account will vary from year to year, and over 30 years an employee could achieve average rates of return that are higher or lower than the results shown here. Moreover, many employees begin their careers contributing little or nothing to the TSP, gradually increasing their contributions as their incomes increase, or as they become more aware of the need to save for retirement. Consequently, these examples should be regarded as illustrations only.

**Estimated Replacement Rates for a 30-Year Employee.** For a federal employee who begins his or her career in 2004 and retires after 30 years of service, the FERS basic annuity will provide first-year retirement income equal to about 32%

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<sup>18</sup> A "single-life annuity" pays benefits until the annuitant dies. A "joint and survivor annuity" pays a smaller monthly benefit, but guarantees continued payment until the death of the annuitant or the annuitant's spouse, whichever comes later. A "level annuity" pays a fixed monthly benefit year after year. A "graded annuity" pays a smaller initial monthly benefit, but the benefit is increased by a fixed percentage (often 3%) as a means of preserving the real value of the benefit against the effects of inflation.

of the worker's final annual salary. (See **Table 3** and **Table 4**). The dollar amount of the annuity will be higher for higher-paid employees, but the replacement rate will be approximately the same, regardless of the employee's final salary level. The replacement rate of Social Security benefits, however, declines as a worker's income increases. The benefit formula for Social Security is "tilted" in favor of low-wage workers; therefore, the percentage of earnings replaced by Social Security is greater for low-wage workers than for high-wage workers.<sup>19</sup>

The lower rate of income replacement provided to high-wage workers by Social Security is one of the main reasons why these workers need a higher rate of personal saving in order to reach the same rate of income replacement as lower paid workers are able to attain through the combination of the FERS retirement annuity and Social Security. For a federal worker retiring at the GS-4 salary level at age 62 after 30 years of federal employment, monthly Social Security benefits will replace an estimated 25% of final salary. (See **Table 3** and **Table 4**). For a worker retiring at the GS-8 salary, the replacement rate for Social Security drops to 21% of final pay. For a worker retiring at the GS-12 salary level, Social Security will replace only 19% of final pay. Social Security will replace just 14% of final pay for a worker who retires at the GS-15 salary level.

The proportion of pre-retirement income that will be replaced by converting the employee's Thrift Savings Plan into a retirement annuity will depend on the balance in the account and the interest rate at which the account balance is converted to an annuity. The account balance at retirement depends on the *percentage of pay* that the employee contributed throughout his or her career, the *rate of return* earned by the funds in which these contributions were invested, and the *length of time* over which the employee and employer contributions to the TSP were in the fund earning additional interest, dividends, and capital gains. For any given account balance, a higher annuity interest rate will provide a larger annuity. The annuity interest rate is determined by the prevailing long-term interest rates in the nation's credit markets.

Employees covered by FERS have an amount equal to 1% of pay contributed to the Thrift Savings Plan by their employing agencies, even if the employee makes no voluntary contributions to the TSP. This amount is not deducted from employee pay. It is paid by the employing agency from sums appropriated to it by Congress for salaries and related expenses. Assuming a nominal annual investment return of 6.0%, an employee who retires after 30 years of federal employment will be able to replace only about 3% of final salary from his or her TSP account if he or she never makes a voluntary contribution to the plan. (See **Table 3**). Assuming a 8.0% rate of return, the TSP could replace about 4% of pay for a worker who makes no voluntary contributions. (See **Table 4**).

With only the agency automatic 1% contribution, the combined income from FERS, Social Security, and the TSP would leave workers at all four illustrated pay levels at or below the 60% income replacement rate that many pension professionals

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<sup>19</sup> Social Security is intended to replace a relatively higher percentage of career-average pay for low-wage workers than for high-wage workers in part because Congress recognized when designing the program that low-wage workers are less able to save for retirement.

regard as the minimum necessary for maintaining one's accustomed standard of living in retirement. By contributing 5% of pay, however, the replacement rate can be boosted substantially. Even assuming a relatively low rate of return on investment of 6.0%, annual employee contributions of 5% of pay to the TSP would boost the replacement rate to 76% at the GS-15 level and to 87% at the GS-4 level after a 30-year career.

**Table 3. Illustration of Replacement Rates for FERS-Covered Employee Retiring at Age 62 After 30 Years of Service**

(Assuming an average annual rate of return on TSP of 6.0% (nominal))

	GS-4	GS-8	GS-12	GS-15
Final salary in 2004 dollars:	\$40,072	\$61,508	\$98,513	\$162,846
Source of retirement income:	<i>Percent of pre-tax final salary replaced by each source of income:</i>			
FERS basic retirement annuity	32%	32%	32%	32%
Social Security	25%	21%	19%	14%
TSP monthly annuity with only 1% agency automatic contribution	3%	3%	3%	3%
<b>Total replacement rate, first year</b>	<b>60%</b>	<b>57%</b>	<b>54%</b>	<b>49%</b>
TSP monthly annuity with 5% from employee and 5% agency match	30%	30%	30%	30%
<b>Total replacement rate, first year</b>	<b>87%</b>	<b>83%</b>	<b>81%</b>	<b>76%</b>
TSP monthly annuity with 10% from employee and 5% from agency	44%	44%	44%	44%
<b>Total replacement rate, first year</b>	<b>101%</b>	<b>97%</b>	<b>95%</b>	<b>90%</b>

**Source:** Estimates prepared by the Congressional Research Service.

**Notes:** Includes only Social Security benefits earned while a federal employee. Estimates reflect current law, including scheduled increases in retirement age. Estimates of income from the TSP are based on a level single-life annuity at 5%.

The impact on replacement rates of the first 5% of employee contributions is especially large because each additional percent of pay contributed by the employee brings matching contributions from the employer. The first 3% of pay contributed by the employee is matched dollar-for-dollar by the employing agency, and the next 2% of pay is matched by the employer at the rate of 50 cents on the dollar.



**Table 4. Illustration of Replacement Rates for FERS-Covered Employee Retiring at Age 62 After 30 Years of Service**  
(Assuming an average annual rate of return on TSP of 8.0% (nominal))

	GS-4	GS-8	GS-12	GS-15
Final salary in 2004 dollars:	\$40,072	\$61,508	\$98,513	\$162,846
Source of retirement income:	<i>Percent of pre-tax final salary replaced by each source of income:</i>			
FERS basic retirement annuity	32%	32%	32%	32%
Social Security	25%	21%	19%	14%
TSP monthly annuity with only 1% agency automatic contribution	4%	4%	4%	4%
<b>Total replacement rate, first year</b>	<b>61%</b>	<b>57%</b>	<b>55%</b>	<b>50%</b>
TSP monthly annuity with 5% from employee and 5% agency match	40%	40%	40%	40%
<b>Total replacement rate, first year</b>	<b>97%</b>	<b>93%</b>	<b>91%</b>	<b>86%</b>
TSP monthly annuity with 10% from employee and 5% from agency	60%	60%	60%	60%
<b>Total replacement rate, first year</b>	<b>117%</b>	<b>113%</b>	<b>111%</b>	<b>106%</b>

**Source:** Estimates prepared by the Congressional Research Service.

**Notes:** Includes only Social Security benefits earned while a federal employee. Estimates reflect current law, including scheduled increases in retirement age. Estimates of income from the TSP are based on a level single-life annuity at 5%.

Higher investment returns would result in a higher replacement rate. For an employee who contributes 5% of pay over a 30-year career, an 8.0% annual rate of return on investment would result in a TSP account balance that, when converted to a retirement annuity would by itself replace 40% of final salary. (See **Table 4**).

Employee contributions above 5% of pay are not matched by the employing agency, but they still have a substantial impact on replacement rates. Assuming a 6.0% annual rate of return, a 10% employee contribution to the TSP over a 30-year career would result in a replacement rate from the TSP of approximately 44% of final pay. (See **Table 3**). When combined with the FERS basic annuity and Social Security benefits, the TSP can increase the replacement rate for those who contributed 10% of pay to the TSP over a 30-year career to more than 90% of final pay. Assuming a rate of return on investment of 8.0%, employees who contribute 10% of pay over a 30-year career can replace more than 50% of their final pay from

the TSP. When combined with the FERS basic annuity and Social Security benefits, the retirement income resulting from a 10% annual employee contribution and a 8.0% annual rate of return could result in replacement rates of more than 100% in the initial year of retirement. (See **Table 4**).

**Estimated Replacement Rates for a 20-Year Employee.** **Table 5** and **Table 6** show the estimated replacement rates achieved by the combination of the FERS basic annuity, Social Security, and the TSP for an employee who retires at age 62 after 20 years of service under FERS. (Note that the Social Security benefits shown in all examples are only those that the worker earned during the period that he or she was a federal employee). For a worker retiring at 62 with 20 years of service, the basic FERS retirement annuity would replace about 22% of final earnings, regardless of the GS-level from which he or she retires. Because Social Security's benefit structure favors low-wage employees, Social Security benefits replace a higher percentage of final earnings for a worker retiring at the low end of the general schedule than for one who retires from a job at the high end of the pay scale. Social Security benefits earned during a 20-year period of federal employment would replace approximately 21% of final earnings for a worker who retires from a job at the GS-4 level, compared to a replacement rate of 18% at the GS-8 level, 15% at the GS-12 level, and 12% at the GS-15 level. (See **Table 5** and **Table 6**).

The estimates presented in **Table 5** and **Table 6** make clear that the FERS retirement annuity and Social Security benefits accumulated over a 20-year period will not provide a level of retirement income that would meet the minimum 60% replacement rate recommended by most financial advisors. In these examples, the combined replacement rates achieved by the FERS annuity and the Social Security benefits attributable to the worker's period of federal service range from 36% for a highly-paid employee to 45% for a lesser-paid employee. For employees who make no voluntary contributions to the Thrift Savings Plan, the TSP would add a negligible amount to these replacement rates. For an employee with 20 years of service who makes no contributions to the TSP, the agency automatic 1% contribution would replace about 2% of final pay based on a 6.0% annual rate of return. (See **Table 5**). Assuming a 8.0% annual investment return, the agency automatic contribution would still replace only 2% of pay for an employee retiring after 20 years of service. (See **Table 6**).

The estimates displayed in **Table 5** and **Table 6** also show that a worker who participates in the TSP only during the 20 years immediately preceding retirement will achieve a much lower income replacement rate than an employee who participates for 30 years. **Table 5** shows that an employee contributing 5% of pay and earning a 6% annual rate of return would be able to replace about 17% of final pay from his or her TSP account. This is much lower than the 30% replacement rate achieved by an employee who contributes 5% of pay over 30 years and earns a 6% annual return. Contributing 10% of pay over 20 years at an annual investment return of 6.0% would raise the employee's replacement rate to 26%; however, this is about 18 percentage points below the replacement rate achieved by an employee who contributes 10% of pay over a 30-year period, assuming a 6.0% rate of return.

**Table 5. Illustration of Replacement Rates for FERS-Covered Employee Retiring at Age 62 After 20 Years of Service**  
(Assuming an average annual rate of return on investment in TSP = 6.0%)

	GS-4	GS-8	GS-12	GS-15
Final salary in 2004 dollars:	\$36,026	\$55,297	\$88,567	\$146,404
Source of retirement income:	<i>Percent of pre-tax final salary replaced by each source of income:</i>			
FERS basic retirement annuity	22%	22%	22%	22%
Social Security	21%	18%	15%	12%
TSP monthly annuity with only 1% agency automatic contribution	2%	2%	2%	2%
<b>Total replacement rate, first year</b>	<b>45%</b>	<b>42%</b>	<b>39%</b>	<b>36%</b>
TSP monthly annuity with 5% from employee and 5% from agency	17%	17%	17%	17%
<b>Total replacement rate, first year</b>	<b>60%</b>	<b>57%</b>	<b>54%</b>	<b>51%</b>
TSP monthly annuity with 10% from employee and 5% from agency	26%	26%	26%	26%
<b>Total replacement rate, first year</b>	<b>69%</b>	<b>66%</b>	<b>63%</b>	<b>60%</b>

**Source:** Estimates prepared by the Congressional Research Service.

**Notes:** Includes only Social Security benefits earned while a federal employee. Estimates reflect current law, including scheduled increases in retirement age. Estimates of income from the TSP are based on a level single-life annuity at 5%.

At an 8.0% annual rate of return, an employee who participates in the TSP only for a 20-year period can bring his or her total replacement rate closer to the range that is generally considered necessary for maintaining one's standard of living in retirement. At this rate of return on investment, an employee contributing 5% of pay each year can achieve a replacement rate of 21% from the TSP. Combined with the FERS basic retirement annuity and Social Security benefits, this would yield a total replacement rate ranging from 54% for a worker retiring from a GS-15 job to 63% for the lower-paid worker retiring from a GS-4 job. By contributing 10% of pay each year, the 20-year employee can replace an estimated 31% of final pay from the TSP alone. This would yield a total replacement rate of 64% for the GS-15 employee and 73% for the GS-4 employee.

**Table 6. Illustration of Replacement Rates for FERS-Covered Employee Retiring at Age 62 After 20 Years of Service**  
(Assuming an average annual rate of return on investment in TSP = 8.0%)

	GS-4	GS-8	GS-12	GS-15
Final salary in 2004 dollars:	\$36,026	\$55,297	\$88,567	\$146,404
Source of retirement income:	<i>Percent of pre-tax final salary replaced by each source of income:</i>			
FERS basic retirement annuity	22%	22%	22%	22%
Social Security	21%	18%	15%	12%
TSP monthly annuity with only 1% agency automatic contribution	2%	2%	2%	2%
<b>Total replacement rate, first year</b>	<b>44%</b>	<b>40%</b>	<b>38%</b>	<b>35%</b>
TSP monthly annuity with 5% from employee and 5% agency match	21%	21%	21%	21%
<b>Total replacement rate, first year</b>	<b>63%</b>	<b>59%</b>	<b>57%</b>	<b>54%</b>
TSP monthly annuity with 10% from employee and 5% from agency	31%	31%	31%	31%
<b>Total replacement rate, first year</b>	<b>73%</b>	<b>69%</b>	<b>67%</b>	<b>64%</b>

**Source:** Estimates prepared by the Congressional Research Service.

**Notes:** Includes only Social Security benefits earned while a federal employee. Estimates reflect current law, including scheduled increases in retirement age. Estimates of income from the TSP are based on a level single-life annuity.

**Workers Who Leave Federal Employment Before Reaching Retirement Age.** For employees who switch jobs one or more times over the course of their careers, a defined contribution retirement plan such as the TSP has an advantage over the traditional defined benefit pension in that the value of the accrued benefit can continue to increase until the employee reaches retirement age. All that is required for this to occur is for the employee to refrain from spending any lump-sum distributions that he or she may receive before retiring and for the accrued benefit to remain invested in an asset that achieves a total rate of return in the interim before retirement that is greater than the rate of inflation.

Employees who have become vested in a defined benefit pension are legally entitled to the benefit they have earned upon reaching the plan's normal retirement age, even if they are no longer employed by the firm at which they earned the pension. For example, consider an employee who leaves the federal government for another employer at age 40 after 10 years of service. If this individual's highest three

consecutive years of earnings averaged, say, \$40,000, he or she would be entitled to an annuity of \$4,000 per year beginning at age 62.<sup>20</sup> In most defined benefit pension plans, including FERS, the annuity is based on the employee's actual earnings during their period of employment with the firm, and these salary amounts are not adjusted for inflation between the time the employee leaves the firm and the date of retirement. The worker in this example would be eligible to collect his or her \$4,000 annuity at age 62, 22 years after leaving the federal government. If inflation were to average 3.0% per year over those 22 years, the retiree's first-year annuity would be worth only about \$2,100 in 2004 dollars.<sup>21</sup>

In contrast to the example just cited, the value of a defined contribution plan like the TSP can continue to grow throughout an individual's working life, regardless of how often he or she changes jobs. If the employee had contributed the maximum permissible amount to the TSP each year and these contributions had earned an average rate of return of 6%, the TSP account would have reached a value of approximately \$65,000 after 10 years.<sup>22</sup> If the employee leaves this money invested in the TSP or transfers it to another qualified retirement savings account, this sum can continue to grow until the employee reaches retirement age.<sup>23</sup> Assuming that the funds earn a relatively modest annual return of 6.0%, the total will have risen to \$279,000 by the time this individual has reached age 65. At current interest rates, this would be sufficient to purchase an annuity that would pay the retiree \$24,250 per year (\$2,021 per month) for the rest of his or her life.<sup>24</sup>

## Conclusion

The Thrift Savings Plan (TSP) plays a pivotal role in helping federal workers achieve adequate financial resources for retirement. Employees covered by FERS who do not make voluntary contributions to the TSP, and thus receive only the 1% agency automatic contribution, will be able to replace only 2% to 4% of final annual salary from the TSP at retirement. Most workers in the lower and middle ranges of the federal salary scale will be able to achieve the 60% salary replacement

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<sup>20</sup> FERS employees accrue benefits each year equal to 1.0% of the average of their high-3 pay. An employee with five or more years of service can receive a full annuity at age 62. An employee with 10 or more years of service can receive a reduced annuity at 55.

<sup>21</sup> Once payment of a FERS annuity begins, it is protected from inflation by annual cost-of-living adjustments — but only partially and only for retirees age 62 and older. See CRS Report 94-834, *Cost-of-Living Adjustments for Federal Civil Service Annuities*.

<sup>22</sup> Based on contributing 10% of pay (plus 5% employer match) on a starting salary of \$27,000 and ending salary of \$42,000 earning 6.0% compounded annually.

<sup>23</sup> Departing employees who have not reached age 55 have the option to leave their TSP accounts intact, in which case they will continue to accrue interest, dividends, and capital gains until the individual withdraws the money. They also can “roll over” their TSP accounts into another tax-qualified retirement account such as an Individual Retirement Account (IRA) or another employer's 401(k). Alternatively, a departing employee can withdraw his or her funds from the TSP without rolling them over into another account, in which case both regular income taxes and a 10% tax penalty will apply.

<sup>24</sup> Based on a single-life, level annuity at an interest rate of 4.125%.

recommended by pension analysts from the benefits paid by Social Security and the FERS basic retirement annuity, but this is not so for higher-wage federal workers. Federal employees at all income levels can significantly boost their retirement income by contributing to the TSP, and such contributions are essential in order for those in the upper third of the federal pay scale to achieve a level of income that will allow them to maintain their pre-retirement standard of living.