CBO
MEMORANDUM

THE CONTRIBUTION OF
MUTUAL FUNDS
TO TAXABLE CAPITAL GAINS

October 1999

CONTENTS

TABLES

FIGURES

BOXES

SUMMARY
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Mutual funds pool money from shareholders and invest in a diverse portfolio of securities. The funds earn income from the dividends and interest paid on those securities; they also earn capital gains when they sell securities for more than they paid for them. As long as the funds distribute most of the income they earn in a year to their shareholders, that income is taxed as income to the shareholder, not the fund. The federal income tax applies lower tax rates to long-term capital gains (gains realized on assets held for at least a year), so mutual funds identify those gains separately as capital gains distributions. The vast majority of capital gains distributions are earned by stock funds, with bond funds earning the rest.

Capital gains distributions from stock and bond funds have been rising rapidly for the past two decades. Between 1990 and 1997 alone, they soared from $8 billion to $183 billion. That amount of growth equals two-thirds of the increase in capital gains reported on individual income tax returns between 1990 and 1997. Furthermore, the growth of those distributions between 1994 and 1997 was large enough that it could have caused one-fourth of the unexpected surge in federal revenues from individual income taxes that occurred in fiscal years 1996 through 1998.

Did the rapid growth of capital gains distributions from mutual funds cause the simultaneous surges in taxable capital gains and income tax revenues? Although many people have speculated that it may have, this analysis concludes that it did not. The reason is that two factors muted the impact of mutual-fund distributions on taxable capital gains and tax revenues. First, less than half of the distributions paid in recent years were taxed as capital gains. And second, some of the distributions that were taxed probably substituted for gains on directly held stocks.

Individual income tax returns provide direct evidence about the amount of capital gains distributions paid out by mutual funds in one year that become taxable income for the same year. The amount of such distributions reported on tax returns has grown less rapidly than the amount paid by mutual funds. In the early 1980s, total distributions reported by taxpayers were nearly equal to total distributions paid out; by 1990, they represented only about one-half, and by 1997, about one-quarter.

The tax status of the remaining capital gains distributions is not known for certain. But indirect evidence about that status comes from information about who owns shares in stock funds. From the 1920s, when stock funds began, through the 1950s, nearly all shares were held directly by individuals in taxable form. Since then, various institutions have started purchasing shares in stock funds. Between 1980 and 1997, the fraction of stock-fund assets held in traditional, individual accounts declined from 66 percent to 28 percent, according to one source of data. That decline accounts for the declining share of capital gains distributions reported on tax returns.

The falling percentage of stock-fund assets held in traditional accounts has largely resulted from the rapidly rising percentage of assets held in pensions, individual retirement accounts, and insurance company products called variable annuities. In 1997, those three types of accounts held 57 percent of stock-fund assets. Capital gains distributions received by those accounts are tax-deferred until they are paid out to individual beneficiaries, often years after they are received. Furthermore, payouts from those accounts are taxed as part of beneficiaries' ordinary income, so they are not identified as capital gains distributions at that time. Thus, distributions paid to those three types of accounts never show up in taxable capital gains.

A variety of other institutions—ranging from trusts and estates to corporations, nonprofit institutions, and state and local governments—also hold stock-fund assets. Trusts and estates appear to receive about 10 percent of the capital gains distributions paid by stock funds in most years. A substantial fraction of those gains are passed along to individuals; although they are taxed as capital gains on individual returns, they are not identified as distributions from mutual funds. The rest, which are retained by the trust or estate, are taxed as gains under the fiduciary income tax. The other types of institutions that own shares in stock and bond funds most likely receive a small fraction of the capital gains distributions paid by those funds. Nonfinancial corporations probably pay taxes on the distributions they receive, but other institutions are likely to be tax-exempt.

All together, less than 40 percent of the capital gains distributions that mutual funds paid in 1997 appear to have been taxed as capital gains that year, the Congressional Budget Office (CBO) estimates.

Besides receiving capital gains distributions, owners of mutual-fund shares can realize capital gains or losses when they sell their shares. The limited information available about that source of gains, however, suggests that it adds much less to total taxable gains than distributions from mutual funds do.

The amount of capital gains distributions that become taxable income measures the gross effect of mutual-fund distributions on taxable income. The net effect is probably smaller. To the extent that mutual funds are buying and selling assets that people would have bought and sold by themselves, capital gains distributions substitute for capital gains realizations that would have occurred otherwise. Statistical regression tests performed by CBO could not identify the extent to which the distributions that become taxable individual income represent a net increase in taxable gains rather than a substitution, but some net increase is likely.

Because distributions from mutual funds make a smaller net contribution to taxable capital gains than the amounts paid out, they account for a small portion of the growth in taxable capital gains that occurred between 1990 and 1997. Nor have such distributions been a major component of revenue growth in recent fiscal years.

The major contributors to revenue growth have been wages, business income, and capital gains on all assets, all of which have grown strongly, particularly among higher-income taxpayers.[1]

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1.   Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 2000-2009* (January 1999), pp. 48-50; and Richard A. Kasten, David J. Weiner, and G. Thomas Woodward, "What Made Receipts Boom and When Will They Go Bust?" *National Tax Journal* (September 1999), pp. 339-347.

MUTUAL FUNDS AND THEIR CAPITAL GAINS DISTRIBUTIONS

A mutual fund is "an investment company that pools money from shareholders and invests in a diversified portfolio of securities."[1] Such funds diversify by investing in a range of securities issued by various businesses and governments. But most funds also set an investment objective, such as growth or income, that leads them to focus their investing on particular types of securities. Stock funds specialize in the common shares of publicly traded corporations. Bond funds specialize in the longer-term debt of governments and corporations. Money market funds invest in debt instruments, too, but focus on those with short terms and low risk of default. Within each of those broader categories, many funds have a narrower focus, such as Asian stocks or long-term, tax-exempt municipal bonds. Some funds, called hybrids, invest in a mixture of bonds and stocks.

At the end of 1998, $5.5 trillion was invested through U.S. mutual funds (see Table 1). That amount was as large as 13 percent of the nation's household assets.[2] Stock funds were by far the biggest category of mutual fund, with money market funds a distant second, followed closely by the combination of bond and hybrid funds.

Mutual funds earn income by receiving interest payments and dividends on the securities they hold. They also realize capital gains and losses from selling securities. Mutual funds' net income is the amount that remains from interest, dividends, and realized capital gains after subtracting realized capital losses and operating expenses.

Mutual funds are exempt from tax on income they pass on to shareholders, provided the funds meet certain requirements. One requirement is that they distribute most of their income in the year they earn it. For example, to avoid one excise tax, mutual funds must distribute, before the end of the calendar year, 98 percent of the net capital gains they realize during the 12 months ending October 31. (When a mutual fund's net income is negative, that income cannot be distributed but instead is carried forward to offset positive income in future years.)

Distributions are taxable to the shareholders who receive them, just as they would be if the shareholders held the underlying assets themselves. Interest, dividends, and short-term capital gains (those held for less than a year) are taxed as ordinary income. Mutual funds group those payments together under the term "income distributions," or sometimes just "dividends." Long-term capital gains from

1.   Investment Company Institute, *1999 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1999), p. 11.

2.   Household assets are reported in Federal Reserve Board, *Flow of Funds Accounts of the United States* (June 11, 1999), Table B.100, p.102. Not all of the money invested in mutual funds is listed in household assets. Mutual-fund assets that households hold indirectly through pensions, insurance companies, and other businesses are excluded. (The household sector in the flow-of-funds accounts includes nonprofit institutions.)

TABLE 1.   ASSETS IN U.S. MUTUAL FUNDS AT THE END OF 1998

Type of Fund	Assets (Billions of dollars)	Percentage of Total Mutual-Fund Assets
Stock	2,978	54
Money Market	1,352	24
Bond	831	15
Hybrid	365	7
Total	5,525	100

SOURCE: Congressional Budget Office based on Investment Company Institute, *1999 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1999), p. 67.

mutual funds are taxed like other long-term capital gains; they are identified separately as "capital gains distributions." Shareholders choose whether to receive their distributions as payments or have them reinvested in the fund through the purchase of new shares. Distributions are taxable whether paid out or reinvested.

By the above definitions, money market funds typically do not generate capital gains distributions because they invest primarily in securities with a duration of less than a year (thus, the few capital gains they realize are short term). Since money market funds do not make capital gains distributions, they are not included in this analysis. Instead, this memorandum focuses on stock funds and bond funds. (For the sake of simplicity, references to bond funds include hybrid funds.)

The Growth of Assets in Stock and Bond Funds

The primary source of information about assets in stock and bond funds is the Investment Company Institute (ICI), the national association of mutual funds and related investment companies. ICI staff collect information reported by individual mutual funds, survey other financial firms about their use of mutual funds, and gather related information from government sources. The staff of the Board of Governors of the Federal Reserve System also collects information on mutual-fund assets— much of it from the ICI—for the government's flow-of-funds accounts. Information from ICI and the flow-of-funds accounts differs in minor ways because of differences in how they classify some mutual funds, how they value bonds, and how they use additional sources of data.

The first open mutual fund in the United States was introduced in 1924, but mutual funds did not become popular until after World War II. The early funds were

stock funds. Bond, hybrid, and money market funds did not proliferate until the 1970s and 1980s. By the end of the 1960s, the total value of stock and bond funds approached $50 billion; it remained near that level until the 1980s (see Figure 1). The total value of stock and bond funds began growing rapidly in the 1980s, reaching $550 billion by the end of 1989, and then soared in the 1990s, nearing $4.2 trillion in 1998.

Increases in both stock funds and bond funds fueled the rapid growth in the 1980s. In particular, bond funds (including hybrid funds), which had been smaller as a whole than stock funds, surpassed them in the mid-1980s (see Figure 2). Bond funds' sudden growth resulted from several factors: the creation of funds that passed on tax-exempt interest from state and municipal bonds (allowed by the Tax Reform Act of 1976), declining interest rates, and growing public acceptance of a variety of bond funds. In 1993, however, stock funds regained their lead in overall size as their growth accelerated while that of bond funds slowed down.

In part, stock and bond funds have grown because the value of all assets has grown in response to economic growth and inflation. But the increase in stock- and bond-fund assets exceeds that general growth, as evidenced by the fact that such assets represent a rising fraction of total household assets (see Figure 3).[3] Between 1950 and 1968, assets in stock and bond funds rose steadily, from 0.2 percent to 1.4 percent of all assets, buoyed by rising stock prices and the growing popularity of the funds. In the following decade, inflation-adjusted stock prices fell, and the funds' share of total assets retreated to 0.5 percent by 1981. That share rebounded sharply in the mid-1980s, stabilizing at about 2.3 percent by the end of the decade. Since 1990, it has skyrocketed, reaching 9.7 percent of all assets in 1998.

Assets held through stock and bond funds make up a growing share of household assets for several reasons. First, stocks have increased in value faster than assets such as real estate and unincorporated businesses. Between 1984 and 1998, appreciation in the value of stocks accounted for 60 percent of the growth in asset values of stock funds; for bond funds, appreciation caused 51 percent of growth.[4]

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3.   The fraction is calculated as the ratio of total stock- and bond-fund assets to total household-sector assets. Information about assets in stock and bond funds comes from ICI, *1972 Mutual Fund Fact Book* (Washington, D.C.: ICI, 1972), p. 7, and *1999 Mutual Fund Fact Book*, p. 67. Data about assets in the household sector come from Federal Reserve Board, *Flow of Funds Accounts*.

4.   Those percentages are Congressional Budget Office estimates based on data from ICI, *1998 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1998), pp. 73-74, and *1999 Mutual Fund Fact Book,* pp. 75-77. Recall that the bond-fund category includes hybrid funds, so some of the appreciation of bond funds is caused by appreciation of stock prices. Net cash inflow accounts for the rest of the growth of stock and bond funds.

FIGURE 1.   TOTAL ASSETS IN STOCK AND BOND FUNDS, 1950-1998

Billions of Dollars

Second, households and institutions have evinced a growing desire to invest
their money through stock and bond funds. Since the early 1980s, households have
been net buyers of stocks held through stock funds and net sellers of stocks held
directly.[5] Households have also invested more money in stock and bond funds than
in bank savings accounts, bonds, or life insurance products. And even though house-
holds continue to put more money into real estate than into stock and bond funds, the
rate of investment in those funds has grown the more quickly of the two.

Third, entities such as pension funds, trusts and estates, and life insurance
companies are also making a greater share of their investment through stock and
bond funds. In the case of pension plans, the percentage of their assets invested in

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5.   ICI, *1998 Mutual Fund Fact Book*, p. 73; and Federal Reserve Board, *Flow of Funds Accounts*, Table
        F.100, p. 16.

FIGURE 2.   STOCK-FUND ASSETS AND BOND-FUND ASSETS, 1970-1998
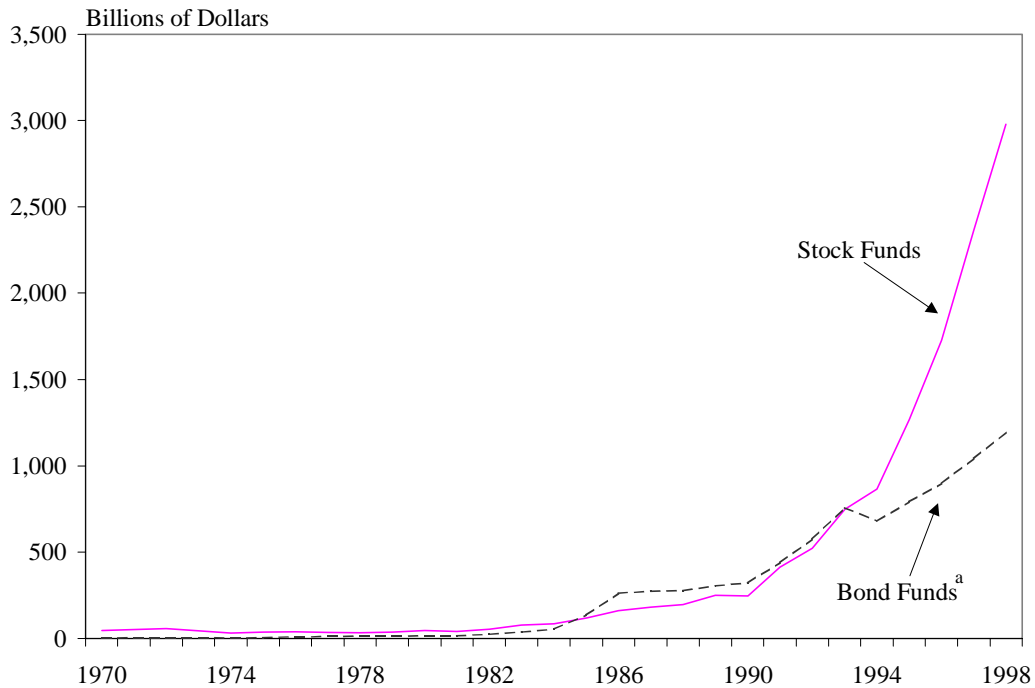
SOURCE: Congressional Budget Office based on Investment Company Institute, *1999 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1999), p. 67.

a.   Includes hybrid funds.

such funds has risen because new pension contributions have increasingly been made to individual employee accounts under 401(k) and related arrangements. Individual employees frequently rely on stock and bond funds for investment-management services and diversification. In the past, a greater portion of pension contributions went into centrally managed pension funds, which were large enough to hire their own investment managers and diversify their portfolios without using mutual funds to do so.

Institutions' growing use of stock and bond funds means that a rising share of fund assets is not held directly by households. Those institutional holdings still show up in statistics of household assets—for example, through the value of household pension assets.

FIGURE 3.   STOCK- AND BOND-FUND ASSETS AS A SHARE OF
            TOTAL HOUSEHOLD ASSETS, 1950-1998
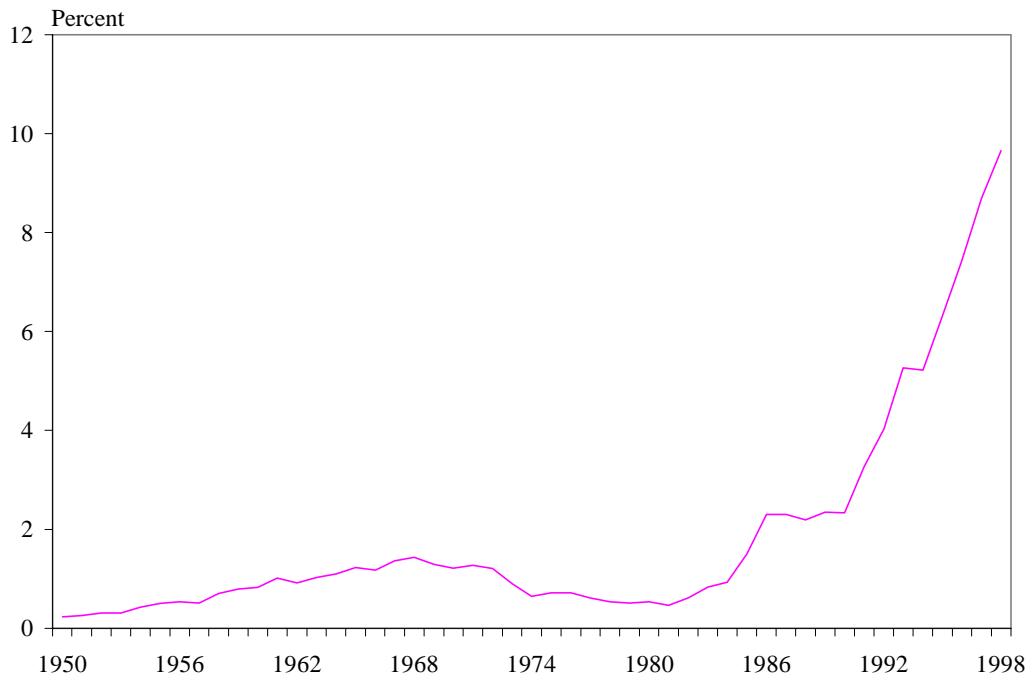
Despite their rapid growth, stock and bond funds still account for less than 10 percent of all household assets. Real estate accounted for 24 percent of such assets at the end of 1998, directly held corporate stocks made up 15 percent, and unincorporated businesses accounted for 10 percent.[6] Many of those types of assets generate taxable capital gains as well.

The Growth of Capital Gains Distributions

Capital gains distributions largely result when fund managers sell stocks. In recent years, stock funds have accounted for 90 percent of capital gains distributions, even though they hold 70 percent of the assets in stock and bond funds.

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6.   Federal Reserve Board, *Flow of Funds Accounts,* Table B.100, p. 102.

FIGURE 4.   TOTAL ASSETS IN STOCK FUNDS AND CAPITAL GAINS DISTRIBUTIONS
FROM STOCK AND BOND FUNDS, 1970-1998
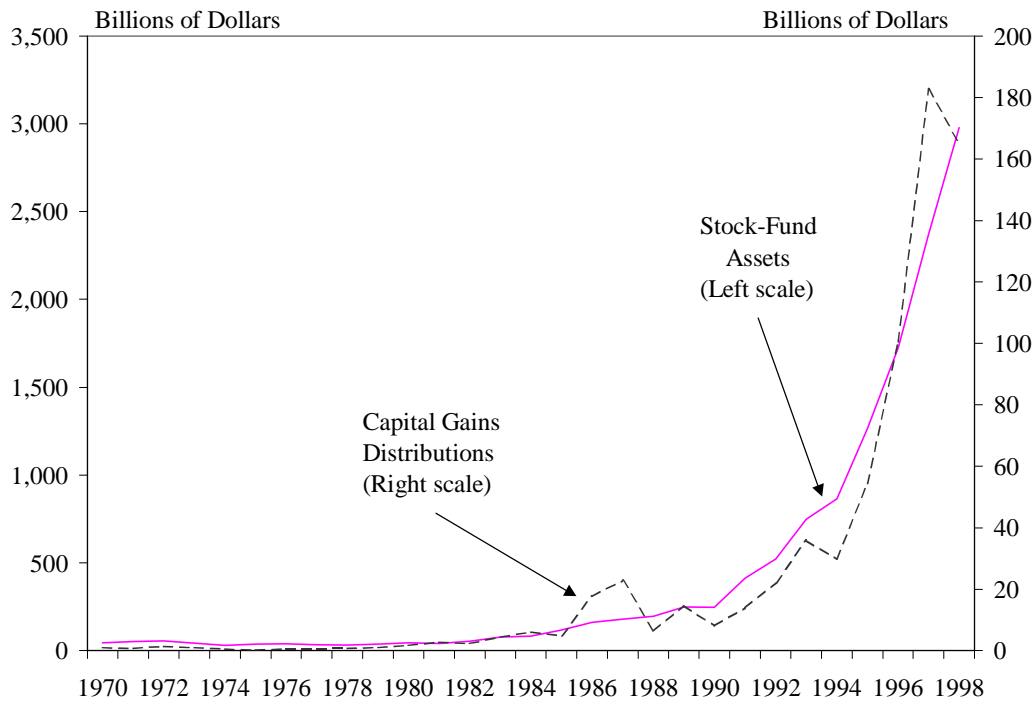
Because of the link between capital gains distributions and stock sales, the total amount of those distributions tends to follow the total value of stock funds (see Figure 4). Both were flat in the 1970s, rose in the 1980s, and grew even faster in the 1990s.[7] From a recession-year low of $8 billion in 1990, capital gains distributions hit a boom-year high of $183 billion in 1997, before falling back to $165 billion in 1998.

The 1998 fall and other occasional declines in distributions since 1980 have occurred mostly because of slow growth or declines in stock prices. The drop in distributions in 1998, for example, was caused in part by slow growth in average stock prices from November 1997 through October 1998—including declines for some stocks over the full 12 months and sharp declines for most stocks in the

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7.   ICI, *1999 Mutual Fund Fact Book*, p. 82.

summer.[8] (The drop in distributions in 1988, in contrast, represented a return to more typical levels after an unusual bulge in distributions in 1986 and 1987.)

THE TAXATION OF CAPITAL GAINS DISTRIBUTIONS

One question posed by the rise in capital gains distributions is, What role (if any) did that rise play in the recent surges in taxable capital gains and federal income tax revenues? Answering that question requires determining the extent to which capital gains distributions enter the stream of taxable income. Individual income tax returns provide direct evidence of capital gains distributions appearing in taxable income. But that evidence is incomplete because some distributions that end up in taxable income are not identified as such on individual tax returns. Indirect evidence—based on who owns shares in mutual funds and what types of accounts they hold those shares in—can give a more complete picture of how capital gains distributions from mutual funds are taxed.

In recent years, about one-quarter of the distributions paid by stock and bond funds have been reported by individuals as capital gains distributions on their tax returns. Roughly another one-tenth of those distributions have been paid to trusts and estates; they are taxed as capital gains either on the returns of trust administrators (known as fiduciaries) or on the individual returns of beneficiaries. More than half of all distributions appear to have gone to pensions, individual retirement accounts (IRAs), and variable annuities. Those distributions are taxed as ordinary income when account holders withdraw the funds, generally in later years. Another small amount of distributions is taxed on corporate returns or paid to tax-exempt organizations.

Direct Evidence from Tax Returns

The income tax returns that individuals file provide the only documentation of capital gains distributions in taxable income. (Corporations and fiduciaries report such distributions on their tax returns, but the Internal Revenue Service (IRS) does not collect that information.) People who receive capital gains distributions from mutual

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8.   Each calendar year, mutual funds distribute the capital gains they realized between November of the previous year and October of the current year. Slowed by a sharp dip in stock prices in the summer of 1998, the Standard & Poor's 500 index grew by 9 percent during the year ending in October 1998 compared with 35 percent during the previous year. The Wilshire 5000 index, which includes many smaller firms, grew by 2 percent in those 12 months compared with 34 percent in the previous year. Both indexes grew strongly in the final two months of 1998, but many of the gains that funds realized in those months will be distributed in 1999.

Total assets in stock funds rose strongly in 1998 even though distributions declined. The change in total assets in 1998 is measured on a calendar year basis, during which stock prices grew more than they did from October 1997 to October 1998. Also, stock funds received a substantial infusion of new cash in 1998.

funds must report those distributions on their tax returns. Exceptions apply to distributions paid to IRAs or other tax-deferred accounts. Information about total reported distributions is available for 1981 through 1997.[9]

Reported distributions, like the total distributions paid by stock and bond funds, fluctuated during the 1980s and then rose almost continuously through the 1990s (see Figure 5). That pattern was much stronger, however, for total distributions paid than for distributions reported on tax returns, which fell behind total distributions by growing amounts.

In 1981 and 1982, taxpayers actually reported more capital gains distributions on their tax returns than, according to ICI, stock and bond funds paid out. The reason for that apparent impossibility is a matter of speculation. The ICI data may have omitted some distributions—say, from nonmember mutual funds or from other types of funds, such as closed-end funds. Alternatively, taxpayers may have misreported some of their other income as capital gains distributions. For example, they may have reported mutual-fund dividends as capital gains distributions to get capital gains tax treatment on ordinary income, or they may have reported small gains from asset sales as distributions to avoid filling out Schedule D. Those sources of distortion in the data probably ended in the 1980s because of better coverage by ICI and better monitoring by the IRS.

The decline in the share of distributions reported on tax returns since 1981 and 1982, however, goes well beyond what errors in the data could account for. For example, between 1983 and 1986, taxpayers reported close to 80 percent of the distributions paid out by the funds, whereas between 1987 and 1990, they reported around half (see Table 2). From 1991 to 1994, they reported about one-third of total distributions, but in the last three years of data, that number fell to one-fourth.

The declining fraction of capital gains distributions showing up on individual tax returns is the main reason that the surge in distributions did not cause the surge in taxable capital gains in the 1990s. An additional reason is that gains on other assets increased greatly at the same time. In the 1980s, before distributions from stock and bond funds began their upswing, they generally made up no more than 5 percent of total capital gains reported by taxpayers (see Table 3).[10] When those

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9. Before 1997, individuals reported taxable capital gains distributions directly on Form 1040 if they had no other capital gains or losses. Otherwise, they reported the distributions on Schedule D along with other gains and losses. Only the portion reported directly on Form 1040 has been published (as Internal Revenue Service, *Individual Income Tax Returns*), so historical information on all capital gains distri-butions in adjusted gross income is limited. The Congressional Budget Office, the Treasury Department, and the Statistics of Income Division of the IRS have tabulated distributions from Schedule D for 1981 through 1997.

10. The only exception was in 1987 when changes in tax law and a sharp decline in stock prices caused a bulge in distributions but not other capital gains realizations.

FIGURE 5.   CAPITAL GAINS DISTRIBUTIONS PAID BY STOCK AND BOND FUNDS
            AND REPORTED ON TAX RETURNS, 1981-1997
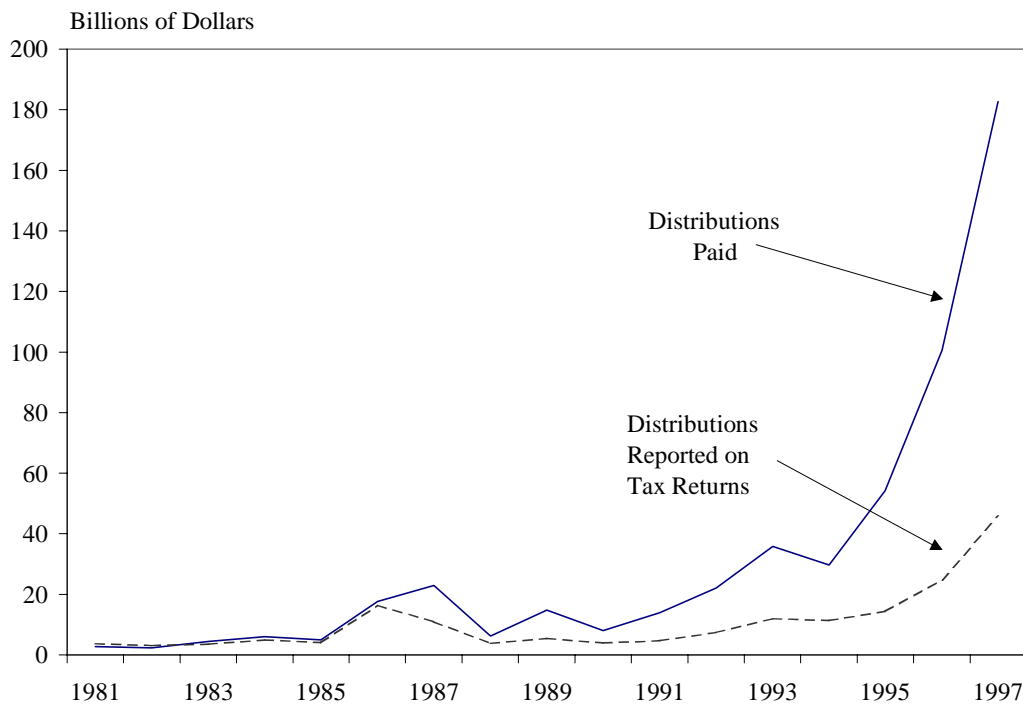
Billions of Dollars

SOURCE: Congressional Budget Office based on Investment Company Institute, *1999 Mutual Fund Fact Book*
           (Washington, D.C.: ICI, May 1999), p. 82; and tabulations of individual income tax returns by the Treasury
           Department, the Statistics of Income Division of the Internal Revenue Service, and CBO.

distributions soared between 1990 and 1997, the amount reported jumped from $4
billion to about $46 billion. At the same time, however, total capital gains reported
on tax returns jumped from $124 billion to around $370 billion. As a result, stock-
and bond-fund distributions remained a minor component of total reported capital
gains—despite increasing their share of that total from less than 5 percent to more
than 12 percent.   What else contributed to the growth of total capital gains in the
1990s is unclear, but likely candidates are gains on directly held stocks, business
assets, and real estate.

Indirect Evidence from the Ownership of Assets in Stock Funds

Other clues about how capital gains distributions from stock and bond funds are
taxed come indirectly from information about who owns shares in those funds and
what kinds of accounts they place those shares in. In a tabulation prepared for the
Congressional Budget Office (CBO), ICI allocated the value of share ownership
among six categories:

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TABLE 2. PERCENTAGE OF CAPITAL GAINS DISTRIBUTIONS FROM STOCK AND BOND FUNDS REPORTED ON TAX RETURNS, 1981-1998

	Capital Gains Distributions from Stock and Bond Funds (Billions of dollars)	Distributions Reported on Tax Returns (Billions of dollars)	Percentage of Distributions Reported on Tax Returns
1981	2.70	3.65	135.2
1982	2.35	3.07	130.5
1983	4.39	3.63	82.8
1984	6.02	4.91	81.6
1985	4.89	4.11	84.0
1986	17.66	16.34	92.5
1987	22.92	11.02	48.1
1988	6.34	3.88	61.2
1989	14.77	5.48	37.1
1990	8.04	3.90	48.6
1991	13.92	4.66	33.5
1992	22.09	7.43	33.6
1993	35.90	12.00	33.4
1994	29.74	11.32	38.1
1995	54.27	14.39	26.5
1996	100.51	24.72	24.6
1997	182.66	45.72[a]	25.0[a]
1998	164.99	n.a.	n.a.

SOURCE: Congressional Budget Office based on Investment Company Institute, *1999 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1999); and tabulations of individual income tax returns by the Treasury Department, the Statistics of Income Division of the Internal Revenue Service, and CBO.

NOTE: n.a. = not available.

a. Preliminary.

o   Traditional accounts (shares owned directly by individuals, excluding IRAs),

o   IRAs (retirement accounts set up by individuals),

o   Pensions (including 401(k) arrangements and Keogh plans),

o   Variable annuities (products offered by life insurance companies),

o   Fiduciaries (managers of assets for trusts and estates), and

o   Other institutions (including corporations and nonprofit organizations).

TABLE 3.   DISTRIBUTIONS FROM STOCK AND BOND FUNDS AS A PERCENTAGE
          OF TOTAL CAPITAL GAINS REPORTED ON TAX RETURNS, 1981-1997

	Distributions Reported on Tax Returns (Billion of dollars)	Total Capital Gains Reported on Tax Returns (Billions of dollars)	Distributions as a Percentage of Total Capital Gains Reported
1981	3.65	80.94	4.5
1982	3.07	90.15	3.4
1983	3.63	122.77	3.0
1984	4.91	140.50	3.5
1985	4.11	171.99	2.4
1986	16.34	327.73	5.0
1987	11.02	148.45	7.4
1988	3.88	162.59	2.4
1989	5.48	154.04	3.6
1990	3.90	123.78	3.2
1991	4.66	111.59	4.2
1992	7.43	126.69	5.9
1993	12.00	152.26	7.9
1994	11.32	152.73	7.4
1995	14.39	180.13	8.0
1996	24.72[a]	260.03[a]	9.5
1997	45.72[a]	370.00[a]	12.4

SOURCE: Congressional Budget Office based on tabulations of individual income tax returns by the Treasury Department, the Statistics of Income Division of the Internal Revenue Service, and CBO.

a.   Preliminary.

The tabulation has separate allocations for stock and bond funds. This analysis uses only stock funds because they account for most capital gains distributions. ICI's data on asset ownership for stock funds cover 1980, 1981, and 1985 through 1997.

Information about the amount of capital gains distributions paid to each category is not available. As a rough approximation, however, CBO assumed that distributions are paid to each category in proportion to the fraction of stock-fund assets held in that category. How those distributions are taxed can be inferred from the general tax rules that apply to each category. The first five categories have a primary set of rules that applies to capital gains. The last category includes both taxed and tax-exempt institutions, so more information about how assets are allocated between those institutions is needed to infer how total distributions to that category are taxed.

Traditional Accounts. According to ICI, stock-fund assets in traditional accounts have been growing less rapidly than all stock-fund assets and therefore have declined as a share of them. In 1980, $29 billion out of the $44 billion in stock-fund assets, or 65.9 percent, was held in traditional accounts (see Table 4). By 1997, those figures were $662 billion out of $2,399 billion in total stock-fund assets, or 27.6 percent.[11]

The fact that the percentage of total stock-fund assets held in traditional accounts is declining probably explains why the fraction of capital gains distributions from stock and bond funds that are reported on individual tax returns is also declining (as Table 2 showed). Traditional accounts are ones held by individuals (excluding IRAs), so their distributions should be reported on individual returns. As the share of assets held in those accounts has fallen, the fraction of capital gains distributions reported on tax returns should have fallen.

Traditional accounts provide a case for testing the assumption that the six categories of ownership receive distributions from stock funds in proportion to the share of fund assets they hold. Because distributions to traditional accounts should be reported on individual tax returns, the fraction of distributions reported on such returns should be roughly the same as the share of distributions paid to traditional accounts. Thus, if CBO's assumption about the allocation of distributions is valid, the share of distributions reported on tax returns will be close to the share of assets held in traditional accounts.

Is it close? The answer is yes in 1996 and 1997, but that is a relatively recent development (see Table 5). For much of the 1980s and early 1990s, the fraction of distributions reported on individual returns was higher than the fraction of assets held in traditional accounts—much higher in 1981, 1985, and 1986. Nevertheless, both percentages have shown a downward trend. Thus, for 1996 and 1997, CBO's assumption may be valid; but for earlier years, the most that can be said is that trends in the amount of distributions going to a category are probably similar to trends in the fraction of assets held in that category.

Several factors may have caused the fraction of distributions reported on tax returns to exceed the fraction of assets in traditional accounts before 1996. First, the types of stock funds that taxpayers hold in traditional accounts may have earned more capital gains than the types of stock funds that pensions, fiduciaries, and other institutions hold. Second, ICI may have allocated too few assets to traditional accounts in earlier years. Its data come from mutual funds, and those funds receive

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11.   Those figures are from the ICI allocation that is consistent with the *1998 Mutual Fund Fact Book*. Total assets have been revised for 1984 through 1997 in the *1999 Mutual Fund Fact Book*, p. 67. Traditional accounts have grown as a share of the financial assets of households since 1980, even though they have not grown as fast as the other repositories of stock-fund assets. Assets in traditional accounts represented 0.4 percent of household financial assets in 1980 and 2.4 percent in 1997.

TABLE 4.   ASSETS IN STOCK FUNDS, BY CATEGORY OF OWNERSHIP, 1980-1997

| | Traditional Accounts | Tax-Deferred Accounts | | | | Fiduciaries | Other Institutions | Total |
		IRAs	Pensions	Variable Annuities	Subtotal			
In Billions of Dollars								
1980	29	0	8	0	8	5	2	44
1981	29	1	5	0	6	4	2	41
1982	n.a.	2	6	n.a.	n.a.	n.a.	n.a.	54
1983	n.a.	6	9	n.a.	n.a.	n.a.	n.a.	77
1984	n.a.	9	11	n.a.	n.a.	n.a.	n.a.	83
1985	62	16	17	3	37	10	8	117
1986	78	28	20	6	54	19	11	162
1987	81	38	23	8	69	19	11	181
1988	87	44	25	9	79	16	14	195
1989	105	59	35	13	107	22	15	249
1990	91	61	40	15	116	23	16	246
1991	115	94	118	26	238	37	23	412
1992	113	125	172	34	331	47	32	523
1993	177	180	224	50	454	71	46	749
1994	188	201	268	63	533	94	52	866
1995	263	293	373	114	781	137	89	1,269
1996	425	391	456	168	1,015	188	123	1,751
1997	662	545	597	222	1,364	214	158	2,399
In Percent								
1980	65.9	0.5	17.1	0	17.5	10.9	5.7	100.0
1981	69.3	1.6	11.9	0	13.5	10.9	6.3	100.0
1982	n.a.	3.5	11.3	n.a.	n.a.	n.a.	n.a.	100.0
1983	n.a.	7.5	12.0	n.a.	n.a.	n.a.	n.a.	100.0
1984	n.a.	10.5	12.7	n.a.	n.a.	n.a.	n.a.	100.0
1985	53.1	13.8	14.9	2.7	31.4	8.4	7.1	100.0
1986	48.3	17.2	12.4	3.7	33.2	11.8	6.7	100.0
1987	45.0	21.0	12.8	4.3	38.1	10.6	6.3	100.0
1988	44.4	22.6	13.1	4.7	40.4	8.2	7.1	100.0
1989	42.0	23.8	13.9	5.3	43.1	8.8	6.1	100.0
1990	37.0	24.9	16.1	6.2	47.2	9.2	6.6	100.0
1991	27.8	22.8	28.8	6.2	57.7	8.9	5.5	100.0
1992	21.7	23.9	32.8	6.5	63.2	9.0	6.0	100.0
1993	23.7	24.0	29.9	6.7	60.6	9.5	6.2	100.0
1994	21.7	23.2	31.0	7.3	61.5	10.8	6.0	100.0
1995	20.7	23.1	29.4	9.0	61.5	10.8	7.0	100.0
1996	24.3	22.3	26.0	9.6	58.0	10.7	7.0	100.0
1997	27.6	22.7	24.9	9.3	56.9	8.9	6.6	100.0

SOURCE: Congressional Budget Office based on tabulations by the Investment Company Institute from data in *1998 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1998).

NOTE: IRAs = individual retirement accounts; n.a. = not available.

TABLE 5.   COMPARING THE SHARE OF DISTRIBUTIONS REPORTED ON
            INDIVIDUAL INCOME TAX RETURNS WITH THE SHARE
            OF STOCK-FUND ASSETS HELD IN TRADITIONAL ACCOUNTS

	Percentage of Capital Gains Distributions from Stock and Bond Funds Reported on Tax Returns	Percentage of Stock-Fund Assets Held in Traditional Accounts
1981	135.2	69.3
1982	130.5	n.a.
1983	82.8	n.a.
1984	81.6	n.a.
1985	84.0	53.1
1986	92.5	48.3
1987	48.1	45.0
1988	61.2	44.4
1989	37.1	42.0
1990	48.6	37.0
1991	33.5	27.8
1992	33.6	21.7
1993	33.4	23.7
1994	38.1	21.7
1995	26.5	20.7
1996	24.6	24.3
1997	25.0	27.6

SOURCE: Congressional Budget Office based on Investment Company Institute, *1999 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1999); tabulations of individual income tax returns by the Treasury Department, the Statistics of Income Division of the Internal Revenue Service, and CBO; and tabulations by the Investment Company Institute based on data in *1998 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1998).

NOTE: n.a. = not available.

pooled accounts from third parties such as brokerages. The pooled accounts include various types of accounts for many individual customers of the brokerage, but until recently, ICI has not had adequate information from those third parties about the composition of their pools. Third, as noted earlier, individuals may have overstated capital gains distributions on their tax returns in the early 1980s.

The similarity of the fractions in 1996 and 1997 may not continue in later years. Nor does that similarity mean that the share of distributions paid to the other five categories identified by ICI follows the share of assets in each category.

IRAs, Pensions, and Variable Annuities. As the percentage of stock-fund assets held in traditional accounts has declined over two decades, the percentage held in IRAs, pensions, and variable annuities has soared (see Table 4). The growth of those three

15

types of accounts spearheaded the growth of total stock-fund assets between 1980 and 1995, as their combined share jumped from 17.5 percent to 61.5 percent. In 1996 and 1997, the three grew less rapidly than traditional accounts, and their fraction of total stock-fund assets slipped to 56.9 percent by the end of 1997.

Of the three categories, pensions have shown the most modest growth in percentage terms, increasing their share of total stock-fund assets from 17.1 percent in 1980 to 24.9 percent in 1997. IRAs and variable annuities have grown much more dramatically, going from next to nothing in 1980 to 22.7 percent and 9.3 percent of stock-fund assets, respectively, in 1997. IRAs experienced most of their percentage growth in the 1980s, whereas variable annuities grew steadily throughout the past two decades.

The rapid rise of IRAs and pensions results from the aging of the baby-boom generation, legislative changes, and shifts in the way people save for retirement. The aging of the baby boomers has brought many people to the point in life where they start saving for retirement. Legislation in the 1970s and early 1980s extended the tax advantages for employers' pension plans to plans that accept individual contributions. Those accounts became possible as variants of employers' pensions—such as 401(k) accounts—or as IRAs and Keogh plans. Employers and individuals have increasingly turned to such accounts as vehicles for retirement saving, causing the balances in them to mushroom since 1980. Mutual funds, particularly stock funds, have been attractive investment options for those individually based accounts because they offer the diversity and investment management that individual investors have trouble providing for themselves in modest-sized accounts.

This analysis groups IRAs, pensions, and variable annuities together because the way their investment earnings are taxed is similar. That taxation is deferred until funds are withdrawn from the accounts. Thus, capital gains distributions paid to those accounts by and large show up in future revenues. Furthermore, when the distributions are withdrawn, they are identified on tax returns as withdrawals from tax-deferred accounts and are taxed as ordinary income, not as capital gains.

If capital gains distributions are paid out in proportion to ownership of stock-fund assets, approximately 60 percent of distributions have been paid to IRAs, pensions, and variable annuities in recent years and do not show up in reported capital gains income. Furthermore, those gains will only gradually show up in income taxes as individuals begin to withdraw funds from their accounts.[12] Finally, future declines in stock prices could reduce the amount of past distributions that

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12.   The speed with which distributions paid to retirement funds are withdrawn is unclear. Distributions are likely to increase withdrawals to some extent the year after they are paid because of mandatory withdrawal rules. Comparisons of recent withdrawals from IRAs and pensions with recent changes in stock prices, however, suggests that the immediate impact is small and that capital gains increase withdrawals gradually.

ultimately gets taxed by reducing the value of retirement accounts and the size of future withdrawals.

Fiduciaries. Fiduciaries administer the trusts and estates set up by individuals. Trusts and estates have held roughly 10 percent of the assets in stock funds since 1980, which suggests that they have received about 10 percent of the capital gains distributions paid out by such funds, at least in recent years. That percentage cannot be confirmed from tax return data, however, because the IRS does not collect information about the amounts reported on fiduciaries' returns.

Capital gains distributions to trusts and estates are taxed in one of two ways: under the fiduciary income tax if they are retained in the trust or estate, or under the individual income tax if they are redistributed to beneficiaries. Distributions that are redistributed are identified on individual returns only as capital gains income from a trust or estate, not as coming from a mutual fund. Thus, no information is available from tax returns about the fraction of distributions received by trusts and estates that gets passed on to individuals.

Hints about that fraction, however, come from tabulations of the percentage of all income that trusts and estates pass on. Only two such tabulations are available for years since 1980. In 1982, fiduciaries distributed 53 percent of their income to beneficiaries; in 1994, they distributed 46 percent.[13] Based on those two figures, it is plausible that about half of the distributions received by trusts and estates are passed on to individuals, but that proportion is highly uncertain.

Other Institutions. The fraction of stock-fund assets held by other institutions—such as businesses, nonprofit organizations, and governments—has remained relatively stable since 1980, between 5.5 percent and 7.1 percent (see Table 4). The consistency of that fraction indicates that those institutions have increased their stock-fund assets at the same average rate as all holders of stock funds. For 1996 and 1997, at least, the share of stock-fund assets held by those institutions is a plausible indicator of the share of capital gains distributions they receive.

How those distributions are taxed depends on what type of institution they are paid to. Some of the institutions in this category are taxable; others are not. ICI's tabulation does not allocate stock-fund assets among the various types of institutions in this category. However, ICI's annual *Mutual Fund Fact Book* and the Federal Reserve Board's quarterly data on the flow-of-funds accounts allocate the combined assets of stock and bond funds among several subcategories of institutions in this category. Those data can be used to infer how the distributions paid to these institutions are taxed. (The inclusion of bond-fund assets adds uncertainty, because

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13. The fraction for 1982 is based on data from Gary J. Estep, "Fiduciary Income Tax Returns, 1982," *Statistics of Income Bulletin,* vol. 4, no. 4 (Spring 1985), pp. 39-60. The fraction for 1994 is based on tabulations done by the Treasury Department for CBO.

bond funds generate fewer capital gains than stock funds and their pattern of ownership among these institutions may not mirror the pattern for stock funds.)

The four subcategories of other institutions to which ICI allocates stock- and bond-fund assets are nonfinancial corporations, nonprofit organizations, a combination of insurance companies and financial institutions, and other unclassified institutions. In 1995, according to ICI, those four subcategories held $134 billion in stock and bond funds—$89 billion of which was in stock funds. Nonfinancial corporations held the largest share, 35 percent, followed by unclassified institutions with 27 percent and nonprofits and the combined category of insurance companies and financial institutions with just under 20 percent each (see Table 6). That pattern fluctuated moderately between 1991 and 1996; for example, the share held by nonfinancial corporations varied between 30 percent and 35 percent.

In addition to the nonfinancial corporations and nonprofit organizations shown by ICI, the flow-of-funds accounts break out life insurance companies, banks, and credit unions separately. They also include a category for state and local governments but have no unclassified category.

The flow-of-funds data are most detailed for 1988 through 1995. In 1995, they show other institutions holding $147 billion in stock- and bond-fund assets—10 percent more than ICI's figure of $134 billion (see Table 6). However, the percentage distribution of assets among nonfinancial corporations, nonprofit institutions, and life insurance and financial companies combined is similar in the flow-of-funds and ICI data. ICI's unclassified institutions appear to be mostly state and local governments in the flow-of-funds accounts.

Three of the six categories in the flow-of-funds accounts—banks, life insurance companies, and nonfinancial corporations—are subject to the corporate income tax. The other three are tax-exempt. Banks are taxable, but they probably receive few capital gains distributions. (Federal law generally precludes banks from owning equity in businesses, so they must primarily hold bond funds, which pay few capital gains.) Life insurance companies pay a low effective tax rate on investment income because they can deduct earnings credited to reserve funds. As a result, only nonfinancial corporations' capital gains distributions are likely to be fully taxable. No data are available on the extent to which those corporations invest in stock or bond funds. ICI reports that corporations invest in mutual funds as part of their cash management and therefore probably invest more in lower-risk funds that predominately hold bonds. Corporations may also find bond funds that hold tax-exempt bonds attractive.

TABLE 6. ASSETS IN STOCK AND BONDS FUNDS, BY TYPE OF INSTITUTIONAL OWNER, 1995

Type of Institution	Data from Investment Company Institute		Data from Flow-of-Funds Accounts	
	Assets (Billions of dollars)	Percentage of Total Assets	Assets (Billions of dollars)	Percentage of Total Assets
Nonfinancial Corporations	47	35	46	31
Nonprofit Organizations	24	18	34	23
Insurance and Financial Institutions				
Life insurance companies	n.a.	n.a.	28	19
Banks	n.a.	n.a.	2	1
Credit unions	n.a.	n.a.	3	2
Subtotal	26	19	33	22
Institutions Not Classified	37	27	a	a
State and Local Governments	b	b	35	24
Total	134	100	147	100

SOURCE: Congressional Budget Office based on Investment Company Institute, *1998 Mutual Fund Fact Book* (Washington, D.C.: ICI, May 1998), p. 96; and Federal Reserve Board, *Flow of Funds Accounts of the United States* (June 11, 1999), Table L.214, p. 90, and Table L.100a, p. 107.

NOTES: Unpublished data on variable annuities have been subtracted from the published ICI figure for assets of insurance companies and other financial institutions.

n.a.= not available.

a. This subcategory is not included in the flow-of-funds accounts.

b. This subcategory is not included in ICI's allocation.

Because nonfinancial corporations own about one-third of the stock- and bond-fund assets held by the "other institutions" category, they could be assumed to receive about one-third of the capital gains distributions paid to that category. However, their actual share is probably somewhat lower because those businesses probably hold more than one-third of the category's bond funds and less than one-third of its stock funds. The ICI data in Table 4 show the "other institutions" category holding 6.6 percent of stock-fund assets in 1997. If it received that percentage of capital gains distributions in 1997 and if nonfinancial corporations received at most one-third of those gains, then no more than 2.2 percent would be

taxed as capital gains. The remaining 4.4 percent (or more) paid to the other institutions in the category would be tax-exempt.

Conclusions

Data on the ownership of stock-fund assets allow inferences about the taxation of those funds' capital gains distributions. If distributions are paid in proportion to stock-fund ownership, then 32 percent of the $182.7 billion in distributions that stock and bond funds paid in 1997 were taxed as capital gains on individual income tax returns for that year. That percentage represents all of the distributions paid to traditional accounts and half of those paid to fiduciaries for trusts and estates (see Table 7). The other half of the distributions to fiduciaries (or 5 percent of total distributions) were taxed as capital gains under the fiduciary income tax. Another 2 percent were taxed as capital gains on corporate tax returns, bringing the total share taxed as capital gains to 39 percent. Of the remainder, the 57 percent paid to IRAs, pensions, and variable annuities will be taxed as ordinary income on individual returns, mostly in years after 1997. The 4 percent paid to tax-exempt institutions will go untaxed.

The assumptions that underlie those figures create some uncertainty about the exact percentages. Distributions may not be paid precisely in proportion to stock-fund ownership, and half of the distributions paid to fiduciaries are not necessarily distributed to beneficiaries. But in the absence of more detailed information, those assumptions provide the basis for reasonable estimates.

The extent to which capital gains distributions from stock and bond funds will continue to grow depends mostly on the prospects for returns on stocks and bonds. Forecasting such returns is well beyond the scope of this analysis. However, the analysis does allow for more limited speculation about the future allocation of stock-fund ownership and the taxation of capital gains distributions. The fraction of stock-fund assets held in IRAs, pensions, and variable annuities, which has increased for nearly two decades, seems likely to keep growing. The baby-boom generation will probably continue to favor such tax-deferred accounts for accumulating financial assets. In particular, accounts such as 401(k)s are likely to spread further through the workforce, with most of them accumulating assets rapidly. Balances in IRAs should also increase because of continuing rollovers from pensions and expanded contri-butions. Legislation in 1997 broadened the eligibility to contribute and increased the types of saving that can be done through IRAs. Those factors could lead to a resurgence of the trends, seen over the past two decades, of a rising share of stock-fund assets being held in tax-deferred accounts and, thus, a declining share of capital gains distributions being taxed as capital gains in the year they are paid out. The recent surge in traditional accounts may result from the surge in stock prices and therefore subside when that surge subsides.

TABLE 7. ALLOCATION OF 1997 CAPITAL GAINS DISTRIBUTIONS,
BY TAX TREATMENT

Tax Treatment	Percentage of Total Capital Gains Distributions	Source of Distributions
Taxed as Capital Gains		
On individual returns	32	Traditional accounts plus half of the distributions of trusts and estates
On fiduciary returns	5	Half of the distributions of trusts and estates
On corporate returns	2	Nonfinancial corporations
Subtotal	39	
Deferred (Taxed later as ordinary income on individual returns)	57	Individual retirement accounts, pensions, and variable annuities
Tax-Exempt	4	Other institutions (nonprofits, state and local governments, credit unions, banks, and insurance companies)
Total	100	

SOURCE: Congressional Budget Office.

NOTE: This allocation assumes that capital gains distributions are paid in proportion to stock-fund ownership.

CAPITAL GAINS ON THE SALE OF MUTUAL-FUND SHARES

Capital gains distributions are not the only way that mutual funds contribute to taxable capital gains. Owners of mutual-fund shares realize gains or losses when they sell those shares if the value of the shares has risen or fallen since they purchased them. Changes in share price largely reflect changes in the prices of the assets that the funds hold.

Information about gains and losses from the sale of mutual-fund shares is limited. Taxpayers list that information each year in the transactions portion of Schedule D, but the IRS records the information only infrequently. In 1981 and again in 1985, the Statistics of Income Division of the IRS collected that information from a sample of individual income tax returns.

21

In 1981, taxpayers reported $387 million in capital gains from the sale of mutual-fund shares and another $227 million in losses. Assuming that taxpayers could offset the losses against other capital gains, sales of shares added a net $160 million to taxable capital gains. Adding that amount to the $3,648 million in capital gains distributions from mutual funds that taxpayers reported in 1981 raises the total gains from mutual funds by 4 percent. In 1985, net gains from the sale of mutual-fund shares were $787 million, which increased total gains from mutual funds in 1985 by 19 percent.[14]

Based on the limited historical evidence, then, it seems likely that gains from the sale of mutual-fund shares increased the amount of capital gains distributions reported on tax returns in recent years by no more than 20 percent. Fiduciaries and corporations probably also realize gains from selling mutual-fund shares, but those amounts are likely to be much smaller because fiduciaries and corporations hold many fewer shares than individuals do.

THE NET IMPACT OF STOCK AND BOND FUNDS
ON TAXABLE CAPITAL GAINS

The growing amounts of capital gains distributions showing up on individual income tax returns in recent years probably overstate the net contribution of stock and bond funds to taxable capital gains. Much of the growth of those funds reflects a shift of assets from stocks and bonds held directly by individuals to those held indirectly through the funds. Had those assets remained in individual hands, some would undoubtedly have been sold—just as they were by the funds—and the same gains realized. In theory, all of the gains realized by stock and bond funds could be substituting for gains that individuals would have realized, in which case the funds would be making no net contribution to taxable capital gains.

In reality, however, stock and bond funds appear to trade assets more frequently than individuals would on their own. Thus, shifting stock and bond holdings to those funds should speed up the realization of capital gains when stock prices rise rapidly, as they have in recent years. (It should also accelerate a decline in realizations when stock prices decline.) In addition, shifting stock and bond holdings to the funds should permanently increase the amount of realizations because fewer gains will be held until death. (Gains held at death are not subject to income taxation.)

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14. Gerald Auten and Janette Wilson, "Sales of Capital Assets Reported on Individual Income Tax Returns, 1985," *Statistics of Income Bulletin*, vol. 18, no. 4 (Spring 1999), pp. 113-136. The Statistics of Income Division followed the 1985 sample through 1994, but tabulations from that sample appear to be inconsistent with the 1985 data reported in Auten and Wilson because they show losses from share sales exceeding gains. See Congressional Budget Office, *Perspectives on the Ownership of Capital Assets and the Realization of Capital Gains*, CBO Paper (May 1997), pp. 48-50.

The tendency of stock and bond funds to trade more frequently than individuals could moderate in the future. In the past two years, new mutual funds have appeared that promise to buy and hold securities so as to lessen their capital gains distributions. If those tax-sensitive funds become popular with investors who are trying to minimize their capital gains taxes, mutual funds could become less likely to cause a net increase in taxable capital gains.

But more frequent trading is not the only way that stock and bond funds may increase capital gains realizations. The existence of the funds may shift the overall pattern of investment toward assets on which capital gains are more likely to occur and be taxed. Stock and bond funds provide diversification and asset-management services that make it easier for people to shift their investments there from assets such as homes and bank accounts, which generate few taxable gains. The availability of mutual funds may also shift investment into stocks and bonds from unincorporated businesses, which may be less likely to generate capital gains realizations. Finally, the existence of mutual funds may encourage people to save more and thereby increase the value of the assets on which gains can accrue. So far, however, empirical studies show that any increase in saving has been small, and any shift in investment from homes and small businesses has probably been small as well.

CBO has attempted to estimate statistically the net impact of stock and bond funds on total capital gains subject to individual income taxes. The estimating method adds measures of the funds' size and activity to existing equations that explain total taxable gains between 1955 and 1997. Although limitations in the data make it impossible to identify a specific net impact, the estimates suggest that some increase in taxable gains is more likely than a complete offset. (For detailed information about the statistical estimates, see the appendix.)

APPENDIX: TESTING FOR THE NET IMPACT OF STOCK AND BOND
FUNDS ON TAXABLE CAPITAL GAINS

Capital gains distributions paid out by stock and bond funds may substitute for gains
that individuals would otherwise realize from selling stocks and bonds directly. The
Congressional Budget Office (CBO) attempted to estimate the extent of that offset
by adding measures of stock- and bond-fund activity to existing equations used to
forecast the total taxable gains that will be reported on individual income tax returns.
One type of equation explains the growth rate of capital gains, and another explains
the ratio of capital gains to the size of the economy. CBO added three alternative
measures of stock- and bond-fund activity to each equation: one measures the
fraction of corporate stocks held in stock funds and two measure capital gains
distributions. When the equations are reestimated with the added variables, they
indicate that the activity of stock and bond funds is more likely to increase total
capital gains than to completely substitute for other gains. Some of that increase
probably is spurious, however, arising because stock- and bond-fund activity happens
to be correlated with the selling of other assets.

Equations for Testing Net Impact

Forecasters at several institutions use equations to predict the capital gains reported
on individual income tax returns as part of their forecasts of individual income tax
revenues. Most of those equations—including the ones used by CBO—attempt to
explain the annual growth rate of taxable capital gains.   An alternative type of
equation attempts to explain the ratio of capital gains realizations to the size of the
economy. That type has been less widely tested, but it does produce a direct estimate
of the dollar impact that distributions have on taxable gains. CBO used both growth-
rate and ratio equations in the tests of stock- and bond-fund activity.

Growth-Rate Equations. CBO's growth-rate equations explain the annual growth rate
of taxable capital gains in terms of the annual growth rate of accrued gains and
annual changes in the cost of realizing gains.[1] The growth rate of accrued gains is
approximated by the growth rates of the price level, real gross domestic product
(GDP), housing starts, and real stock values.   Housing starts are included to
approximate changes in real estate prices, and real GDP is included to reflect changes
in the value of personal and business assets other than real estate and corporate
stocks. Fluctuations in real GDP growth also capture the tendency of people to
realize more gains in boom years than in recessions. The cost of realizing gains is
measured by the top federal tax rate on capital gains.

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1.   Additional information about the equations can be found in Congressional Budget Office, *Projecting
          Capital Gains Realizations*, CBO Memorandum (November 1995).

To project capital gains, CBO ordinarily uses four separate equations that include slightly different combinations of the explanatory variables. Two omit multifamily housing starts because of uncertainty about how well those starts reflect real estate prices. One of the equations with starts and one without also have an error-correction term that estimates how rapidly realizations rebound toward their normal level after a divergence. Normally, all four equations measure stock value as the total value of corporate equities and stock- and bond-fund shares held by households. Because that sum includes stock- and bond-fund assets, it could pick up some of the influence of those funds on taxable gains and thereby confuse the tests presented here. That potential distortion is explored in the tests below by substituting a pure stock-price index for the value of stocks and fund shares owned by households.[2]

Growth rates for the variables are measured as the yearly change in the logarithm of the variables. Data for estimating the equations are available for 1955 though 1997. The equation without housing starts or the error-correction term takes the form:

$\Delta\log(\text{GAINS}) = \quad c_1 * \Delta\log(\text{PRICE LEVEL})$
$+c_2 * \Delta\log(\text{REAL STOCK PRICES})$
$+c_3 * \Delta\log(\text{REAL GDP})$
$+c_4 * \Delta\Delta\log(\text{REAL GDP})$
$+c_5 * \Delta\text{TAX RATE}$
$+c_6 * \Delta\text{YEAR 1986}$
$+c_0$
$+\text{random error}$

where Δ means change from the previous year.

The variables are measured as follows:

GAINS   Net positive gains reported on individual income tax returns.

PRICE LEVEL   GDP chain-weighted price index from the national income and product accounts.

REAL STOCK PRICES   New York Stock Exchange Composite Price Index for December divided by the annual GDP price index.

REAL GDP   From the national income and product accounts.

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2.   A stock-price index differs from a measure of household stock values because it does not reflect changes in the number of shares that households own. That distinction has modest significance for CBO's statistical estimation because most of the variation in stock values in the estimation period arises from variation in stock prices. The number of shares held by households changed relatively little. Conceptually, stock prices and values have different limitations for measuring accrued gains; neither is necessarily superior.

TAX RATE	Top federal tax rate on long-term capital gains income.
YEAR 1986	1 in 1986, 0 in other years. (Reflects one-time bulge in realizations in 1986 because of impending tax increase.)

The following variables were added or substituted in alternative specifications of the above equation.

STOCK VALUES	Sum of the household sector's holdings of corporate equities and stock-, bond-, and hybrid-fund shares from the flow-of-funds accounts.
STARTS	Starts of housing units in buildings with two or more units, according to the U.S. Census Bureau.
ERROR CORRECTION	Residual of previous year from an equation that explains logarithm of the gains-to-GDP ratio in terms of tax rates and the year 1986 variable.

Ratio Equations. The ratio specification, developed at the Federal Reserve Board, attempts to explain the ratio of taxable gains to the size of the economy.[3] The size of the economy is measured by potential economic output (GDP) at full employment. The ratio of taxable gains to potential GDP has shown no long-run trend up or down in the past 40 years but has fluctuated considerably from year to year. The specification tries to explain those fluctuations in terms of fluctuations in stock prices, the business cycle, tax rates, and other variables. Explanatory variables such as stock prices and GDP are also measured relative to potential GDP.[4]

The ratio specification has been unable to explain the strong tendency for unusually high realizations in one year to be followed by high realizations in the next, and for unusually low realizations in one year to be followed by low realizations in the next. To correct for the statistical shortcomings of such an unexplained correlation, the equation is estimated with a first-order autoregressive correction.

The ratio equation shown below is a version specified to include explanatory variables similar to those in the growth equation. One simplification is that changes in the price level and real stock prices are forced to have the same effect on realizations. Another simplification is that business-cycle influences are measured by one variable, the ratio of actual to potential GDP.

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3.   Randall Mariger, *Forecasting Individual Capital Gains Realizations,* Federal Reserve Board Memoran-dum (August 27, 1997).

4.   Changes in the ratio of stock prices to GDP are similar to changes in the ratio of stock value to GDP because the number of shares changes slowly.

GAINS / POTENTIAL GDP = c_1 * STOCK PRICE / POTENTIAL GDP
$+c_2$ * GDP / POTENTIAL GDP
$+c_3$ * TAX RATE
$+c_4$ * YEAR 1986
$+c_0$
$+u_t$

and:

$$u_t = c_5 * u_{t-1} + \text{random error}_t$$

The term u_t is the error term in year t that is correlated with the error term in the previous year. Potential GDP is CBO's measure of real potential GDP expressed in current dollars by multiplying by the implicit price deflator.

As with the growth equation, one alternative specification substitutes the total value of household holdings of stocks and stock- and bond-fund shares for the stock-price index. Another adds multifamily housing starts (measured relative to the number of households instead of potential GDP).

The above specifications were selected through theorizing and experimentation by several analysts.[5] Nonetheless, they incompletely represent the factors that determine the accrued capital gains that people hold in a year and the decisions to sell assets with those gains. As a result, the estimated equations fail to explain annual realizations precisely. Additional variables, such as ones that reflect the activities of stock and bond funds, might improve the equations' ability to explain all realizations.

Variables Measuring the Activity of Stock and Bond Funds

CBO added three variables measuring stock- and bond-fund activity to the equations to estimate the extent to which those funds have a net impact on total taxable gains. One variable is the fraction of taxable stock holdings that is held in taxable stock funds. The other two variables are amounts of capital gains distributions: total distributions paid by stock and bond funds, and distributions reported by individuals on their tax returns.

Share of Individuals' Taxable Stock Holdings in Stock and Bond Funds. This variable provides a direct test of the hypothesis that more frequent trading by mutual funds raises total taxable gains. If the taxable distributions from stock and bond funds are raising taxable capital gains because fund managers realize gains that individual investors would not, then the increasing share of stocks that taxable investors hold in stock and bond funds should increase taxable gains. If, by contrast, fund managers are doing the same trading that individuals would do on their own,

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5. See Congressional Budget Office, *Projecting Capital Gains Realizations*, and the references cited therein.

then the rising share of stocks held in stock and bond funds should have no impact on taxable gains.

The fraction of stocks that taxable individuals hold in stock funds is constructed from measures of the value of their stock-fund holdings and direct stock holdings. The first component—the value of taxable household stock-fund holdings—is measured as the sum of all stock-fund assets held in traditional accounts plus half of those held in trusts and estates. Those amounts came from data by the Investment Company Institute (ICI) for 1980, 1981, and 1985 through 1997 and from the Federal Reserve's flow-of-funds accounts for other years since 1955. The flow-of-funds data are adjusted in various ways to make them more consistent with the ICI data (see Box A-1 for details). The second component—the value of stocks held directly by taxable investors—is measured by flow-of-funds data on stocks held by the household sector plus half of the stocks held by trusts and estates.[6] The fraction of stocks that taxable investors hold in stock funds is then measured as the ratio of the value of their stock-fund holdings to the sum of their stock-fund and direct holdings. That variable is referred to in the equations as MFSHARE.

MFSHARE grew irregularly between 1955 and 1971, from 2.9 percent to a plateau of about 6.1 percent (see Table A-1). It then fell irregularly to 3.2 percent in 1980. MFSHARE went through a similar cycle between 1980 and 1992, peaking at 5.9 percent in 1987 before receding to 4.4 percent in 1992. Since then it has shot up to 12.2 percent. The growth of MFSHARE since 1980 has resulted from a combination of new investment in stock funds and disinvestment in directly held stocks.

MFSHARE follows a pattern similar to that of taxable capital gains, but its turning points lag behind those of taxable gains. When taxable gains are shown relative to potential GDP, as in the ratio equation, gains and MFSHARE rise from the mid-1950s through 1968 (see Figure A-1). Both subsequently turn downward, although the decline in MFSHARE begins and ends later. Both peak again in the 1980s, but taxable gains peak in 1986 whereas MFSHARE peaks in 1987. After bottoming out in the early 1990s, both rise through 1997, with MFSHARE growing much faster than taxable gains. The correlation between MFSHARE and taxable gains relative to potential GDP is .44.

Not only does MFSHARE lag behind the turning points in taxable gains, it misses many of the yearly fluctuations in the growth rate of taxable gains. The correlation between DMFSHARE and the growth rate of taxable gains, the dependent variable in the growth equation, is .17.

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6. Federal Reserve Board, *Flow of Funds Accounts of the United States* (March 12, 1999), p. 102. The March data differ slightly from the June 1999 data used earlier in this memorandum.

BOX A-1.
ESTIMATING TAXABLE STOCK-FUND ASSETS BEFORE 1980

The Congressional Budget Office (CBO) used two sources of data to estimate the value of stock-fund holdings by taxable individuals since 1955: the Investment Company Institute (ICI), an industry group that publishes a variety of annual statistics about mutual funds; and the Federal Reserve Board's quarterly reports on the official flow-of-funds accounts (in this case the report published on March 12, 1999). Flow-of-funds data extend back to 1955, but ICI data do not begin until 1980. Consequently, CBO made several interpolations to the pre-1980 flow-of-funds figures to make them more consistent with the later ICI data.

One interpolation involved the amount of assets held only in stock funds. The flow-of-funds accounts report total assets held in stock and bond funds combined. The interpolation was made using other flow-of-funds data on the share of total assets in those funds invested in stocks or in bonds. Before 1980, according to the flow-of-funds accounts, stocks accounted for about 90 percent of stock and bond assets in the funds. CBO multiplied the precise proportion for each year by total stock- and bond-fund assets reported in the accounts to approximate the value of assets in stock funds alone.

Another interpolation was for the share of fund assets that individuals hold in taxable form. Both the ICI and flow-of-funds data identify stock- and bond-fund assets held by individuals directly and in pensions, but ICI shows a smaller share held by households directly and a greater share held by pensions. In 1980, the ICI data show individuals holding 65 percent of stock- and bond-fund assets themselves and pensions holding 17 percent, compared with 74 percent and 12 percent, respectively, in the flow-of-funds data. The difference probably results from differences in how the two sources classify their pension data and therefore grew as the amount of stock- and bond-fund assets in pensions grew. To approximate the ICI classification before 1980, CBO estimated that the difference grew from zero to its 1980 level in proportion to the growth of pension holdings of stock- and bond-fund assets. For the 1950s and early 1960s, when pension funds held negligible assets in stock and bond funds, the ICI figure was assumed to be the same as the flow-of-funds figure.

No interpolations were made for the share of assets held in fiduciary accounts. The ICI data and flow-of-funds accounts show similar dollar holdings after 1980, so the shares held by fiduciaries in the flow-of-funds accounts before 1980 were assumed to apply to stock funds as well.

The flow-of-funds data on stock and bond funds do not identify what portion of individual holdings is in individual retirement accounts or variable annuities. Fortunately, the amount of stock- and bond-fund assets held in those forms was insignificant before 1980 and therefore can be assumed to be zero in the flow-of-funds data for that period.

Capital Gains Distributions. In principle, a second way to estimate the net impact of distributions from stock and bond funds on taxable gains would be to include a measure of taxable distributions from those funds in an equation that explains the amount of taxable gains on assets held outside those funds. If a dollar of taxable distributions reduced other taxable gains by a dollar, then stock and bond funds would have no net impact on taxable gains. (Gains from the funds would be substituting for gains on other assets.) At the other extreme, if a dollar of taxable

TABLE A-1.   THREE MEASURES OF MUTUAL-FUND ACTIVITY, 1955-1997

	MFSHARE[a] (Percentage)	CGD[b] (Billions of dollars)	CGDTAX[c] (Billions of dollars)
1955	2.9	0.22	0.22
1956	3.0	0.29	0.29
1957	3.1	0.28	0.28
1958	3.7	0.27	0.27
1959	3.9	0.43	0.43
1960	4.2	0.42	0.42
1961	4.6	0.50	0.50
1962	4.2	0.50	0.50
1963	4.6	0.47	0.47
1964	4.6	0.56	0.56
1965	4.9	0.94	0.94
1966	5.2	1.32	1.32
1967	5.6	1.69	1.69
1968	5.6	2.40	2.40
1969	6.1	2.54	2.54
1970	6.1	0.92	0.92
1971	6.2	0.78	0.78
1972	5.4	1.40	1.40
1973	5.4	0.94	0.94
1974	5.8	0.48	0.48
1975	5.2	0.22	0.22
1976	4.2	0.47	0.47
1977	4.3	0.63	0.63
1978	4.1	0.71	0.71
1979	3.5	0.93	0.93
1980	3.2	1.77	1.77
1981	3.4	2.70	2.70
1982	4.1	2.35	2.35
1983	4.8	4.39	3.63
1984	5.2	6.02	4.91
1985	5.3	4.89	4.11
1986	5.6	17.46	16.34
1987	5.9	22.98	11.02
1988	5.3	6.35	3.88
1989	5.3	14.80	5.48
1990	5.2	8.05	3.90
1991	4.7	14.12	4.66
1992	4.4	22.34	7.43
1993	6.1	36.11	12.00
1994	7.1	29.97	11.32
1995	7.5	54.57	14.39
1996	10.0	101.07	24.72
1997	12.2	184.15	45.72

SOURCE: Congressional Budget Office based on data in Tables 2 and 4 and on Federal Reserve Board, *Flow of Funds Accounts of the United States* (March 12, 1999), and Investment Company Institute, *Mutual Fund Fact Book* (Washington, D.C.: ICI, 1998 and earlier years).

a.   The share of stocks that taxable individuals hold in stock funds (converted to percentages for ease of display).

b.   Capital gains distributions paid out by mutual funds.

c.   Capital gains distributions reported on individual tax returns since 1983. (Before 1983, CGDTAX is the same as CGD.)
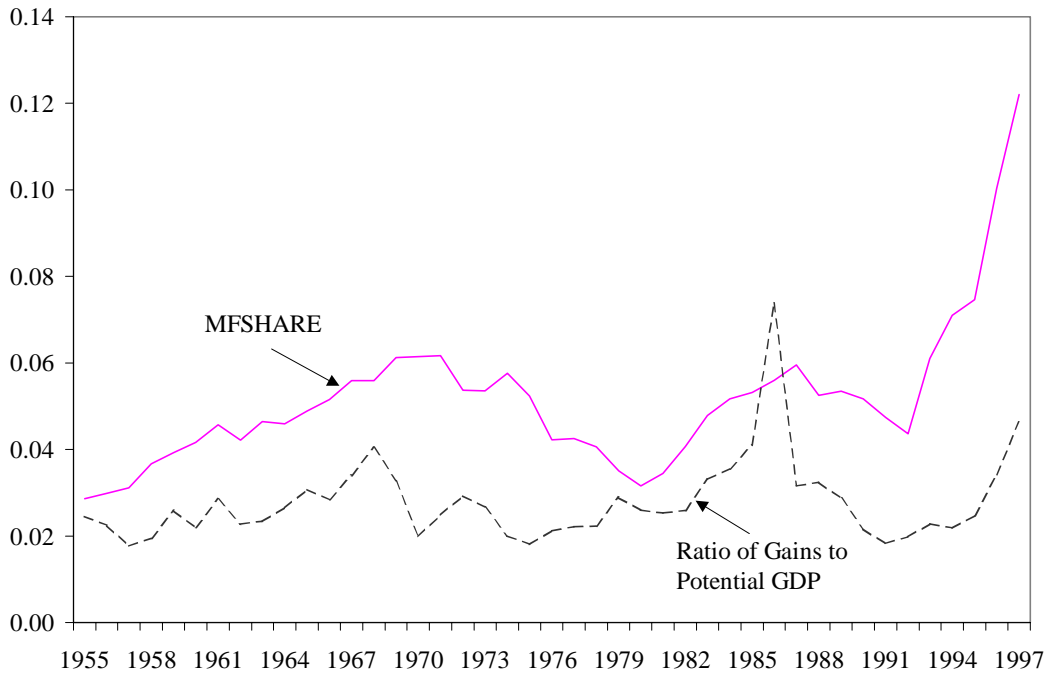
NOTE: MFSHARE is the share of stocks that taxable individuals hold in stock funds.

distributions from stock and bond funds had no effect on other taxable gains, then no substitution would be occurring and all taxable distributions would be net additions to taxable gains.

Such a test cannot be carried out with the available data, however. Although total taxable gains are known for many years, their division according to source (from stock and bond funds and from other assets) is not known. The largest component of total gains coming from stock and bond funds is the amount of distributions reported by taxpayers. That amount is known only for 1981 through 1997. Those 17 years provide too few data points for reliable estimation of equations like the ones described above. The other components of gains from stock and bond funds that are included in total gains—distributions passed through estates and trusts, and gains realized from selling shares in the funds—are unknown for most years.

A feasible alternative is to add a measure of capital gains distributions to the equations described above. If a dollar of distributions is estimated to have no impact on taxable gains, then distributions are indeed substituting for other gains. If a dollar

31

of distributions is estimated to raise taxable gains, the interpretation is less clear. The distributions may not be fully offset by reduced gains on other assets. Or some factor that affects all gains may be omitted from the basic equation. For example, the factors that lead investors to realize gains are probably not entirely captured by the equations, and they may be reflected in the decisions of fund managers to realize gains. Such correlations between realizations by the funds and by other investors would make distributions appear to explain total taxable gains. Hence, this alternative equation could be biased toward finding that distributions from stock and bond funds increase total taxable gains.[7]

Although measures of distributions have limited value in determining the net contribution of stock and bond funds to taxable capital gains, they may still be useful in forecasting. For instance, ICI reports total distributions paid by those funds before the IRS reports total taxable gains. Thus, if the distributions reflect amounts of capital gains realized by many other investors, equations including the distribution variable could provide advance information about total taxable gains.

CBO added two measures of capital gains distributions to the equations. The first is the amount of distributions reported by stock and bond funds, which is known in the equations as variable CGD (see Table A-1). That amount was included because it may be useful for forecasting total taxable gains. (CGD differs slightly in later years from the amounts shown in Table 2 because it does not reflect revisions incorporated in ICI's *1999 Mutual Fund Fact Book*.)

The second measure is the amount of distributions that individuals reported on their tax returns, known as CGDTAX. That variable is only available for 1981 through 1997. For earlier years, CGD is used. It is probably a good substitute in the 1950s and early 1960s because flow-of-funds data indicate that at that time most stock- and bond-fund assets were held in taxable form by individuals. CGD is an increasingly less reliable approximation starting in the late 1960s, when trusts and estates, pensions, and other institutions began to increase their holdings of stock and bond funds. By 1980, ICI shows that only 66 percent of stock funds were held by individuals in traditional fashion.

The amounts that individuals reported on their tax returns in 1981 and 1982 are larger than the amounts that, according to ICI, stock and bond funds paid out. The variable CGDTAX uses ICI's distributions in those years on the assumption that individuals overstated their distributions. That overstatement, if it existed, should have diminished in later years as the Internal Revenue Service improved its monitoring of income from mutual funds.

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7.   The net impact of distributions on total taxable gains could also be overstated by the mathematical fact that distributions are a component of taxable gains.

The amounts that taxpayers reported as distributions between 1983 and 1997 omit distributions passed through trusts and estates. That omission should have a relatively small effect because trusts and estates hold many fewer stock-fund assets than individuals do, and not all of the distributions paid to trusts and estates are passed through. Also, annual fluctuations in pass-through distributions caused by changes in stock prices and other market forces are likely to be similar to fluctuations in distributions paid to traditionally held funds and thus reflected in distributions reported by taxpayers.

CGD and CGDTAX omit capital gains that taxpayers realize from selling shares in stock and bond funds, but that omission is unlikely to affect the estimated coefficients. For one thing, the amount of omitted gains is small. And for another, the sale of fund shares is likely to offset trading that individuals would have done on directly held assets.

CGDTAX falls progressively behind the upward trend in CGD after 1983, but it shows similar fluctuations around the trend. Distributions reported by taxpayers fall progressively behind total distributions, apparently because traditional holdings of stock funds grew less rapidly than tax-deferred, fiduciary, and institutional holdings, as discussed earlier.

CGDTAX has always been a small component of total taxable gains, although it has grown from less than 5 percent in the early 1980s to more than 12 percent in 1997 (see Table 3 on page 12). In spite of its small size relative to total gains, its trends over time match some of the trends in total taxable gains (see Figure A-2). Both measures of gains rose gradually from 1955 through 1968, dropped in the early 1970s, peaked dramatically in the mid-1980s, and then dipped again before jumping up in the 1990s. The major difference between the two is that reported distributions (CGDTAX) have far surpassed their last peak, in the mid-1980s, whereas total taxable gains have pulled only slightly ahead of their mid-1980s peak.

The growth rate of CGDTAX, which will be entered into the growth-rate equation, has a correlation of .62 with the growth rate of taxable gains. CGDTAX relative to potential GDP, which will be entered into the ratio equation, has a correlation of .70 with gains relative to potential GDP.

Results

When the measures of stock- and bond-fund activity are added to the equations individually, all of the estimated coefficients are positive, suggesting that stock and bond funds do increase taxable gains. Only the coefficients of MFSHARE are statistically different from zero, however, and they may be reflecting realizations by other investors.

FIGURE A-2.   TOTAL TAXABLE GAINS AND CAPITAL GAINS DISTRIBUTIONS
REPORTED ON TAX RETURNS, 1955-1997
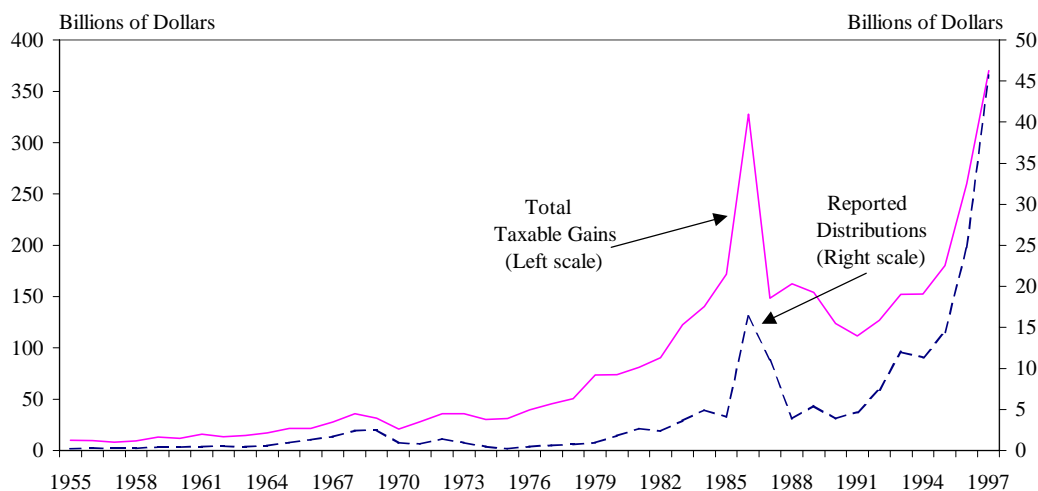
SOURCE: Congressional Budget Office based on data in Table A-1 and from the Department of the Treasury.

Ratio Equations.   The basic ratio equation, using data from 1955 through 1997, estimates coefficients that are statistically different from zero (as indicated by t-statistics greater than 2.0) and have their expected signs. The equations explain 90 percent of the variation in the ratio of taxable gains to potential GDP (see Table A-2).

When MFSHARE is added to the basic ratio equation, its estimated coefficient is 0.126. Its t-statistic of 2.0 means that a true coefficient of zero is very unlikely. Coefficients on the other variables in the equation are close to their values in the basic equation without MFSHARE, indicating that the contribution of MFSHARE largely comes from reducing the unexplained residual in the basic equation. In particular, adding MFSHARE helps explain the increasing amount of taxable gains relative to potential GDP in 1993, 1996, and 1997.

A coefficient of 0.126 means that a 1 percentage-point increase in the share of stocks that taxable individuals hold in stock and bond funds increases the ratio of taxable gains to potential GDP by 0.126 percentage points. Applied to the 1990-1997 period, the coefficient implies that the increase in MFSHARE of 7 percentage points raised total taxable gains by $67 billion. In comparison, distributions reported on tax returns rose by $42 billion during that period; distributions passed through trusts and estates may have risen by at most another $8 billion, for a total increase of no more than $50 billion in actual taxable distributions.

34

TABLE A-2.   REGRESSION STATISTICS FROM FOUR RATIO EQUATIONS

	Basic Equation	Equation with MFSHARE	Equation with CGD	Equation with CGDTAX
Equation Variables				
constant	-0.0640	-0.0749	-0.0638	-0.0570
	-2.6620	-3.2414	-2.8026	-2.5097
STOCK PRICE / POTENTIAL GDP	0.4741	0.4520	0.4389	0.4251
	7.4357	7.2840	6.3804	6.3519
GDP / POTENTIAL GDP	0.0975	0.0965	0.0932	0.0852
	4.7322	4.8920	4.5016	4.0572
TAX RATE	-0.0662	-0.0614	-0.0617	-0.0588
	-3.8265	-3.6535	-3.5347	-3.4246
YEAR 1986	0.0333	0.0336	0.0333	0.0308
	15.3621	16.1650	15.4768	12.4205
MFSHARE	*	0.1256	*	*
		2.0446		
CGD / POTENTIAL GDP	*	*	0.3108	*
			1.3326	
CGDTAX / POTENTIAL GDP	*	*	0.0000	1.4666
				1.8960
First-Order Autoregressive Coefficient	0.9519	0.9552	0.9458	0.9475
	22.0169	21.1775	20.5968	20.7615
Summary Statistics				
Adjusted R-Squared	0.9148	0.9217	0.9165	0.9203
Standard Error of Regression	0.0028	0.0027	0.0028	0.0027
Durbin-Watson Statistic	1.4277	1.4817	1.6022	1.6696
Inverted AR Root	0.95	0.96	0.95	0.95

SOURCE: Congressional Budget Office.

NOTES: The dependent variable of these equations is GAINS/POTENTIAL GDP. The ratio's mean is 0.0278; its standard deviation is 0.00968; and the estimation period is 1955 to 1997. t-statistics are shown in smaller type below the estimated regression coefficients. t-statistics of 2.0 or greater are statistically significant at the 5 percent probability level.

   * = not applicable.

An estimated increase in taxable gains greater than the actual increase in distributions is inconsistent with the hypothesis being tested. The coefficient of MFSHARE is intended to estimate the extent to which shifting stocks into stock funds raises capital gains on those stocks. An estimated increase equal to the amount of taxable distributions ($50 billion) would indicate that all distributions by stock funds were net increases in taxable gains. That is, individuals would not have realized any gains on those stocks if they had held them directly. An estimated increase of less than $50 billion would imply that gains in stock and bond funds partially substituted for gains by individuals. But an estimated increase of $67 billion implies that shifting stocks to stock funds increases gains by more than the amount realized by the funds.

One explanation for that discrepancy is statistical error. The standard error of the estimate is 0.061, so the true coefficient of MFSHARE has a 95 percent chance of lying between zero and 0.25. If the true coefficient was, say, half of its estimated size (0.63), the increase in MFSHARE during the 1990s would have raised taxable gains by $34 billion. An increase of that magnitude when total taxable distributions rose by about $50 billion would mean that two-thirds of distributions from stock and bond funds were net increases in taxable gains. Higher net increases are more probable than the two-thirds figure, and lower net increases are less probable.

Although statistical error is a plausible explanation for the apparent over-estimate, it is not the most likely explanation. Statistical error is as apt to mean that the true effect could be half as much above the estimated impact as below it. The most likely explanation is that other activity involving the realization of capital gains is correlated with the rising share of stocks held in stock funds. That could occur because some omitted variable both encourages realizations of gains and encourages people to invest in stock funds, or simply because some omitted variable happens to be correlated in recent years with the rapid increase in MFSHARE. Unfortunately, if other realizations activity is contaminating the estimated impact of stock and bond funds themselves, the net contribution of those funds cannot be isolated.

The impacts of CGD and CGDTAX are directly observable from their estimated coefficients in the ratio equations (see Table A-2). When CGD is added to the basic ratio equation, its coefficient is 0.31, which means that an additional dollar of capital gains distributions raises taxable gains by 31 cents. Capital gains distributions increased by $174 billion between 1990 and 1997, so the coefficient implies that their increase raised taxable capital gains by $54 billion. That amount is close to the estimated $50 billion increase in distributions appearing on tax returns, which implies that nearly all taxable distributions are net increases in taxable capital gains. The strength of that finding is limited, however, because of the large standard error of the estimate. That error is large enough to allow the possibility of no impact, negative effects, or much larger positive effects. The lack of statistical significance for the coefficient (t = 1.33) also means that total distributions from stock and bond funds are not useful for forecasting total taxable gains.

When CGDTAX is added to the basic ratio equation, its estimated coefficient is 1.47, which means that an additional dollar of distributions paid to taxable individuals increases total taxable gains by $1.47. That increase is larger than gains on stock and bond funds can account for. If distributions by stock and bond funds are not offset by reduced gains on other assets, then each dollar of distributions reported by taxpayers will raise total taxable distributions by no more than $1.20. (The $1.00 is the amount reported by taxpayers, and the $0.20 is the unidentified distribution passed through trusts and estates.) An impact much in excess of $1.20 would have to reflect realizations activity on other assets as well as stock and bond funds.

Statistical uncertainty about the 1.47 estimate is substantial. The standard error of the estimate is such that the actual impact of CGDTAX has a 95 percent chance of lying between -0.08 and 3.01. That range barely includes zero, so a complete offset is possible but unlikely. Effects as high as 3.01 are also possible, and those could arise only if taxable distributions were reflecting realizations activity on other assets as well as any impact from stock and bond funds. As noted above, the coefficient of CGDTAX is likely to be biased upward, both because distributions are likely to be correlated with realizations activity by other investors and because CGDTAX is itself a component of taxable gains.

The estimated impact of CGDTAX is slightly smaller than the estimated impact of MFSHARE. The $42 billion increase in CGDTAX between 1990 and 1997 multiplied by the estimated coefficient of 1.47 implies that taxable distributions raised total taxable gains by almost $62 billion, compared with the $67 billion figure suggested by MFSHARE. Given the statistical uncertainty of the estimated coefficients, the difference between $62 billion and $67 billion is statistically insignificant.

Growth-Rate Equations. The basic growth-rate equation estimates that all coefficients have their expected signs. Four of the estimated coefficients are statistically different from zero, but the coefficients for price level and the acceleration of real GDP are not (see Table A-3).[8] The equation explains nearly 80 percent of the variation in the growth rate of taxable gains.

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8. The estimated coefficient of real GDP is 3.0, implying that a 1 percent change in the growth rate of real GDP leads to a 3 percent change in the growth rate of taxable gains. The size of that coefficient reflects the great sensitivity of taxable gains to the business cycle. The size is implausible, however, for the long-term response of taxable gains to real GDP growth.

TABLE A-3.   REGRESSION STATISTICS FROM FOUR GROWTH-RATE EQUATIONS

	Basic Equation	Equation with MFSHARE	Equation with CGD	Equation with CGDTAX
Equation Variables				
constant	-0.0810	-0.1744	-0.0798	-0.0766
	-1.1817	-2.5044	-1.1571	-1.1293
dlog(PRICE LEVEL)	1.2365	2.5939	1.2378	1.2524
	1.2886	2.6396	1.2827	1.3204
dlog(REAL STOCK PRICES)	0.7273	0.7744	0.6939	0.6746
	5.5425	6.4532	4.9959	4.9832
dlog(REAL GDP)	3.0218	3.6873	2.8569	2.6517
	2.5564	3.3682	2.3653	2.2103
ddlog(REAL GDP)	0.8927	0.8326	0.8453	0.7836
	1.1265	1.1586	1.0576	0.9953
d(TAX RATE)	-0.0248	-0.0192	-0.0246	-0.0236
	-3.4686	-2.8326	-3.4094	-3.3033
d(YEAR 1986)	0.5371	0.5596	0.5265	0.4913
	6.2968	7.2035	6.0619	5.4136
d(MFSHARE)	*	7.8642	*	*
		2.9681		
dlog(CGD)	*	*	0.0310	*
			0.7710	
dlog(CGDTAX)	*	*	*	0.0642
				1.3597
Summary Statistics				
Adjusted R-Squared	0.7833	0.8219	0.7808	0.7883
Standard Error of Regression	0.1130	0.1024	0.1136	0.1117
Durbin-Watson Statistic	1.9856	2.0854	2.0146	2.0165

SOURCE: Congressional Budget Office.

NOTES: The dependent variable of these equations is dlog(GAINS). Its mean is 0.0918; its standard deviation is 0.243; and the estimation period is 1955 to 1997. t-statistics are in small type below the estimated regression coefficients. t-statistics of 2.0 or greater are statistically significant at the 5 percent probability level.

   * = not applicable.

When the change in MFSHARE is added to the basic growth-rate equation, its coefficient is more certainly above zero than in the ratio equation, and its implied impact is much larger. The coefficient of 7.86 suggests that the increase in MFSHARE between 1990 and 1997 raised taxable gains by $140 billion—far above the estimated $50 billion of taxable distributions from stock and bond funds during that period. Statistical uncertainty is unlikely to explain such a large impact if the true effect is $50 billion or less.

The larger impact of MFSHARE in the growth-rate equation than in the ratio equation appears to arise from that variable's interaction with the price-level variable in the growth-rate equation. Adding the change in MFSHARE to the basic growth-rate equation causes the coefficient of the price-level term to double. In the basic equation, the coefficient of the growth rate of the price level implies that a 1 percent increase in inflation will raise the growth rate of taxable gains by a plausible 1.2 percent. But when the change in MFSHARE is added, a 1 percent increase in inflation is estimated to raise the growth rate of taxable gains by 2.6 percent. That amount is implausible because it means that inflation has three times as much impact as increases in real stock prices and nearly the same impact as increases in real GDP. The implausibly large impacts estimated for the inflation rate and the change in MFSHARE are offset by a larger negative value for the constant term. That pattern suggests the two variables are interacting to explain realizations activity outside mutual funds that happens to be correlated with the combination of the two variables. In short, the estimated impact of MFSHARE appears to be more distorted in the growth-rate equation than in the ratio equation. The distortion is avoided in the ratio equation because the inflation term does not appear by itself there.

When the growth rates of CGD and CGDTAX are added separately to the growth-rate equation, their estimated coefficients are again positive but are smaller relative to their standard errors than in the ratio equation (see Table A-3). Compared with the ratio equation, no net impact or even a negative impact on total taxable gains is plausible. So too is the possibility that a dollar of taxable distributions raises total taxable gains by more than could be attributable to stock and bond funds. The 0.064 coefficient of CGDTAX implies that the growth of distributions reported by taxpayers between 1990 and 1997 raised total taxable gains by $35 billion, or 83 cents for each dollar of growth in reported distributions. The statistical error in the estimate means that the actual change per dollar of growth in taxable distributions has a 95 percent chance of being as low as a 40 cent reduction or as high as a $2 increase in total taxable gains. The portion of the range between zero and $1.20 is

TABLE A-4.   REGRESSION STATISTICS FOR MFSHARE IN ALL EQUATIONS

Equations	Coefficient	Standard Error	t-Statistic	Probability
Growth-Rate Equations				
Stock prices	7.86	2.65	2.97	0.005
Stock values	10.18	2.93	3.47	0.001
Stock prices plus housing starts	6.98	2.61	2.68	0.011
Stock values plus housing starts	9.09	2.82	3.23	0.003
Stock prices plus error correction	9.53	2.44	3.91	0.000
Stock values plus error correction	11.77	2.71	4.34	0.000
Stock prices plus housing starts plus error correction	8.63	2.43	3.56	0.001
Stock values plus housing starts plus error correction	10.47	2.64	3.96	0.000
Ratio Equations				
Stock prices	0.13	0.061	2.04	0.048
Stock values	0.17	0.068	2.46	0.019
Stock prices plus housing starts	0.13	0.060	2.15	0.038
Stock values plus housing starts	0.16	0.064	2.57	0.015

SOURCE: Congressional Budget Office.

NOTE: MFSHARE is the share of stocks that taxable individuals hold in stock funds. For more information about the variables of the equations, see pp. 25-26.

consistent with a pure test of the impact of stock and bond funds.[9] The coefficients of CGDTAX seem to be less biased by the realizations activity of other investors than the coefficients of MFSHARE do.

Alternative Specifications of the Basic Equations. Of the three changes in the basic equations discussed above, only one causes a noticeable change in the estimated coefficients of MFSHARE. Substituting the value of household stock holdings for the stock-price index causes the estimated impact of MFSHARE to increase by between 20 percent and 30 percent (see Table A-4). That increase occurs primarily because the value of stock holdings explains less of the variation in taxable gains than the stock-price index does. When MFSHARE is added to the basic equations with stock values, it explains some of the variation in taxable gains that is

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9.   When CGD is added to the basic growth-rate equation, its coefficient is 0.031, which implies that the growth in distributions paid by stock and bond funds between 1990 and 1997 raised taxable gains by $20 billion, or 48 cents for each dollar of growth in reported distributions. The statistical error in the estimate indicates a 95 percent chance that the actual impact per dollar of growth in taxable distributions could be as low as a 78 cent reduction or as high as a $1.68 increase.

unexplained by stock values.   Thus, substituting stock values further obscures the net impact of stock and bond funds on taxable gains.

The two other changes made to the basic equations are the addition of multifamily housing starts and, in the growth-rate equations, of an error-correction term. Those additions improve the fits of the basic equations shown in Tables A-2 and A-3 but cause small changes in the estimated coefficients of MFSHARE.

Conclusions

All of CBO's estimates find that stock and bond funds increase taxable capital gains, but the sizes of the increase are so large that the estimates probably overstate the net impact of those funds. The estimated coefficients of MFSHARE appear to be distorted in the growth-rate equations and in the ratio equations with stock values. In the ratio equations with stock prices, the estimated coefficients are consistent with the hypothesis that stock and bond funds raise taxable gains by two-thirds or more of the amount that they distribute. However, those coefficients are also consistent with the hypothesis that MFSHARE is reflecting realizations activity by other investors, and that hypothesis is more probable. The estimated effect of CGDTAX in the ratio equations is slightly smaller than that of MFSHARE, but it is subject to the same uncertainties about the net impact of the funds. In the growth-rate equations, the coefficient of CGDTAX does not appear to suffer the same distortion as the coefficient of MFSHARE. In fact, it implies a modestly smaller impact than the coefficient of CGDTAX in the ratio equation does. Finally, distributions paid by stock and bond funds (CGD) are not useful in forecasting taxable gains, even though data on those distributions are generally available earlier than IRS data on taxable gains.

The uncertainty about the impact of stock- and bond-fund activity results partly from the relatively few years of experience that exist with such funds at their current size. The uncertainty also arises from weaknesses in the historical data, such as the absence of direct information about the amount of distributions reported by taxpayers before 1981 and the fraction of household stocks held in stock funds before 1980. Finally, the inability of the basic equations to explain other realizations raises the likelihood of bias in the estimated effects of stock- and bond-fund activity. Indeed, the inclusion of stock- and bond-fund variables in the forecasting equations highlights their shortcomings.   The overestimate of the effect of mutual funds—particularly in the case of MFSHARE in the ratio equation—results largely from the sharp spike in taxable gains and MFSHARE in 1996 and 1997. Because the basic equations fail to adequately explain that spike in taxable gains, the addition of stock- and bond-fund variables appears to do so.

41