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## Responses of Mutual Fund Investors to Adverse Market Disruptions

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### Disciplines

Economics

### Comments

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# **Living with Defined Contribution Pensions**

## **Remaking Responsibility for Retirement**

Edited by

Olivia S. Mitchell and Sylvester J. Schieber

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## Chapter 7

# **Responses of Mutual Fund Investors to Adverse Market Disruptions**

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John D. Rea and Richard G. Marcis

Asset allocation by participants in 401(k) plans is critical to the contribution that these plans make in providing for retirement security. An important concern in this regard is how plan participants might react to adverse market developments, such as heightened market volatility or an extended bear market. This concern is relevant because the growth of 401(k) plans and assets during the last ten years has occurred when stock prices have trended upward and interest rates have trended downward. Consequently, many 401(k) participants have not yet had to cope with declining values in their 401(k) accounts.

Only limited information on asset allocation in 401(k) plans is available, and very little is known about how participants have reallocated plan assets or contributions in response to changes in stock prices and interest rates. Given the paucity of information on 401(k) participants, it may prove useful to examine the investment activity of mutual fund investors as an alternative. Mutual funds are a significant part of the 401(k) market, accounting for an estimated 37 percent of all assets held in 401(k) accounts at the end of 1995. In addition, the 401(k) market is a significant line of business for mutual funds, representing over 8 percent of all mutual fund assets at the end of 1995. Moreover, assets from all retirement-related accounts, including 401(k) plans, other defined contribution plans, and Individual Retirement Accounts (IRAs), accounted for an estimated 35 percent of all mutual fund assets at year-end 1995. Furthermore, between 1993 and 1995, about 30 percent of the net flow of new cash to mutual funds was from 401(k) plans and another 37 percent was from IRAs and other retirement plans.<sup>1</sup> Finally, an estimated 18.4 million households who owned mutual funds in mid-1995 had a family member participating in a 401(k) plan (Investment Company Institute

1996c). These households represented about 60 percent of all mutual fund owners and perhaps as many as 75 to 80 percent of all 401(k) participants. Of the 18.4 million households, approximately four out of five held mutual funds in their 401(k) accounts.<sup>2</sup>

In view of the overlap between mutual fund ownership and 401(k) participation and the high percentage of mutual fund assets and net flows arising from retirement-related accounts, this chapter reviews research on the response of mutual fund shareholders to short-term market disruptions and to longer-term declines in stock prices. This topic has received considerable attention lately, as concern has arisen over the possibility of a run on stock mutual funds in the event of a collapse in stock prices (Kaufman 1994).

To summarize the key findings, stock fund holders have not in the past liquidated their holdings en masse in response to stock market breaks or sharp sell-offs. They have, however, shown a sensitivity to cyclical and secular movements in stock prices. In addition, they displayed remarkable stability in 1994 in the face of market disruptions that included the tightening of monetary policy, derivative losses at taxable money funds, the bankruptcy of Orange County, and the Mexican peso crisis.

Although a run on mutual funds is not an impossibility, this evidence suggests that the probability is low. The low likelihood partly reflects the manner in which mutual funds are regulated. Assets of mutual funds must be marked to the market daily, and consequently shareholders cannot avoid losses associated with market developments by redeeming shares. In contrast, under similar circumstances, bank depositors have an incentive to make withdrawals because bank assets are not marked to market. Mutual funds must also hold readily marketable assets and disclose information about their investment objectives and investment strategies so that investors can assess the risks associated with mutual fund investments.

In addition to regulation, certain characteristics of mutual fund investors also contribute to the low likelihood of a run. Surveys of the shareholders show that most are seasoned investors with long-term investment horizons. Surveys also indicate that fund owners generally have not redeemed shares because of market developments and that they are not inclined to do so in the future. In addition, most shareholders have a basic understanding of investment risk and are aware that mutual funds are risky. As a result, they take risk into account when making purchase decisions, although they typically place it within a long-term investment horizon.

These characteristics of mutual fund shareholders suggest that participants in 401(k) plans may not act precipitately as well in response to market developments, although they may reallocate plan assets and con-

tributions in response to longer-run changes in stock returns and interest rates. Further research is needed on the determinants of asset allocation in 401(k) plans, as this conclusion assumes that the activity of mutual fund investors generally is representative of that of 401(k) participants. In this regard, mutual fund shareholders with 401(k) plans do differ from those without plans in several respects. For example, those with 401(k) plans tend to be younger, less educated, and less wealthy. They also tend to have a higher proportion of their financial assets in 401(k) plans. In addition, those who only own mutual funds in their 401(k) plans appear to be much more dependent upon these plans for retirement income than other mutual fund owners. Such differences might be the source of different responses to market developments.

### **Profile of Mutual Fund Owners**

Individuals are the primary owners of mutual funds, held either directly or indirectly through trusts or retirement plans. At the end of 1995, financial institutions, businesses, endowments, nonprofit organizations, and other types of nonpersonal entities held only 10 percent of the \$2.8 trillion in mutual fund assets. Another 15 percent of mutual fund assets was held in fiduciary arrangements, such as trusts and custodial accounts for minors, a significant portion of which is for the benefit of individuals. Thus, depending upon the interpretation of fiduciary accounts, individuals owned or controlled at least 75 percent of all industry assets.

A survey of approximately 1,500 household owners of mutual funds conducted in 1995 showed that the typical financial decision maker in these households is 42 years of age; 54 percent have a college degree, 83 percent are employed, 15 percent are retired, and 77 percent have a working spouse (ICI, 1996b). Median household income is \$55,000 and median financial assets—excluding real estate investments, life insurance policies, and retirement plan assets—are \$40,000, of which 45 percent is in mutual funds (Table 1). Stock mutual funds are the most commonly owned mutual fund, being found in the portfolios of 72 percent of all households (ICI, 1996c). In addition, 52 percent of the households own money market funds, and 47 percent own bond funds. With regard to other types of financial assets, over half of the households own individual stocks, and roughly a quarter own individual bonds and annuities. Table 1 also highlights the importance of retirement-related, tax-advantaged accounts to mutual fund owners, of whom 62 percent have an IRA, and 60 percent participate in a 401(k) plan (ICI, 1996c). Of the 401(k) participants, 80 percent own mutual funds in the plan, whereas the remaining 20 percent holds no mutual funds in a plan. Of those

TABLE 1 Selected Characteristics of Households Owning Mutual Funds, by Ownership Through 401(k) Plans

<i>Investor characteristic</i>	<i>All owners</i>	<i>Owners with mutual funds in 401(k) plans</i>	<i>Owners with no mutual funds in 401(k) plans</i>
<i>Median</i>			
Age of financial decisionmaker	42	39	46
Household income	\$55,000	\$60,000	\$52,500
Financial assets outside employer-sponsored retirement plans	\$40,000	\$30,000	\$60,000
Mutual fund assets outside employer-sponsored plans	\$18,000	\$20,000	\$20,000
<i>Percent of respondents</i>			
College degree	54	50	57
Employed, full- or part-time	83	93	74
Retired from lifetime occupation	15	6	23
Spouse employed*	77	83	71
<i>Types of assets owned<sup>†</sup></i>			
Individual stocks	52	53	51
Individual bonds	23	20	26
Annuities	22	15	29
<i>Types of mutual funds owned:<sup>‡</sup></i>			
Stock	72	72	73
Bond	47	46	48
Money market	52	51	54
IRA	62	48	74

Source: Authors' computations using 1995 Investment Company Institute survey.

\*Percent of married households.

<sup>†</sup>Multiple responses permitted.

<sup>‡</sup>Multiple responses permitted. Includes ownership in 401(k) plans.

owning mutual funds in a 401(k) plan, 55 percent also own mutual funds outside the plan.

Households with mutual funds in 401(k) plans differ in a number of respects from those that only own mutual funds outside these plans. Reflecting the relatively recent development of 401(k) plans, those households with plan mutual funds tend to be younger, and a higher proportion are employed, giving the group a higher median household income. The group with mutual funds in a 401(k) plan has accumulated smaller amounts of financial assets outside the employer-sponsored retirement plans and tends to have a higher percentage of financial wealth in mutual funds. In contrast, those households not owning mutual funds through a



TABLE 2 Selected Characteristics of Households Owning Mutual Funds Through 401(k) Plans, July 1995

<i>Investor characteristic</i>	<i>Owners with mutual funds only in 401(k) plans</i>	<i>Owners with mutual funds in and outside 401(k) plans</i>
<i>Median</i>		
Age of financial decisionmaker	37	41
Household income	\$50,000	\$60,000
Financial assets outside employer-sponsored retirement plans	\$20,000	\$50,000
Mutual fund assets in 401(k) plan	\$12,000	\$25,000
<i>Percent of respondents</i>		
College degree	40	60
Employed, full- or part-time	95	91
Retired from lifetime occupation	4	8
Spouse employed*	84	83
Types of assets owned outside of employer-sponsored plans <sup>†</sup>		
Individual stocks	43	62
Individual bonds	19	21
Annuities	8	22
Types of mutual funds owned <sup>†</sup>		
Stock	52	83
Bond	26	58
Money market	39	57
IRA	25	68
Employer-sponsored retirement plan other than 401(k) plan	32	65

Source: Authors' computations using Investment Company Institute data.

\*Percent of married households.

<sup>†</sup>Multiple responses permitted.

401(k) plan — most of whom do not participate in a plan — show a higher frequency of ownership of IRAs and annuities.

Further distinctions can be made among those households who own mutual funds in a 401(k) plan, as described in Table 2. Those whose only holdings of mutual funds are in the plan are younger, have less education, have a somewhat higher concentration of financial assets in their 401(k) accounts, and are more conservatively invested than those 401(k) participants who also hold mutual funds outside 401(k) plans. In addition, a significantly smaller percentage of those households only owning mutual funds in 401(k) accounts is covered by another employer-sponsored retirement plan and has an IRA. Thus, these households would appear to be more dependent upon their 401(k) plans for retirement income (ICI 1996c).

## **Response of Mutual Fund Shareholders to Movements in Stock Prices<sup>3</sup>**

The overlap in ownership of mutual funds in and outside 401(k) plans suggests that an analysis of the response of mutual fund owners to changing conditions in financial markets might indirectly provide some insight into how 401(k) participants might respond as well. To this end, this section and the next examine the response of mutual fund shareholders to movements in stock prices since 1944 and to a series of market disruptions in 1994. For this purpose, shareholder activity is measured as the net flow of cash to mutual funds, which is the difference between sales of mutual fund shares to investors and redemptions of shares by shareholders.

### *Stock Market Cycles and Sell-Offs*

The post-World War II period provides a rich experience in which to examine the reaction of mutual fund owners to stock market developments. During this period, the stock market experienced fourteen major cycles, as measured by peaks and troughs in the monthly average of Standard and Poor's (S&P) 500 stock price index.<sup>4</sup> Figure 1 shows that eight of the cycles were associated with cycles in general business conditions, as dated by the National Bureau of Economic Research, and only the mild 1980 recession failed to produce a significant decline in stock prices. The other six stock market cycles were not associated with business cycles, although the contractions in 1961-62, 1966, and 1983-84 occurred in advance of slowdowns in economic activity (Table 3).

The stock market contractions differ considerably in length and severity. The duration of the fourteen contractions ranged from four to thirty-seven months, with the average downturn lasting fourteen months. With two exceptions, the shortest stock market contractions typically were not associated with business recessions, whereas the longest contractions occurred in conjunction with recessions. The largest decline in the S&P 500 index was 43.4 percent during the 1973-74 contraction, and the smallest decrease of roughly 10 percent occurred in the 1959-60, 1971, and 1983-84 contractions. The average decrease in the index for all contractions was 19.5 percent.

The fourteen cycles contain several short periods of sharp declines in stock prices. Because of the averaging of daily values, the largest one-month decline in the S&P 500 index occurred not in the October 1987 market break but in September 1946, when the index fell 14.7 percent. The second largest decline of 12.5 percent was in October 1987; three other contractions produced one-month decreases in excess of 10 per-



Figure 1. S&P 500 stock price index (monthly average of daily index, 1942-95). Shaded regions represent contraction phase of stock market cycle. Source: Rea and Marcis (1996).

TABLE 3 Stock Market Cycles, 1942-95

Cycle			Duration (months)		Change in S&P index (%)		Largest decrease in S&P index in contraction (%)		
Expansion		Contraction	Expansion*	Contraction†	Expansion*	Contraction†	One-month	Two-month	Three-month
Trough	Peak	Trough							
Apr. 1942	May 1946	Jun. 1949‡	49	37	138.5	-25.3	14.7	16.7	18.8
Jun. 1949	Jun. 1953	Sep. 1953‡	43	8	87.4	-11.1	4.9	5.6	7.9
Sep. 1953	Jul. 1956	Dec. 1957‡	34	17	109.6	-17.3	6.2	10.0	15.1
Dec. 1957	Jul. 1959	Oct. 1960‡	19	15	48.1	-10.1	4.0	5.6	6.8
Oct. 1960	Dec. 1961	Jun. 1962	14	6	33.5	-22.5	11.7	18.3	20.9
Jun. 1962	Jan. 1966	Oct. 1966	43	9	67.8	-17.3	6.0	9.4	10.2
Oct. 1966	Dec. 1968	Jun. 1970‡	26	18	38.1	-29.0	11.5	14.2	14.7
Jun. 1970	Apr. 1971	Nov. 1971	10	7	36.3	-10.0	4.6	6.7	4.6
Nov. 1971	Jan. 1973	Dec. 1974‡	14	23	27.6	-43.4	10.4	17.8	24.1
Dec. 1974	Sep. 1976	Mar. 1978	21	18	57.2	-15.8	3.8	5.2	6.4
Mar. 1978	Nov. 1980	Jul. 1982‡	32	20	52.7	-19.4	8.8	7.6	10.6
Jul. 1982	Oct. 1983	Jul. 1984	15	9	53.3	-9.9	5.5	5.4	5.3
Jul. 1984	Aug. 1987	Dec. 1987	37	4	118.0	-26.8	12.5	23.1	25.6
Dec. 1987	Jun. 1990	Oct. 1990‡	30	4	49.6	-14.8	8.1	12.4	14.7
Average			28	14	65.6	-19.5	8.1	11.3	13.3

Source: Rea and Marcis (1996).

\*Trough to peak.

†Peak to trough.

‡Contraction associated with business recession.

cent. Over a two-month period, the largest decrease was the 23.1 percent drop in the 1987 contraction. Sizable two-month declines also were posted in the 1962 and 1973–74 contractions. Over a three-month period, the 25.6 percent decrease in the index between October and December 1987 was the largest for all postwar contractions but was not much greater than the 24.1 percent drop between June and September of 1974. Substantial three-month decreases also occurred in the 1946 and 1962 downturns.

### Net Flow During Expansions and Contractions

Shareholder activity in stock funds generally has not fluctuated between inflows during periods of rising stock prices and outflows during periods of falling stock prices.<sup>5</sup> Indeed, such a pattern has been the exception rather than the rule (Figure 2). Of the thirteen stock market cycles for which complete data are available for both the expansion and contraction, only three—those in 1970–71, 1984–87, and 1987–90—showed this pattern; that is, only in these three cycles was net flow positive over the expansion and negative over the contraction (Figure 3). Of the remaining ten cycles, three experienced a net outflow in both the expansion and contraction, and seven posted a net inflow in both the expansion and contraction. The fourteenth cycle from 1942 to 1949, for which data are only available since 1944, most likely was of the last type, as net flow was positive from 1944 through 1949.

With only three minor exceptions, the eight contractions with positive, cumulative net flows experienced a net inflow in each month. That is, the inflow does not mask a short period of outflows (Table 4). Although no significant net outflows occurred during these eight contractions, two of the largest one-month and two-month declines in the S&P stock price index were recorded during the 1946–49 contraction and during the 1961–62 contraction. Neither of these market breaks, however, was associated with net redemptions, either during the break or in subsequent months.

In the six contractions with net outflows, none cumulated over the course of the entire contraction to a high level, ranging from 0.9 percent of equity fund assets to 13.1 percent (Figure 3). The largest occurred in the relatively mild 1976–78 contraction, and the net outflow in the 1987 downturn was 3.5 percent of assets.

The relatively low rate of net outflows over the entire course of the six contractions would not necessarily rule out substantially higher rates of net outflows within a shorter time interval. Despite the possibility, net outflows measured over one-month, two-month, and three-month intervals were never large. The largest one-month net outflow was in October



Figure 2. Net flow to equity mutual funds (monthly, six-month moving average, 1944–95). Shaded regions represent contraction phase of stock market cycle. Source: Rea and Marcis (1996).

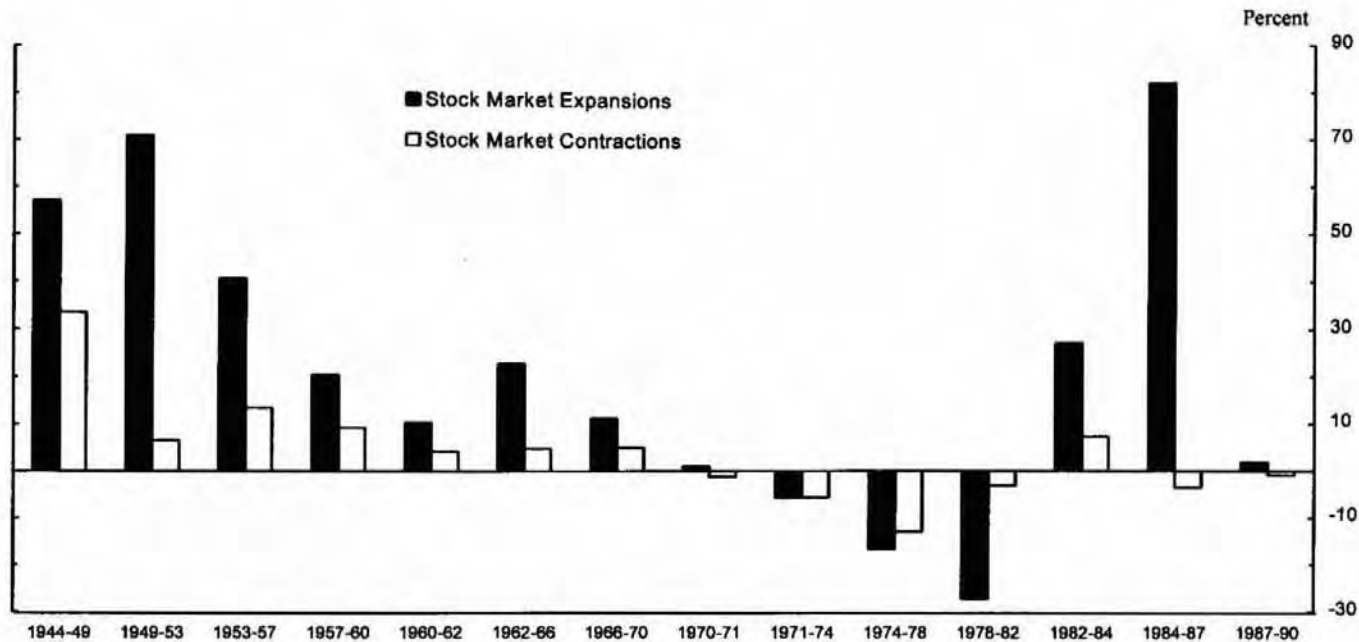


Figure 3. Net flow to equity mutual funds during stock market expansions and contractions, 1944-90 (percent of assets). Net flow is expressed as a percent of assets at trough for stock market expansions, as a percent of assets at peak for contractions. Source: Rea and Marcis (1996).

TABLE 4 Minimum and Maximum Monthly Net Flow to Equity Funds During Stock Market Contractions, 1946-90 (% of assets in previous month)

<i>Contraction</i>			
<i>Peak</i>	<i>Trough</i>	<i>Minimum</i>	<i>Maximum</i>
May 1946	Jun. 1949	0.6	1.3
Jan. 1953	Sep. 1953	0.7	1.0
Jul. 1956	Dec. 1957	0.6	1.2
Jul. 1959	Oct. 1960	0.4	0.9
Dec. 1961	Jun. 1962	0.4	1.0
Jan. 1966	Oct. 1966	0.3	0.8
Dec. 1968	Jun. 1970	-0.1	0.8
Apr. 1971	Nov. 1971	-0.5	0.1
Jan. 1973	Dec. 1974	-0.6	-0.1
Sep. 1976	Mar. 1978	-1.0	-0.4
Nov. 1980	Jul. 1982	-1.1	0.9
Oct. 1983	Jul. 1984	-0.1	1.9
Aug. 1987	Dec. 1987	-3.1	0.6
Jun. 1990	Oct. 1990	-1.0	0.3

Source: Rea and Marcis (1996).

1987 and represented only 3.1 percent of stock fund assets (Table 4). This contraction also produced the largest two- and three-month net outflows, but even over the three-month period, the outflow represented little more than 4.0 percent of assets. The next largest outflows for these time intervals ranged from 1.1 percent for the one-month period to 2.8 percent for the three-month period.

### The 1987 Stock Market Break

On a monthly basis, the net outflow of \$7.5 billion in October 1987 was the highest on record, and it resulted primarily from an increase in share redemptions and secondarily from a drop-off in sales of new shares. The outflow in October reversed a \$1.5 billion net inflow in September and followed an average monthly net inflow of \$3.2 billion during the first nine months of 1987.

The net outflow in October likely was concentrated in the second half of the month and could have been as high as \$8.2 billion.<sup>6</sup> Information from thirty large complexes—which at that time held 80 percent of equity fund assets—implies that perhaps \$1.6 billion occurred on October 16, \$2.7 billion on October 19 (the day of the break), and \$1.3 billion on October 20.<sup>7</sup> The three-day estimate of \$5.6 billion is nearly 70 percent of the net outflow between October 16 and the end of the month.

Despite the record level of net redemptions in October 1987, several



aspects of the redemption activity suggest that it was not large in a relative sense. At most, the net outflow in the last half of October amounted to no more than 4.5 percent of assets.<sup>8</sup> In addition, the burst in net redemptions was largely confined to October 16, 19, and 20. After averaging nearly \$2.0 billion per day over these three days, the net outflow moderated to an estimated \$325 million per business day over the remainder of the month and then tapered off to \$60 million per business day in November and December. For each of these two months, the net outflow represented about 0.7 percent of assets.

Furthermore, mutual fund shareholders did not characterize themselves as having liquidated shares heavily during and shortly after the market break. In a survey of households owning stock funds conducted in November 1987, only 5 percent had redeemed shares during and since the break (ICI 1988). In a follow-up survey taken in May 1988, this figure had risen only to 11 percent. The May survey, however, did reveal that mutual fund shareholders had become more conservative in their investments and were exercising restraint in making new purchases of mutual fund shares.

Perhaps reflecting this cautiousness, the net flow to equity funds remained negative through the first quarter of 1989 even though stock prices were rising. The net outflow resulted, however, not from a pickup in the pace of redemptions but rather from a slowdown in sales. In fact, monthly redemptions as a percent of assets declined, on average, about one percentage point between the first nine months of 1987 and the period from January 1988 to March 1989.

### The 1976–78 Contraction and Long Waves in Net Flow

The net outflow of 13.1 percent in the 1976–78 contraction, which included several monthly net redemptions of 1.0 percent of assets and a three-month net outflow of 2.8 percent between March and May 1977, occurred in the period extending from 1971 through mid-1982, when equity funds experienced net redemptions in almost every month (Table 5). In comparison with net outflows in the expansions during this period, the net outflow in the 1976–78 contraction was not, however, especially large. For example, the cumulative net outflow in the 1978–80 expansion was 27.2 percent of assets, more than double that in the 1976–78 contraction, and the cumulative net outflow in the 1975–76 expansion also exceeded that in the 1976–78 contraction. In addition, both of these two expansions had numerous months in which the net outflow was more than 1.0 percent of assets, and the largest net outflow, 4.5 percent, for any three-month period since 1944 occurred during the 1978–80 expansion.

TABLE 5 Largest Net Outflows in Stock Market Contractions over One-, Two- and Three-Month Periods

<i>Period</i>	<i>Percent of assets in previous month</i>
<i>One-month</i>	
October 1987	3.1
March 1977	1.1
January 1981	1.0
May 1977	1.0
August 1977	1.0
December 1977	1.0
December 1981	1.0
May 1982	1.0
August 1990	1.0
<i>Two-month</i>	
October–November 1987	3.6
March–April 1977	1.9
December 1980–January 1981	1.8
June–July 1981	1.4
August–September 1990	1.2
<i>Three-month</i>	
October–December 1987	4.1
March–May 1977	2.8
June–August 1981	2.2

Source: Rea and Marcis (1996).

Furthermore, from the trough in S&P index in March 1978 through October 1978, equity funds experienced a net outflow of 9.0 percent of assets, even as the S&P index increased 13.2 percent.

This period of eleven and one-half years in which equity funds were out of favor with the investing public stands in marked contrast to the preceding period, dating back to 1944, when equity funds experienced net inflows in virtually every month of each expansion and contraction. Stock prices in the 1944–70 period trended strongly upward, with the S&P index increasing at an 8.4 percent compound annual rate between the cyclical peaks in May 1946 and December 1968. In contrast, the 1970s were a period of stagnation in the stock market. The S&P index reached a record high in December 1968, pushed briefly above that level in late 1972 and early 1973, but never saw it again until late 1979. The compound annual rate of increase in the S&P index between the cyclical peaks in December 1968 and November 1980 was only 2.1 percent.

The period spanning the 1970s and early 1980s also contrasts with the subsequent decade and a half in which stock prices generally rose and stock funds again experienced persistent net inflows, apart from the eighteen months after the 1987 market break. This relationship between the long-run movement in net flow and stock returns, along with that observed between the late 1940s and early 1970s, suggests that mutual fund investors are sensitive to long-term rates of return on equity. The 1970s and early 1980s were a period of high inflation, making investments in real assets more attractive than those in financial assets, whereas the high stock returns before and after this period likely contributed to households' investing in equities through mutual funds.

### The 1973–74 Contraction

The nearly 25 percent drop in the S&P 500 index over the third quarter of 1974 was second in size only to the decline registered in the 1987 stock market break. Nonetheless, the pace of net outflows ticked up only slightly during the three-month sell-off, averaging a modest 0.4 percent of assets. After the fall in stock prices subsided in the fourth quarter, net redemptions moderated significantly, declining to less than 0.1 percent of assets, and did not rise again until several months after stock prices turned up in January 1975. As stock prices continued to advance thereafter, net outflows rose further, reaching 1.2 percent of assets in the spring of 1976, a figure that was about double the largest monthly net outflow in the 1973–74 contraction.

### Other Market Sell-Offs

Movements in net flow to equity funds during other periods with significant short-term declines in the S&P 500 index have been mixed. In some instances, such as the market downturn sparked by Iraq's invasion of Kuwait in August 1990, net flow turned negative by a small margin for a month or two. Net flow also was negative for a two-week period with the heightened market volatility in the spring of 1994 (Marcis, West, and Leonard-Chambers 1995). In all these instances, the largest monthly outflow amounted to no more than 1.1 percent of stock fund assets.

During other market sell-offs, such as the outbreak of the Korean War in June 1950 and the sharp sell-off between August and October 1957, net flow either declined slightly and remained positive or continued at the same pace posted in preceding months (Bullock 1959). And, in the market decline in the spring of 1980, net flow actually turned from negative to positive.

### Other Cyclical Patterns

Although net flow has not generally fluctuated from positive in the expansion phase of the stock market cycle to negative in the contraction phase, several recurrent patterns are observable in the cyclical movement of net flow, measured as a percent of assets. To identify these patterns, the expansion and contraction phases of the stock market cycle have been divided into two stages. For the expansion, the first stage includes all months other than the last six and the second stage covers the last six months. For the contraction, the first stage is the first six months, and the second is the remaining months, although not all contractions extend into the second stage.<sup>9</sup>

Net flow has tended, on average, to rise during the expansion phase and to decline during the contraction phase. For all fourteen cycles, the average of monthly net flows, as a percent of assets, increases from 0.38 percent in the first stage of the expansion to 0.58 percent in the last six months of the expansion (Table 6). Thereafter, the average declines to 0.25 percent for the first six months of the contraction, about the value in the remaining months of the contraction.

The absence of variation in net flow between the two stages of the contraction is the result of three of the contractions being so short that they do not contain the second stage. Eliminating these three from the computations of stage averages reveals a tendency for net flow to decline as the contraction progresses. During the first six months of the contraction for the eleven complete cycles, net flow averaged 0.36 percent, as compared with 0.26 percent for the remaining months.

The cyclical pattern in net flow results from a similar pattern in sales of shares rather than share redemptions. Sales, as a percent of assets, tend to rise during the expansion and to fall during the contraction (Table 7). In contrast, the redemption rate has generally remained unchanged, except in the second stage of the contraction, when it declines slightly (Table 8).

From the pattern of sales and redemption rates, it would appear that, to the extent stock fund owners respond to cyclical movements in stock returns, they do so by adjusting the pace of new share purchases rather than by changing the pace of redemptions. That is, stock fund owners have tended to buy more intensively when stock prices are rising and to become more restrained when prices are falling. Even so, the cyclical variation in the pace of sales is not particularly large, ranging from an average low of 1.2 percent in the last part of the contraction to 2.0 percent in the last six months of the expansion. Furthermore, the sales rate in the last six months of the expansion exceeds that in the first stage of

TABLE 6 Net Flow to Equity Mutual Funds During Expansion and Contraction Phases of Stock Market Cycles (percent of assets, period average, 1944-90)

Cycle			Expansion		Contraction	
Expansion		Contraction	Other than	Last six months	First six months	Remaining months
Trough	Peak	Trough	last six months			
Apr. 1942	May 1946	Jun. 1949	1.21*	1.66	1.10	0.93
Jun. 1949	Jan. 1953	Sep. 1953	1.05	1.31	0.83	0.78
Sep. 1953	Jul. 1956	Dec. 1957	0.79	0.80	0.86	0.75
Dec. 1957	Jul. 1959	Oct. 1960	0.80	0.76	0.72	0.55
Oct. 1960	Dec. 1961	Jun. 1962	0.55	0.72	0.71	—
Jun. 1962	Jan. 1966	Oct. 1966	0.32	0.54	0.59	0.44
Oct. 1966	Dec. 1968	Jun. 1970	0.34	0.39	0.42	0.23
Jun. 1970	Apr. 1971	Nov. 1971	0.13	0.07	-0.21	-0.02
Nov. 1971	Jan. 1973	Dec. 1974	-0.34	-0.39	-0.31	-0.31
Dec. 1974	Sep. 1976	Mar. 1978	-0.47	-1.04	-0.76	-0.81
Mar. 1978	Nov. 1980	Jul. 1982	-0.91	-0.25	-0.32†	-0.07
Jul. 1982	Oct. 1983	Jul. 1984	1.11	1.17	1.03†	0.34
Jul. 1984	Aug. 1987	Dec. 1987	1.06	1.42	-0.97	—
Dec. 1987	Jun. 1990	Oct. 1990	-0.25	0.94	-0.23	—
<i>Average</i>						
All cycles			0.39	0.58	0.25	0.26
Eleven complete cycles			0.37	0.46	0.36	0.26

Source: Rea and Marcis (1996).

\*January 1944 to May 1946.

†Four months.

TABLE 7 Sales of Shares of Equity Mutual Funds During Expansion and Contraction Phases of Stock Market Cycles  
(percent of assets, period average, 1944-90)

Cycle			Expansion		Contraction	
Expansion		Contraction	Other than last six months	Last six months	First six months	Remaining months
Trough	Peak	Trough				
Apr. 1942	May 1946	Jun. 1949	2.08*	2.62	1.90	1.55
Jun. 1949	Jan. 1953	Sep. 1953	1.89	1.79	1.36	1.22
Sep. 1953	Jul. 1956	Dec. 1957	1.39	1.27	1.23	1.12
Dec. 1957	Jul. 1959	Oct. 1960	1.22	1.26	1.11	1.01
Oct. 1960	Dec. 1961	Jun. 1962	1.14	1.14	1.20	—
Jun. 1962	Jan. 1966	Oct. 1966	0.87	1.08	1.15	0.97
Oct. 1966	Dec. 1968	Jun. 1970	0.98	1.11	1.15	0.88
Jun. 1970	Apr. 1971	Nov. 1971	0.72	0.81	0.68	0.75
Nov. 1971	Jan. 1973	Dec. 1974	0.71	0.69	0.62	0.57
Dec. 1974	Sep. 1976	Mar. 1978	0.52	0.48	0.59	0.55
Mar. 1978	Nov. 1980	Jul. 1982	1.05	1.82	1.88	2.09
Jul. 1982	Oct. 1983	Jul. 1984	4.22	3.89	3.55	2.56
Jul. 1984	Aug. 1987	Dec. 1987	4.46	6.14	4.48†	—
Dec. 1987	Jun. 1990	Oct. 1990	3.19	4.08	3.01†	—
<i>Average</i>						
All cycles			1.75	2.01	1.71	1.21
Eleven complete cycles			1.42	1.53	1.38	1.21

Source: Rea and Marcis (1996).

\*January 1944 to May 1946.

†Four months.

TABLE 8 Redemptions of Shares of Equity Mutual Funds During Expansion and Contraction Phases of Stock Market Cycles (percent of assets, period average, 1944–90)

Cycle			Expansion		Contraction	
Expansion		Contraction	Other than last six months	Last six months	First six months	Remaining months
Trough	Peak	Trough				
Apr. 1942	May 1946	Jun. 1949	0.87*	0.96	0.80	0.61
Jun. 1949	Jan. 1953	Sep. 1953	0.85	0.48	0.53	0.44
Sep. 1953	Jul. 1956	Dec. 1957	0.60	0.46	0.37	0.36
Dec. 1957	Jul. 1959	Oct. 1960	0.42	0.49	0.39	0.46
Oct. 1960	Dec. 1961	Jun. 1962	0.59	0.43	0.48	—
Jun. 1962	Jan. 1966	Oct. 1966	0.55	0.55	0.56	0.52
Oct. 1966	Dec. 1968	Jun. 1970	0.66	0.72	0.74	0.64
Jun. 1970	Apr. 1971	Nov. 1971	0.57	0.74	0.89	0.75
Nov. 1971	Jan. 1973	Dec. 1974	1.06	1.08	0.93	0.86
Dec. 1974	Sep. 1976	Mar. 1978	0.99	1.53	1.35	1.35
Mar. 1978	Nov. 1980	Jul. 1982	1.95	2.06	2.20	2.17
Jul. 1982	Oct. 1983	Jul. 1984	3.12	2.72	2.53	2.23
Jul. 1984	Aug. 1987	Dec. 1987	3.40	4.71	5.45 <sup>†</sup>	—
Dec. 1987	Jun. 1990	Oct. 1990	3.44	3.14	3.24 <sup>†</sup>	—
<i>Average</i>						
All cycles			1.36	1.43	1.46	0.94
Eleven complete cycles			1.06	1.07	1.03	0.94

Source: Rea and Marcis (1996).

\*January 1944 to May 1946.

<sup>†</sup>Four months.



the expansion, on average, by only 0.25 percentage points. This is also about the same amount as the drop-off in the sales rate during the first six months of the contraction phase of the cycle relative to the last six months of the expansion.

In moving from the contraction phase of one cycle to the expansion phase of the next, both the sales rate and the redemption rate have tended to increase. The average rate of sales in the first stage of the expansion has exceeded the average sales rate in the last part of the previous contraction by 0.26 percentage points. In addition, the average redemption rate in the first stage of the expansion has exceeded that in the last part of the previous contraction by 0.14 percentage points.

### **The Response of Mutual Fund Shareholders to Market Disruptions in 1994**

A series of market disruptions in 1994 provides further insight into the response of mutual shareholders to financial developments.<sup>10</sup>

#### *Tightening of Monetary Policy*

The year 1994 produced a variety of financial shocks that had the potential to undermine investor confidence in mutual funds generally or in specific types of mutual funds. The first of these occurred in February, when the Federal Reserve initiated the first of six increases in the federal funds rate in 1994. Interest rates moved upward over the course of the year, producing significant losses for bondholders, including those in bond mutual funds. The movement in interest rates also likely contributed to stock prices' posting only small gains during the year.

The first and subsequent increases in interest rates were associated with outflows from domestic bond funds. These began in February 1994 and continued in each month for the remainder of the year; in contrast, the net flow to these funds had been strong since 1990 as households allocated a greater share of net purchases of financial assets to bond funds in response to the steeply sloped yield curve and declining interest rates. The outflows in 1994 induced by the increase in interest rates and the flattening of the yield curve, however, were not concentrated within a short span of time but rather were spaced over the course the year. The largest outflow occurred in March 1994 in conjunction with a heightened market volatility but amounted to less than 2.0 percent of all assets held by domestic bond funds. Relatively heavy outflows also occurred in the fourth quarter, most likely as households redeemed shares to realize capital losses for tax purposes.

The net outflows that occurred in 1994 were similar to those in 1987



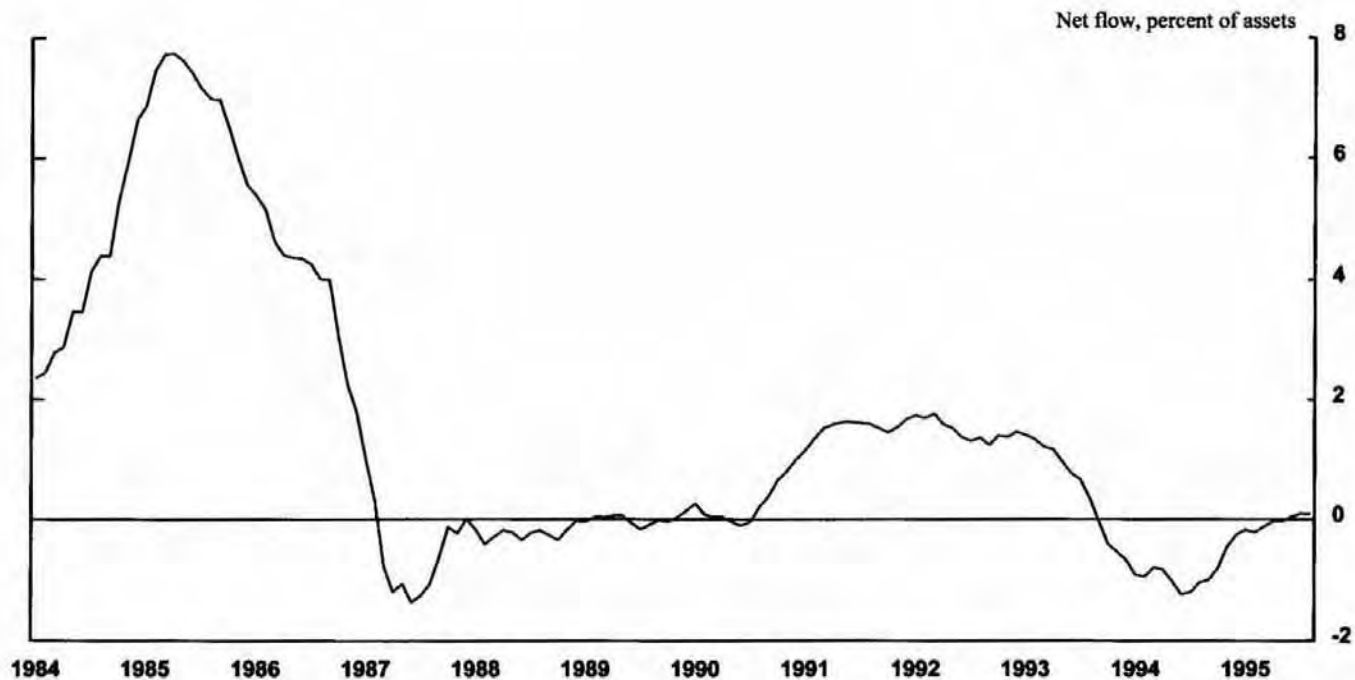


Figure 4. Net flow to domestic bond and income mutual funds (monthly, six-month moving average, 1984–95). First observation is July 1984; last is February 1996. Source: Marcis, West, and Leonard-Chambers (1995).

that began in April of that year in response to the tightening in monetary policy (Figure 4). As in the most recent experience, the outflows in 1987 had been preceded by two years of heavy inflows, brought on by declining interest rates. This experience, along with that in 1994, indicates that the demand for bond funds depends upon the level of interest rates and the slope the yield curve, and thus the net flow to bond funds is likely to have a pattern that relates to fluctuations in interest rates.

In contrast to the outflow from bond funds, equity fund owners did not respond to the tightening in monetary policy by redeeming shares on balance. In fact, the net inflow to stock funds in 1994 was, at that time, the second highest on record and only 7.9 percent below the record set in 1993. This occurred despite a lackluster performance of the stock market. The only evidence of any response came in late March and early April, when equity funds posted a small net outflow during a period of increased stock price volatility.

#### Derivatives Losses at Taxable Money Market Funds

Between May and September of 1994, increases in interest rates caused a number of taxable money market funds to experience losses on structured notes and other derivative instruments that threatened to cause their share prices to fall below \$1.00. Rather than allow the funds to "break the buck," their sponsors or investment advisors provided capital support, thereby permitting the share prices of the funds to remain at \$1.00. The only exception was a small fund that liquidated its portfolio at a 6 percent loss.

Despite the publicity given to the injections of capital, shareholders did not reduce their holdings of money fund assets. In fact, assets increased 5.3 percent from the end of April through year end. Assets of the sponsor-supported funds, however, declined 20.9 percent over this period, suggesting that shareholders distinguished between the two types of funds. The overall reaction, however, was not long lived, as assets generally began to increase at sponsored-supported funds three months after the announcement of the capital injection.

#### The Bankruptcy of Orange County

The filing for bankruptcy by Orange County, California in early December 1994, caused by losses in an investment pool managed by the county for other California municipalities, raised concern among investors about the value of outstanding Orange County securities, as well as obligations of participants in the investment pool of other California issuers managing similar investment pools. Because of the uncertainty re-

garding the value of Orange County securities, many tax-exempt money funds entered into support agreements with their sponsors or advisers to ensure that the funds could maintain a stable share price of \$1.00.

In response to these developments, shareholders reduced their holdings over the remainder of December in tax-exempt money funds that only held obligations of California issuers. In addition, California-only tax-exempt bond funds experienced a pickup in the pace of outflows relative to those of tax-exempt bond funds during December. These reactions, however, were short lived, as assets at California tax-exempt money funds began to increase in January 1995 and the net flow to California bond funds came in line with those at other municipal bond funds in February 1995.

### Devaluation of the Mexican Peso

The devaluation of the Mexican peso in late December and the resulting sharp decline in Mexican securities prices produced sizable losses for holders of Latin American mutual funds and, as the effects spilled over to other developing countries, for holders of emerging market funds generally. For example, in the last two weeks of December, Latin American equity funds dropped over 15 percent in value, and they suffered another 30 percent loss during the first quarter of 1995.

The reaction of shareholders in Latin American and emerging market funds to these events was subdued. These funds experienced net outflows during the last half of the month, but they were small in size and not sustained. For example, the net outflow from Latin American equity funds was less than 2.0 percent of assets in the last two weeks of December. The net outflow ended in March, and by the beginning of May, the cumulative net inflow had more than offset the net outflow posted in the aftermath of the devaluation. Other emerging market equity and bond funds had a similar experience, although the net inflow from the bond funds was larger than that from equity funds.

### Reasons for Shareholder Response to Market Developments

The above evidence indicates that mutual fund investors have been sensitive to changes in interest rates and stock returns, but they have not responded precipitately to market developments. The explanations for the absence of runs are of two types: one involves the regulation of mutual funds,<sup>11</sup> and the other concerns characteristics of mutual fund owners.

## Regulation of Mutual Funds

In examining the potential for a run on mutual funds, it is natural to superimpose the experience with bank runs upon mutual funds. Doing so, however, is inappropriate because banks, for several reasons, are more susceptible to runs than are mutual funds. One reason is that bank deposits are redeemable at par value unless the bank is insolvent. Thus, in the event of a financial or economic shock that reduces the value of bank assets, it is rational for depositors to attempt to make withdrawals to avoid possible losses that would be sustained if the bank became insolvent. Those withdrawing first are more likely to succeed, as the bank can meet the redemptions with cash on hand and not be forced to realize losses through asset sales.

In contrast, a mutual fund is required to value portfolio securities daily and to reflect the valuation in the price at which it sells and redeems shares. As a consequence, declines in the prices of the assets held by a mutual fund are immediately reflected in the share price of the mutual fund, thereby eliminating any opportunity for shareholders to avoid losses through redemptions.<sup>12</sup> Mutual fund shareholders thus do not have the same incentive as bank depositors to redeem shares immediately after a sharp drop in asset prices.<sup>13</sup>

A second reason banks are more susceptible to runs than mutual funds is that a substantial portion of bank assets are illiquid loans about which depositors generally have little information. This serves to increase the uncertainty about the value of bank assets after a financial shock because depositors may not know what loans are held by the bank and because forced sales of the loans to meet deposit withdrawals are almost certainly at a substantial discount from the values that could be realized with greater time to conduct transactions (Calomiris 1993). The illiquidity and nontransparency of bank assets contrast sharply with assets held by mutual funds, the vast majority of which must be readily marketable. More specifically, for at least 85 percent of the assets in a bond or stock mutual fund and at least 90 percent in a money market fund, the fund must be able to sell the securities within a seven-day period at approximately the prices at which they had been valued by the fund. In addition, mutual funds are required to disclose sufficient information about their investments to enable investors to evaluate the risk and prospective return associated with investing in the fund.

To protect depositors against loss because of insolvency and to mitigate the risk of a run, banks are subject to a set of prudential regulations, the purpose of which is to limit asset losses. One of the most important aspects of such regulation is the requirement that banks hold a minimum

level of capital as a buffer to absorb asset losses (Haberman 1987). In addition, bank liquidity is enhanced by allowing banks to borrow from the Federal Reserve. And, as a further safeguard against sudden withdrawals arising from investor uncertainty about a bank's solvency or liquidity, the federal government insures bank deposits against loss up to specific limits.

With only one exception, prudential regulation is not imposed upon mutual funds, as investors in mutual funds are, by design, to be exposed to investment risk. Mutual funds are heavily regulated,<sup>14</sup> but the purpose is to ensure adequate disclosure, asset liquidity, and accurate asset valuation. In addition, mutual fund regulation safeguards the assets and activities of a mutual fund from potential conflicts of interest that might arise between the fund and those organizations providing services to it, such as the investment manager.

The exception involves money market mutual funds. Although they are not required to do so by law or regulation, money fund managers have a stated objective of attempting to maintain a constant share price of \$1.00. This investment objective, along with the practice thus far of sponsors' providing capital support when the share price of \$1.00 is threatened, has led the public to expect money market funds to have a stable value. As a consequence, even though they must disclose that the share price can deviate from \$1.00, money funds are more susceptible to a run than other types of mutual funds. In view of the public's expectation, money funds are subject to regulations designed to minimize the potential for share price fluctuations arising from credit losses and illiquidity.

### Shareholder Characteristics

In addition to the regulatory features that mitigate the potential for a run, mutual fund owners have a number of characteristics that likewise work against a precipitate reaction to adverse market developments. Most shareholders see themselves as long-term investors saving for retirement, their children's education, or some other long-range goal. And they hold mutual funds as a means of achieving these objectives (ICI 1993, 1994a, 1994b, 1996a; Morgan 1994). Consistent with this view, the typical shareholder in a survey of those who had redeemed shares in 1991 had been invested in the mutual fund for five years, and the vast majority making a full redemption did so not because of market developments but primarily because of a change in investment strategy. As a result, most of those who closed an account in 1991 reinvested the proceeds in another mutual fund. Finally, those making a partial redemption typically used the proceeds to finance purchases of goods or services or to pay outstanding bills (ICI 1993).

Shareholders' responses to questions about their probable response to market developments also point toward a long-range investment orientation. For example, most indicate that they would not adjust their portfolios if the stock market dropped precipitously or if interest rates rose significantly (ICI 1994b). Of those that would take action after a decline in stock prices, the responses tend to be split about evenly between those who would redeem shares and those who would purchase additional shares. This is not an overwhelming endorsement of the widely held view among analysts that mutual fund owners consider market sell-offs to be "buying opportunities." At the same time, however, the evidence suggests that the vast majority would not regard stock market declines as "selling opportunities." In contrast to the response to declines in stock prices, most of those who would adjust their portfolios if interest rates rose significantly would redeem shares and place the proceeds in certificates of deposit (ICI 1994b).

Mutual fund investors generally recognize that investing in mutual funds entails risk, and the vast majority have some degree of tolerance for investment risk. They also tend to review the risk of a mutual fund before purchase and consider risk over a time horizon in excess of five years (ICI 1996a, 1997). Most shareholders report having a basic understanding of investment risk, acknowledging an awareness of the relationship between expected return and risk and recognizing the importance of diversification in reducing risk; many also assess prospective purchases of new funds within the context of their entire portfolio (ICI 1996a).

Mutual fund investors are not, however, a homogeneous group, and there is evidence that some have only a limited knowledge of mutual funds and have little awareness of some specific types of risks, such as interest rate risk. And, even though many have indicated that they are comfortable with the risk level that they perceive to exist in their holdings of mutual funds, some shareholders have investment portfolios that may be inconsistent with their tolerance for risk (ICI 1994a). Those showing gaps in their understanding of mutual fund risk are not, however, necessarily doomed to making poor investment decisions, as the majority of these shareholders purchases mutual funds through brokers and financial advisers (ICI 1996b, 1997).

Mutual fund shareholders are generally experienced investors and are not, for the most part, new to investing either in mutual funds or stocks and bonds. Of those households in 1995 representing the more than three-quarters of all household shareholders who own mutual funds outside a 401(k) plan, an estimated 68 percent made their first purchase of a mutual fund before 1990. Twenty percent initially invested in a mutual fund between 1990 and 1992, and only 12 percent since then.<sup>15</sup> In addition, the majority of those having only recently made their initial fund



purchase owned stocks, bonds, and annuities before investing in mutual funds, suggesting that many of new owners of mutual funds had some experience with investment risk<sup>16</sup> (ICI 1994b). Furthermore, those without previous investment experience were not necessarily making their initial purchase without advice, as the majority transacted through brokers and financial advisers.

## Conclusion

Based on past evidence, mutual fund investors are unlikely to react precipitously to sharp sell-offs in stock prices. Because 60 percent of household owners of mutual funds participate in a 401(k) plan, by implication, plan participants too would seem to be unlikely to withdraw en masse from stock mutual funds during market downturns. Mutual fund investors generally have behaved as long-term investors and consequently have shown greater sensitivity to long-run stock returns than to short-run returns. Although direct evidence on 401(k) participants is needed, the overlap between plan participants and mutual fund owners points to participants similarly taking a long-term approach to their 401(k) investments.

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## Notes

1. These estimates for 401(k) and other retirement assets have been prepared by the Investment Company Institute.

2. These estimates for mutual owners participating in 401(k) plans and their plan investments are based upon a survey of 1,500 randomly selected mutual fund owners conducted in July 1995. The estimates should be interpreted with caution, as they likely overstate the actual numbers. Some respondents may not have been able to distinguish a 401(k) plan from other types of employer-sponsored plans, and some may have reported other types of pooled investments as mutual funds.

3. The material in this section is based on Rea and Marcis (1996).

4. A peak in the S&P 500 index is identified as a cyclical high that is followed either by a three- or four-month period over which the index declined at least 20 percent or by a period of five or more months over which the index declined at least 9 percent. The cyclical low or trough marks the end of the downturn from which the index begins a sustained increase. The use of monthly averages conforms to the method used by the Bureau of Economic Analysis to date stock market cycles (U.S. Department of Commerce 1989). Monthly averages also smooth out transitory movements in the index that would affect daily, weekly, or month-end data.

5. Net flow is the difference between sales of shares by mutual funds to investors and redemptions of shares by shareholders. Sales include those due to exchanges from bond, income, and money market funds into equity funds but do not include those from the reinvestment of income and capital gains distributions. Redemptions include exchanges out of equity funds into bond, income, and money market funds. The first year for which data on sales and redemptions are available is 1944. Data are quarterly from 1944 through the third quarter of 1954 and are monthly thereafter. In those instances in which monthly data are required, a monthly estimate is obtained for each month of the quarter by dividing the quarterly data by three. From 1944 through 1975, data of sales due to reinvested dividends have been estimated. Between 1944 and 1960, data on exchanges are not available; no estimates have been made as the volume of exchange transactions was small. From 1944 through 1959, separate data for stock, bond, and income funds are not available; however, stock funds constituted the vast majority of mutual funds during this period.

6. This estimate assumes that a net inflow continued through October 15 at the daily rate recorded in September. The estimate is consistent with information reported by thirty mutual fund complexes for the period October 16–26 (Silver 1987). For this period, these complexes, which held 80 percent of equity fund assets, had a net outflow of \$4.6 billion. If we assume that the average net outflow over October 22, 23, and 26 of \$330 million for the thirty complexes continued over the remaining four business days of the month, the estimated net outflow would be \$5.9 billion for the thirty complexes over the last half of October. If their 80 percent share of equity assets also represents their share of equity fund net flow, we get an estimated net outflow of \$7.4 billion for all stock funds between October 16 and 31.

7. These estimates apply the proportions of the net outflow for the thirty complexes to the estimated total net outflow of \$8.2 billion.

8. For the thirty complexes, the net outflow of \$4.6 billion recorded between October 16 and October 26 represented 3.3 percent of their assets. If the net outflow over the remaining four days of the month was \$330 million per day, we get an estimated 4.4 percent of assets.

9. A six-month period before and after the peak was selected for the purpose of determining whether net flow as percent of assets tended to accelerate near market peaks and to decelerate shortly after market peaks.

10. This section is based upon Marcis, West, and Leonard-Chambers (1995).

11. For a discussion of the potential for a run on mutual funds, see Edwards (1996).

12. To be more specific, an order from an shareholder to redeem shares must be executed by the mutual at the time of the next pricing or valuation of the fund's portfolio.

13. The decline in securities prices might cause some investors to redeem shares because the event might have caused their expectations about future securities prices to differ from expectations now embedded in securities prices. This is not to say that shareholders can avoid those losses caused by the financial shock through the redemption but rather that they may redeem because of anticipated further losses. By the same token, expectations could have been altered to cause other investors to view the existing level of securities prices as representing a buying opportunity, triggering purchases of mutual fund shares.

14. At the federal level mutual funds are regulated by the Securities and Ex-



change Commission under the provisions of the Investment Company Act of 1940. Mutual funds also are subject to the Securities Act of 1933, the Securities Exchange Act of 1934, and the Investment Advisers Act of 1940.

15. This information is from a survey that asked questions about investment experience only of those participants owning mutual funds outside a 401(k) plan. Those owning mutual funds only through a 401(k) plan differ in a number of respects from other shareholders, as described above. From the standpoint of investment experience, since the expansion of the number of 401(k) participants has largely occurred within the last ten years, households only owning funds through a 401(k) likely have had less investment experience. Nonetheless, the investment experience for many is not solely limited to mutual funds, as a significant number own stocks and bonds outside of the plan (Table 2).

16. This information is based upon a survey conducted in mid-1994 of owners who made their first purchase outside a 401(k) plan since January 1, 1992.

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