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SPECULATIVE BEHAVIOR IN THE STOCK MARKETS:
EVIDENCE FROM THE UNITED STATES AND JAPAN

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ABSTRACT

There have been enormous differences of opinion between U.S. and Japanese institutional investors about the outlook for stock prices, differences across the two countries in average one-year-ahead forecasts for the Japanese stock market as great as twenty percentage points.

In the past two years most Japanese and U.S. institutional investors have had expectations for a reversal of trends in the stock market, and advised an investing strategy that depended on getting out of (or in to) the market before an anticipated market turnaround.

These results, obtained from a number of questionnaire surveys in 1989 and 1990, help explain the relative lack of portfolio diversification across countries and show the short-term nature of speculative behavior.

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Speculative Behavior in the Stock Markets:
Evidence From the United States and Japan

I. Introduction

Much can be learned about investor behavior by tabulating responses to questions about expectations and reasons for investing behavior. Doing this can yield direct evidence about investor behavior, and its possible relation to investing patterns and price movements.

We have done such tabulation of responses in both the United States and Japan in a number of surveys in 1989 and 1990. We mailed questionnaires to institutional investors which posed some questions that we thought would be revealing about their motives: questions about expectations about the outlook for stock prices in the two countries, and the relation of these to investment strategy.

The first portions of the questionnaires, which included the questions asked here, were nearly identical across the two countries, except, of course, for translation into English or Japanese. The responses thus enable us to make accurate comparisons across countries and through time. We now have observations both before and after the December 1989 peak of stock prices in Japan (see Figures 1 and 2). This peak represents a major turning point in Japanese stock market history; between this peak and our last survey the Nikkei lost nearly 40% of its value.

I. Impressions Whether the Market is Overpriced

Impressions whether the stock market is over- or under- priced are a basic paradigm in investors' thinking. While a question asking respondents to specify whether the market is over- or under- priced may strike an economist as ill posed, since there is no formal definition what "overpriced" or "underpriced" mean, investors do seem to think in these general terms. At the time of the stock market crash of 1987, when institutional and individual investors were asked in a questionnaire survey to explain the cause of the crash in their own words, and the responses coded, the most important theme in their answers was that the market was overpriced [Shiller, 1989]; this finding is consistent with our findings in Japan at that time [Shiller, Kon-Ya and Tsutsui 1990]. Thus, questions about whether the market is over- or under- priced are natural and easily answered, possibly more so than questions that ask respondents to predict the market at specific future dates (below). One of us has argued [Shiller, 1989] that survey work aimed at understanding speculative behavior must seek answers in familiar terms, and the outcome of such research would be a characterization of popular thinking, popular theories, and popular models, rather than merely a characterization of public expectations.

The U. S. investors are consistently more likely to think that the markets are too high, Table 1, and are dramatically more likely to think this about the Japanese market. In mid 1989, 73.5% of U. S. respondents thought the Japanese market was overpriced, while only 26.6% of the Japanese did. Most Japanese became temporarily of the opinion that their market was too high right after the Japanese market had its spectacular 4.5% drop on February 26, 1990: the early 1990 survey of Japanese investors shows that

61.1% of them felt that the Japanese market was overpriced. But in mid 1990 a comparison of the U. S. and Japanese responses after the enormous decline in the Tokyo stock market and after the Iraqi oil crisis¹ shows a return to nearly the same pattern as in mid 1989, with Americans strongly tending to think that the Japanese market is overpriced and the Japanese respondents again dramatically less likely to think so.

Expectations of Future Price Increases

We asked respondents to give forecasted changes in the Dow Jones Industrial Average and the Nikkei Dow for horizons of three months, six months, 12 months, and ten years (Table 2).

The Japanese were uniformly more optimistic in their short-run expectations than the Americans, both for the U. S. market and for the Japanese market, but particularly so for the Japanese market. At a horizon of one year, there was always a spread of 15-20 percentage points between the Japanese and U. S. forecasts for the Japanese market. The differences between U. S. and Japanese expectations at the long-run horizon of 10 years are not so striking as the differences at the one-year horizon, and the Japanese were actually less optimistic about the U. S. market at the 10-year horizon. Thus, the Japanese are consistently described as short-run optimists only.

The drop in the Japanese market after December 1989 had surprisingly little consistent impact on one-year-ahead forecasts for the Japanese market either in Japan or in the United States. The post-decline responses show rather more the appearance of some short-run pessimism; the U. S. and to

¹See Notes to Tables below.

some extent the Japanese respondents became less sanguine about the three- and six-month outlook than they were in mid 1989.

Dynamic Expectations and Holding Strategy

An essential element in the popular notion of a speculative bubble is that during a bubble increasing numbers of investors are buying stocks because they think that prices will go up for a while longer, and hope to exit before the bubble bursts. Conversely, a bear market may be caused by increasing numbers of investors who think that the market will continue to go down for a while, and who are waiting for the recovery to enter the market.

It is not obvious how to elicit from our respondents whether they are thinking this way. The responses to our expectations questions in the preceding section could be analyzed to see how many people have reversals in their expectations, where their forecasts imply that prices are expected to rise and then fall or to fall and then rise. But since the question asks only 3, 6 and 12 month short-run forecasts, the expected reversal may not be observed. It is also possible that a question asking for numerical values for their expectations tends to be answered in a mechanical way that obscures their hunches as to the precise turning point dates of the market.

A more simple and direct approach to deriving evidence on this speculative behavior can be had by asking whether respondents would advise staying in the market for the time being, even though they expect the market to drop, and conversely. Without specifying the horizon of the associated forecasts, we allow the respondent to reveal directly whether he or she is thinking in terms of a reversal. This was done in both countries (see

Table 3). These questions are imprecise in that they do not specify when the respondent would want to exit or enter the market. But we also asked the U. S. respondents who chose "true" to either of these questions what their best guess for the peak (bottom) of the market is.

It is striking that most of both the U. S. and Japanese respondents answered "true" to one of the two questions in Table 3, in all time periods. Thus, in a sense, most of our investors appear to be either relatively in the market hoping to get out before it drops or relatively out of the market hoping to get in before it rises.

The dates that U. S. respondents wrote in as their best guesses for the peak (bottom) show a strong tendency to be within six months, or no more than a year, from the current date. The question did not suggest what the relevant time horizon was, and so this relatively short-term horizon appears to be an element of investor thinking. This is, therefore, evidence for the popular notion that speculative behavior tends to be relatively short term. U. S. capital gains tax rules have a long history of subjecting short-term gains (earned over an interval of from six months to two years in various enactments of the tax code) at a higher rate than for long-term gains, as a way of discouraging speculation.² Our results would suggest, therefore, that whatever the merits of these capital gains taxes, the short investment horizon encoded in the law was not without relation to the speculative behavior that the taxes were designed to influence.

In the answers to the Table 3 questions, we do see a change in the behavior of Japanese investors before and after the debacle in Japanese

²The motives for enacting these holding-period-related capital gains taxes in the U. S. between 1921 and 1986 were at least partially to restrain speculation; see Reppeti [1989].

stock prices. In mid 1989, before the December 1989 peak in Japanese stock prices, a substantial fraction of Japanese investors (39.1%) answered "true" to the first question in Table 3, indicating that they were planning to get out of the market later, whereas in mid 1990, after the Japanese market lost much of its value, the fraction who answered "true" became very small (7.3%). Between these two dates the fraction of Japanese investors who answered "true" to the second question in Table 3, indicating that they were planning to wait before getting into the market, rose from 23.7% to 55.3%. This evidence is consistent with the notion that the Japanese stock market debacle might have been caused by changed short-run expectations for prices.

Conclusion

The striking differences between the United States and Japan in their impressions whether the Japanese market is overpriced and in their expectations for the Japanese market suggest that we should not think of these expectations as essentially objective. Otherwise, why should professional institutional investors in one country make consistently different forecasts for the same market than those in another country? Of course, it is technically possible that Japanese investors had access to some inside information about the entire Japanese stock market, information that was denied to American investors, but this would seem most unlikely. Information about the entire stock market is hard to keep secret; any aggregate data available to the Japanese institutional investment community tends to be available to the U. S. community as well.

The Japanese optimism might mean, of course, nothing more than that the Japanese investors habitually listen to a small number of public opinion leaders there who have a different interpretation of the news than do U. S. opinion leaders. Still, such divergent expectations between the two countries are not what one might expect from efficient markets theory, and given that these are investment professionals who do, after all, have access to the opinions of public opinion leaders in the other countries.

Kenneth French and James Poterba [1990] have said that the striking lack of cross country investments between the U. S. and Japan can best be explained by postulating that expectations are different between the two countries. They calculated that in 1989 only 1.04% percent of U. S. stocks were held by Japanese investors, and only 0.22% of the Japanese market was owned by U. S. investors. This is much less than would be suggested by rational programs of international diversification, unless we posit that expectations for future returns are dramatically different across the two countries.³ We see in this paper confirmation of their hypothesis that expectations are very different between U. S. and Japanese investors.

Our research also suggests that there may be some merit to the traditional notions of a speculative bubble or bull market as a time when investors are becoming relatively encouraged to invest in stocks, hoping to

³French and Poterba [1990], based on some calculations assuming investors have a coefficient of relative risk aversion of 3, and given assumptions of a variance-covariance matrix of returns, concluded that "hedged U. S. investors would have to expect U. S. returns to be 3.6% higher than those in Japan, while Japanese investors would have to expect returns that are 4.0% per year higher in Japan, to justify the existing pattern of asset holdings." (p. 12) The actual differences in expectations across countries appear in our results here to be even more striking than this. However, Japanese expectations for their own market returns minus the U. S. market returns were as wide as 4.0% only in mid 1990.

get out before the bull market is over, or of a negative bubble or bear market as a time when investors are becoming relatively discouraged from investing in stocks, hoping to get in after the bear market is over. But our results show that there were always substantial numbers of people in both sides of this, some expecting a bull market for the near term and some a bear market. The simple stories of these bull or bear market investors has only to be modified by specifying that what changes from time to time is the proportion of investors in the two categories, not the attitudes of all investors.

Figure 1

The Dow Jones Industrial Average and U. S. Survey Dates
End of Week Data, 1989-1 to 1990-49

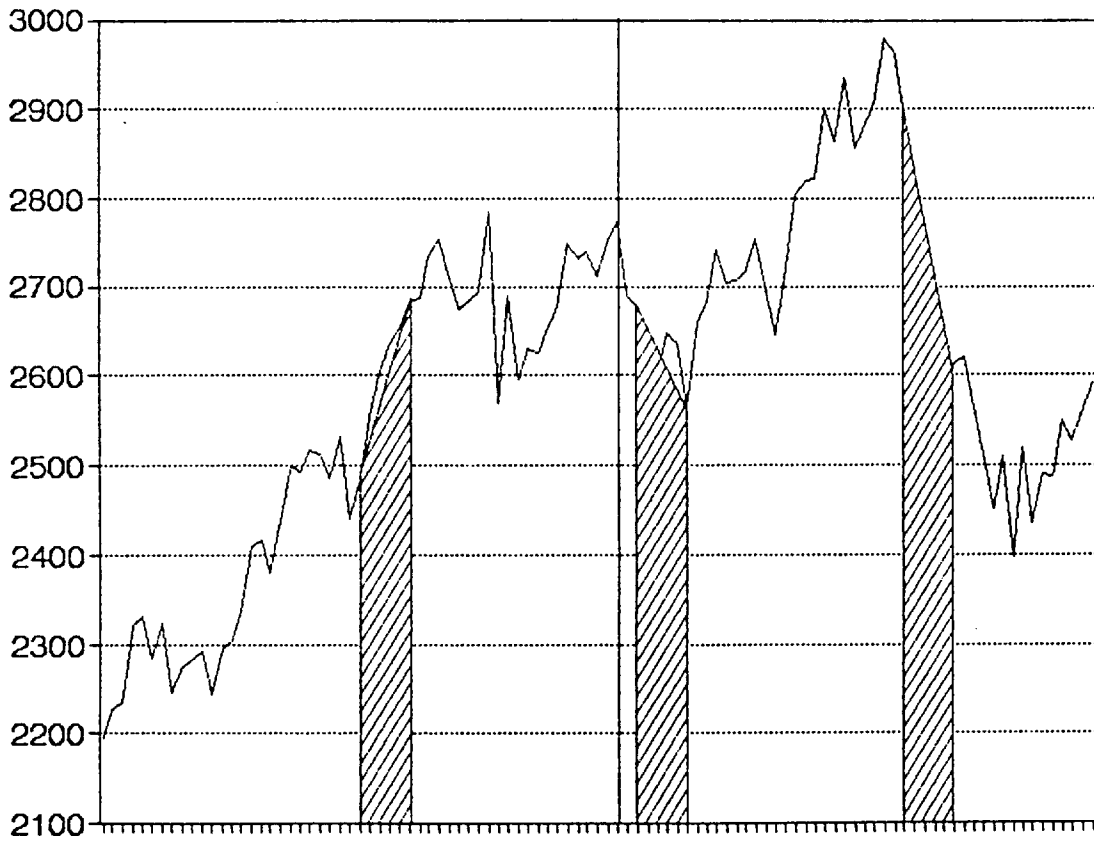


Figure 2

The Nikkei Average and Japanese Survey Dates
End of Week Data, 1989-1 to 1990-49

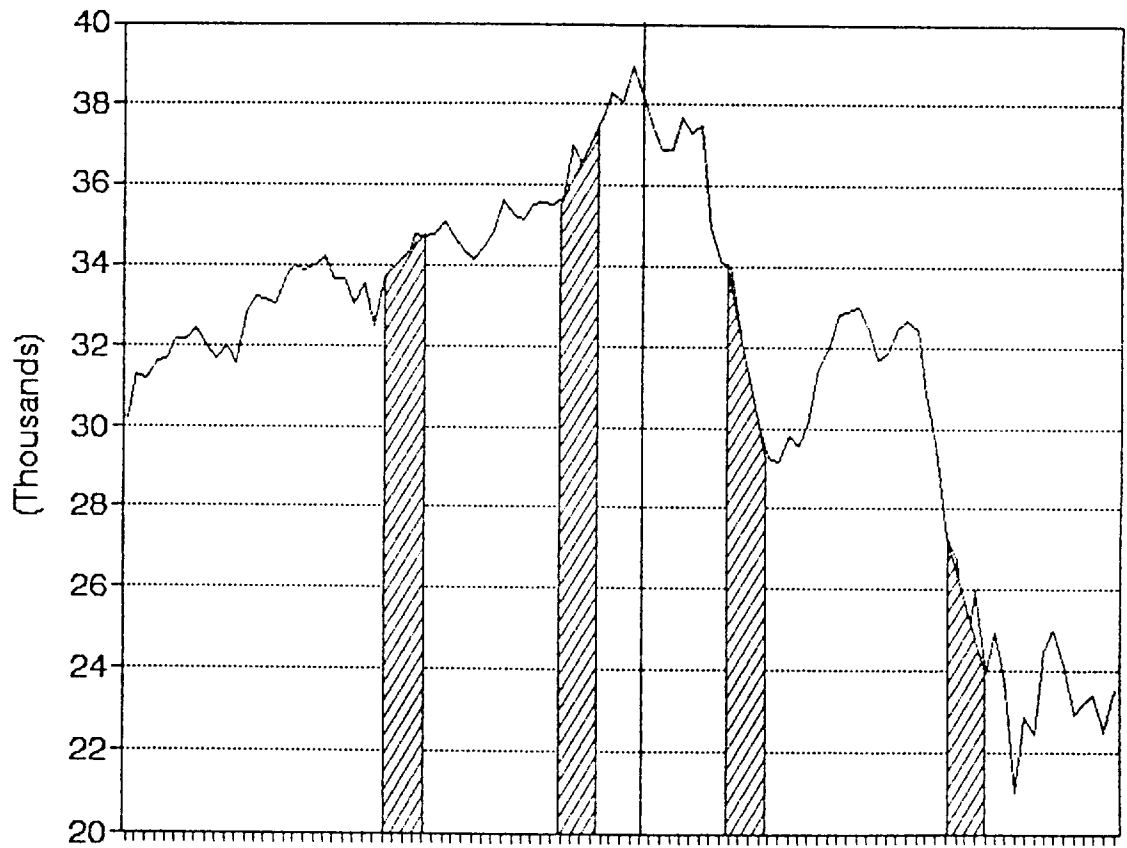


Table 1

"Overpricing" of Market

"Stock prices in the United States, when compared with measures of true fundamental value or sensible investment value, are:"

"1. Too low. 2. Too high. 3. About right. 4. Do not know."

U. S.	mid 89	16.0% (3.0%) n=150	18.7% (3.2%)	62.7% (3.9%)	2.7% (1.3%)
Japan	mid 89	18.0% (3.3%) n=139	0.0%	63.3% (4.1%)	18.7% (3.3%)
<hr/>					
Japan	late 89	11.3% (2.5%) n=159	9.4% (2.3%)	55.3% (3.9%)	23.9% (3.4%)
<hr/>					
U. S.	early 90	10.0% (2.5%) n=140	37.9% (4.1%)	51.4% (4.2%)	0.7% (0.7%)
Japan	early 90	5.5% (2.0%) n=127	0.8% (0.8%)	63.0% (4.3%)	30.7% (4.1%)
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U. S.	mid 90	4.9% (1.8%) n=143	39.2% (4.1%)	52.4% (4.2%)	3.5% (1.5%)
Japan	mid 90 B	5.2% (1.9%) n=135	11.1% (2.7%)	63.0% (4.2%)	20.7% (3.5%)

Table 1 Continued

"Stock prices in Japan, when compared with measures of true fundamental value or sensible investment value are:"

"1. Too low. 2. Too high. 3. About right. 4. Do not know."

U. S.	mid 89	0.0%	73.5%	7.9%	18.5%
			(3.6%)	(2.2%)	(3.2%)
		n=151			
Japan	mid 89	1.4%	26.6%	62.6%	9.4%
		(1.0%)	(3.7%)	(4.1%)	(2.5%)
		n=139			
<hr/>					
Japan	late 89	6.4%	32.1%	52.6%	9.0%
		(2.0%)	(3.7%)	(4.0%)	(2.3%)
		n=156			
<hr/>					
U. S.	early 90	0.0%	81.0%	5.8%	13.1%
			(3.4%)	(2.0%)	(2.9%)
		n=137			
Japan	early 90	0.8%	61.1%	24.6%	13.5%
		(0.8%)	(4.3%)	(3.8%)	(3.0%)
		n=126			
<hr/>					
U. S.	mid 90	0.7%	82.6%	6.5%	10.1%
		(0.7%)	(3.2%)	(2.1%)	(2.6%)
		n=138			
Japan	mid 90 B	11.1%	44.4%	37.0%	7.4%
		(2.7%)	(4.3%)	(4.2%)	(2.3%)
		n=135			
	A	40.2%	21.3%	24.4%	14.2%
		(4.4%)	(3.6%)	(3.8%)	(3.1%)
		n=127			

Numbers in parentheses are standard errors. See also Notes to Tables below.

Table 2

Expected Future Price Changes

"How much of a change in percentage terms do you expect in the following (use + before your number to indicate an expected increase, a - to indicate an expected decrease, leave blanks where you do not know):"

"[FILL IN ONE NUMBER FOR EACH]"

"A. Dow Jones Industrial Average "

		"In 3 months	In 6 months	In 1 year	In 10 years"
U. S.	mid 89	1.24% (0.48%) n=152	1.93% (0.69%) n=121	3.49% (1.11%) n=121	---
Japan	mid 89	3.26% (0.34%) n=111	5.37% (0.52%) n=111	8.48% (0.80%) n=107	83.57% (7.75%) n=94
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Japan	late 89	2.30% (0.26%) n=110	4.98% (0.49%) n=104	10.46% (0.87%) n=102	108.57% (9.56%) n=84
<hr/>					
U. S.	early 90	-4.40% (0.65%) n=106	-5.40% (0.92%) n=104	-0.26% (1.19%) n=110	129.02% (8.76%) n=103
Japan	early 90	4.58% (0.76%) n=84	7.49% (1.06%) n=82	12.57% (1.25%) n=79	99.91% (10.09%) n=67
<hr/>					
U. S.	mid 90	-4.31% (2.10) n=99	-2.10 (1.30) n=102	1.65 (1.39) n=113	95.85 (13.43) n=105
Japan	mid 90	B -0.40 (0.80%) n=98	1.48 (1.03%) n=96	7.29 (1.28%) n=95	88.60 (9.25%) n=90
		A -2.12 (1.05%) n=64	0.60 (1.29%) n=62	4.28 (1.80%) n=59	93.41 (12.27%) n=59

Table 2 Continued

"B. Nikkei Dow (Japan)"

		"In 3 months	In 6 months	In 1 year	In 10 years"
U. S.	mid 89	0.04% (0.70%) n=65	-1.52% (1.25%) n=61	-7.67% (1.84%) n=67	---
Japan	mid 89	3.18% (0.44%) n=127	6.51% (0.57%) n=127	9.49% (0.89%) n=124	129.06% (10.12%) n=107
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Japan	late 89	3.42 (0.34%) n=128	5.67% (0.41%) n=124	13.02% (2.11%) n=120	176.25% (14.13%) n=91
<hr/>					
U. S.	early 90	-5.28% (1.03%) n=65	-8.76% (1.52%) n=62	-9.14% (2.03%) n=70	110.21% (14.46%) n=63
Japan	early 90	2.13% (1.11%) n=102	4.15% (1.11%) n=98	10.84% (1.21%) n=100	146.88% (15.25%) n=78
<hr/>					
U. S.	mid 90	-6.34 (1.00) n=62	-6.25 (1.52) n=63	-8.76 (1.85) n=69	67.08 (12.65) n=64
Japan	mid 90	B 1.53 (0.92%) n=114	4.51 (1.16%) n=113	12.07 (1.61%) n=111	138.36 (12.41%) n=104
		A -0.18 (1.45%) n=77	1.95 (1.70) n=76	8.22 (2.18%) n=73	152.22 (17.45%) n=69

Numbers in parentheses are standard errors. See also Notes to Tables below.

Table 3

Short-Run Speculative Behavior

"Although I expect a substantial drop in stock prices in [the US, Japan] ultimately, I advise being relatively heavily invested in stocks for the time being because I think that prices are likely to rise for a while."

		"1. True 2. False 3. No opinion"			"Expected peak:"	
					<6 months	<12 months
U. S.	mid 89	34.4% (3.9%) n=151	53.0% (4.1%)	12.6% (2.7%)	57.4% (7.2%) n=47	87.2% (4.9%)
Japan	mid 89	39.1% (4.2%) n=138	26.8% (3.8%)	34.1% (4.0%)		
<hr/>						
U. S.	early 90	16.0% (3.2%) n=134	88.8% (2.7%)	5.2% (1.9%)	44.4% (16.6%) n=9	77.7% (10.5%)
<hr/>						
U. S.	mid 90	11.1% (2.7%) n=135	65.9% (4.1%)	22.9% (3.6%)	40.0% (15.5%) n=10	50.0% (15.8%)
Japan	mid 90 B	6.8% (2.2%) n=132	67.4% (4.1%)	25.8% (3.8%)		
	A	7.3% (2.3%) n=123	70.7% (4.1%)	22.0% (3.7%)		

Table 3 Continued

5. "Although I expect a substantial rise in stock prices in [the US, Japan] ultimately, I advise being less invested in stocks for the time being because I think that prices are likely to drop for a while."

		"1. True	2. False	3. No opinion"	"Expected bottom:"	
					<6 months	<12 months
U. S.	mid 89	24.6% (3.6%) n=146	62.3% (4.0%)	13.0% (2.8%)	58.8% (8.4%) n=34	85.3% (6.1%)
Japan	mid 89	23.7% (3.7%) n=135	41.5% (4.2%)	34.8% (4.1%)		
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U. S.	early 90	86.3% (3.0%) n=135	20.7% (2.5%)	8.9% (2.5%)	60.0% (5.5%) n=80	92.5% (2.9%)
<hr/>						
U. S.	mid 90	53.7% (4.3%) n=136	28.7% (3.9%)	17.6% (3.3%)	63.6% (5.9%) n=66	80.3% (4.9%)
Japan	mid 90 B	65.6% (4.2%) n=131	13.7% (3.0%)	20.6% (3.5%)		
	A	55.3% (4.5%) n=123	17.1% (3.4%)	27.6% (4.0%)		

Numbers in parentheses are standard errors. In the questions in this table, U. S. respondents were asked about the U. S. market, Japanese respondents about the Japanese market. See also Notes to Tables below.

Notes to Tables

B and A in the mid-1990 answers indicate the the questions were made under the following specifications respectively:

B "Please try to remember your thought at the end of July before the Iraq shock."

A "Please answer from your thought and investment behavior immediately after the Iraq shock."

The U. S. questionnaires, printed just days before the beginnings of the Iraqi oil crisis, did not make such specifications. The main events in the Iraqi oil crisis were the July 24 Iraqi demand for a \$7.00 per barrel increase in the price of oil with threats of war against Kuwait and Saudi Arabia, and the August 2, 1990 invasion of Kuwait by Iraq. None of the 140 U. S. mid-1990 questionnaires was filled out before July 24, but 52 were filled out before August 2. The best comparison of the U. S. mid-1990 answers is probably with the Japanese "A" answers.

Appendix

Data Sources and Mailing Dates

The U. S. institutional investors were selected at random from the section "Investment Managers" from the Money Market Directory of Pension Funds and their Investment Managers, McGraw Hill. In successive surveys, a new random sample was taken each time, so that respondents were not surveyed twice.

The Japanese institutional investors were selected at random from the customer list of Daiwa Securities Company.

Mailing Dates:

United States:

Mid 1989: On July 5, 1989, 400 questionnaires with letters were mailed; a reminder postcard was mailed July 14 and a second (replacement) questionnaire and letter was mailed to those who did not respond on July 28, 1989.

Early 1990: On January 17, 1990, 400 questionnaires with letters were mailed; a reminder postcard was mailed a week later and two weeks later a second (replacement) questionnaire and letter was mailed to those who did not respond.

Mid 1990: On July 27, 1990, 400 questionnaires with letters were mailed; a reminder postcard was mailed a week later and a second (replacement) questionnaire and letter was mailed to those who did not respond, on August 20, 1990.

Japan:

Mid 1989: On July 3, 1989, 384 questionnaires were mailed. There were 139 responses, 19 returned without answer, including 7 government financial institutions who are not allowed to have stocks.

Late 1989: On November 9, 1989, 370 questionnaires were mailed. There were 162 responses by December 11; 4 were returned unanswered.

Early 1990: On March 6, 1990 369 questionnaires were mailed, there were 127 responses by April 15, 7 were returned unanswered.

Mid 1990: 369 Questionnaires were mailed on August 10, 1990; there were 136 responses by September 11, 9 were returned unanswered.

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