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"Events That Shook The Market"

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Abstract

Tick data on the S&P 500 futures contract and newswire searches are used to match events to large five minute stock price changes. 58 events that led to large stock price changes are identified between 1982 and 1999, 41 of which are directly or indirectly related to monetary policy. Many large five minute stock price changes have no events associated with them.

1 Introduction

Although it is obvious that stock prices respond to events, it is not easy to match particular events to particular changes in stock prices. For example, Cutler, Poterba, and Summers (1989) chose the 50 largest daily changes in the S&P 500 index from 1946 through 1987 and attempted to find an explanation of each change in the next day's New York Times. They found few cases in which it could be said with any confidence that a particular event led to the change. A serious problem with studies like this is that the daily interval is too long. In general in a 24 hour period many events take place and stock prices are fairly volatile.

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In this paper tick data on the S&P 500 futures contract and newswire searches are used to match events to stock price changes. The tick data are used to create the average price per each minute of trading, from which five minute price changes are computed. Although it is somewhat arbitrary what one takes as a ''large'' price change, for purposes of this study ''large'' is taken to be a five minute change greater than 0.75 percent in absolute value. The mean and standard deviation of the 1,884,278 five minute price changes that are examined here are 0.00047 percent and 0.10 percent, respectively, and so a change of 0.75 percent is an extreme change.

Given each large change, newswires were searched to see if an event could be found that led to the change. Table 1, which is at the end of this paper, lists the large price changes and the events that were found. This paper is essentially a discussion of Table 1. There are 4417 trading days in the dataset (between April 21, 1982, and October 29, 1999), and in 179 of these days at least one large price change occurred, i.e., a five minute change greater than 0.75 percent in absolute value. Events were found for 58 of these days. As will be seen, 41 of these 58 events are directly or indirectly related to monetary policy.

It is hoped that knowledge of the 58 events in Table 1 will prove useful in other studies. Each of these events is big in that it changed the total value of U.S. equities by a large amount rapidly. This information may be useful in examining changes in individual stock prices, both absolute and relative to price changes of other stocks. From a macroeconomic perspective, the events are macro shocks, and knowledge of these shocks may be useful in examining various macroeconomic questions.

It is important to stress that this study is purely descriptive. No attempt is made to

explain why a particular event led to the large price change, why other similar events did not lead to large price changes, why many large price changes have no events associated with them, and so on. The main contribution of this paper is simply to list the 58 events.

It is also important to stress that with a very few exceptions it is virtually certain that each of the 58 events listed in Table 1 caused the particular price change. The events can thus be interpreted as ‘‘facts.’’ For example, no sensible person would argue that the five minute price increase of 0.85 percent on June 25, 1982, was not essentially all due to the 4:10 pm money supply announcement. There would likely have been, of course, a price change had there been no announcement, since the price generally changes each minute, but with a standard deviation of 0.10 percent, a typical price change is very small relative to a change of 0.85 percent. For all intents and purposes one can attribute all of the price change to the money supply announcement.

A way of thinking about the events is the following. Consider asking stock brokers a few minutes after the occurrence of one of the price changes in Table 1 that is associated with an event what led, if anything, to the change. The main point here is that almost without exception the brokers would say the event. Some events may have been missed—more will be said about this later—but there is little doubt that each of the 58 events chosen led to the particular price change.

The construction of Table 1 is discussed in Section 2, and the results are discussed in Sections 3 and 4.

2 The Construction of Table 1

The price of an S&P 500 futures contract follows closely the value of the S&P 500 index. Since the S&P 500 index includes most U.S. stocks by market value, the price of an S&P 500 futures contract is a good indicator of the total value of U.S. equities. Tick data are available for the S&P 500 futures contracts from April 1982 on.[1] For ''Regular Trading Hours'' (RTH) the tick data per day begin at 10:00 am prior to September 30, 1985, and at 9:30 am after that.[2] The RTH data end at 4:15 pm, which is 15 minutes after the regular market has closed. Beginning in 1994 the contracts were traded after hours on the GLOBEX market, and tick data are available for these trades as well. These data begin at 4:30 pm and end at 9:15 am the next day. The GLOBEX market is closed Friday night and all day Saturday. It opens at 6:30 pm Sunday night.

For this study the RTH data begin April 21, 1982, and end October 29, 1999. Data are missing for the last half of December 1991—the 1991 data end December 13th. The GLOBEX data begin January 4, 1994, and end October 29, 1999. Data are missing for the last half of 1998—the 1998 GLOBEX data end July 31st. Many government announcements of macroeconomic data occur at 8:30 am, and since the GLOBEX market is open at this time, it can respond immediately to these announcements. Had the GLOBEX market been in existence back to 1982 and tick data been available, it is likely that many more large price changes and associated events would have been

[1]The tick data were purchased from the Futures Industry Institute, which obtains the data from the Chicago Mercantile Exchange.

[2]All times in this paper are Eastern even though the RTH and GLOBEX markets are in the Central time zone.

found. It is also likely that a number of large price changes and associated events would have been found in GLOBEX data for the last half of 1998 had the data been available.

The tick data were averaged per one minute interval to get the average price per minute. The most actively traded contract on the particular day was used for these calculations. Five minute percent changes were then computed, data permitting. There were 1,884,178 five minute price changes available. Table 1 lists the five minute percent changes that were larger than 0.75 percent in absolute value. The table also lists the percent change from the opening price at the current time (i.e., the time at the *end* of the five minute change) and at the time 20 minutes later. This allows one to see if the large price change lasted for at least 20 minutes.

The next step was to see which event, if any, led to the large and rapid change. The Dow Jones Interactive service on the internet was used for this purpose. This service allows one to search for news reports by time of day. The following four news services were searched: Dow Jones News Service, Associated Press Newswire, New York Times, and Wall Street Journal.

For example, the first case in Table 1 is for June 11, 1982, where at 10:05 am the price had fallen by 0.83 percent from the price at 10:00 am (which in this case was the opening price). For this case the news services were searched for news reports between 9:00 am and 11:00 am to see what happened about 10:00 am that led to the large change. In this case no news report was found that seemed likely to have led to the change. Note also that most of the change did not last 20 minutes, since the decrease from the open after 20 minutes is only 0.34 percent compared to 0.83 percent

20 minutes earlier.

In the next case in Table 1 an event was found, which was the 10:00 am announcement of a $1.18 billion current account surplus. Following this announcement the price rose 0.76 percent in five minutes, although this is also a case in which most of the change did not last 20 minutes. The next three events that were found were all money supply announcements at 4:10 pm. Although the regular stock market is closed at 4:00 pm, the RTH market does not close until 4:15 pm, and so the RTH market has time to respond to the money supply announcements.

In some cases an event was found that seemed almost surely to have led to the price change, but for which no exact time could be found. In these cases ‘‘?time’’ is used in Table 1 to denote that the exact time of the event was not found. For the October 9, 1990, change I am a little uncertain whether the Brazil event in fact led to the change, and this is indicated by a ‘‘(?)’’ in the table. For the August 1, 1997, change I am uncertain which of the three events listed led to the change, and this is also indicated by a ‘‘(?)’’ in the table.

An important government announcement each month is the employment report. This report is released at 8:30 am (sometimes 8:29 am, at least according to the time on the press wires), and it contains data from both the household survey and the establishment survey. The main variable of interest from the household survey is the unemployment rate, and the main two variables of interest from the establishment survey are the number of jobs (called ‘‘payrolls’’) and average hourly earnings. The variable that gets the most attention is the payroll variable, and so I have listed the payroll announcement in Table 1. The ‘‘event’’ is, however, the entire employment

report, and there is no way of telling which aspect of the report led to the large price change.

In many cases one large five minute change is followed by a number of others. This is, of course, as expected. If, say, the price has been constant for five minutes and then an event leads to a large change in the first minute and the change is sustained, there will be a total of five large five minute price changes. The focus in this paper is on the first occurrence of the large five minute change. To save space not all of the later changes are presented in Table 1, especially on wild days, although it is always indicated how many changes are not presented. A complete table is available for those who are interested—see the discussion in the Appendix. There were 1,487 large five minute price changes out of 1,884,278 observations.

3 Discussion of Table 1

Although, as discussed in Section 1, it is virtually certain that each of the 58 events listed in Table 1 caused the particular price change, it may be that some events have been missed (aside from the missing data). I personally did all the searching for news reports (no research assistants were used for any part of this project), and so I am to blame if some events have been missed. The most likely error is an event for which there was no news report. Less likely is a news report that was listed in the search but that I failed to notice was an important event. I expect that the number of events missed is small, probably fewer than 10. Remember, however, that many more price changes and events would likely have been found had the GLOBEX market been in

existence prior to 1994.

Assuming that the number of events that I have missed is small, Table 1 shows that there are many large price changes that are not due to identifiable events. There are, for example, no events associated with any of the large number of large price changes in October of 1987. Regarding the price changes with no events, consider the thought experiment about stock brokers mentioned in Section 1. For the price changes with no associated events in Table 1, what would stock brokers say a few minutes after the change? The argument here is that except for the few events that I might have missed, the brokers would not come up with a unique event. Some might say there was no event, and some might mention something non specific like ''profit taking,'' ''renewed confidence,'' ''interest rate fears,'' and the like.

It should be stressed that the events that have been found are not necessarily surprises in the sense of an actual value differing from an expected value, although most of them probably are. Consider, for example, a payroll announcement. Say that market participants believe that there are three possible outcomes regarding the payroll change: 100,000, 300,000, and 500,000 jobs. Assume that market participants weight each possibility equally, so that the expected value is 300,000. Assume also that the participants expect that the Fed will leave the funds rate unchanged if the outcome is 100,000 or 300,000, but raise the funds rate if the outcome is 500,000. Assume finally that participants expect the S&P 500 price to be 1430 if there is no funds rate change and 1400 if there is one. The expected value of the price is thus 1420, which if the participants are risk neutral will be the price before the announcement. In this case even if the actual payroll value is equal to the expected value (300,000), the stock

price will change (from 1420 to 1430). Simply relieving uncertainty may thus change stock prices even if the announced value is equal to the expected value. I have thus avoided calling the events surprises.

The main results from Table 1 are the following. First, of the 58 events that were found, 19 pertain directly to monetary policy (money supply or interest rates). In 1982 the focus was on money supply announcements, and after that it was on the federal funds rate. 13 events are payroll announcements (employment reports), and 9 events pertain to prices and wages (CPI, PPI, and the employment cost index). The war with Iraq accounts for 5 events, Congressional issues account for 4, and Brazil accounts for 2. The remaining 6 are: current account, Mexican loans, GM sales, new home sales, new orders, and fear of Larry Summers.

The payroll, price, and wage announcements are indirectly related to monetary policy in that these announcements may change people's expectations about future monetary policy. If, for example, there is a large payroll increase, people may think it is more likely that the Fed will tighten in the future because of fear of inflation. Large increases in the CPI, PPI, or employment cost index may have similar effects. If the 22 payroll, price, and wage events are added to the 19 direct monetary policy events, this gives 41 of the 58 events that are directly or indirectly related to monetary policy. Even a few of the remaining 17 events may also be put in this category.

Second, the largest response by far was to the cut in the federal funds rate at 3:14 pm on October 15, 1998. At 3:19 pm the five minute percent change was 4.74 percent. The announcement of this rate cut was unusual in that it did not follow a normally scheduled FOMC meeting.

Third, the large price changes are not close to being spread evenly across years. Between 1982 and 1993, before the introduction of the GLOBEX market, the number of days of large price changes per year are respectively: 34, 1, 2, 0, 10, 26, 6, 5, 16, 9, 3, and 1. Between 1994 and 1999 the number of days are respectively: 5, 0, 8, 23, 17 (GLOBEX data for the last half of 1998 missing), and 13 (through October).

Finally, as noted above, many large price changes have no events associated with them.

To see what the stock price did following a large five minute change, the next five minutes after the change was examined. For a given large price change, the starting point was taken to be five minutes after the initial change. For example, for the change at 10:05am on 6/17/82 in Table 1, the starting point was taken to be 10:10am. For the change at 12:02pm on 2/07/86, the starting point was taken to be 12:07pm. From a starting point the next five minute price change was computed. There is unlikely to be much new information only five minutes after the initial change, which is why this short time interval was chosen.

The 58 large price changes with associated events were first examined. (If there is more than one large price change following an event, the first occurrence is always used.) Future data were not available for 6 of these changes (6/25/82, 7/09/82, 7/16/82, 10/01/82, 10/22/82, and 11/05/82). Also, 2 of these changes were based on rumors that were quickly denied (8/19/82 and 11/16/82), and these 2 changes were not used. This left 50 changes, of which 22 were positive and 28 were negative. For the positive changes, the mean of the next five minute change was 0.211 percent with a standard deviation of the mean of 0.147 percent. For the negative changes, the mean of the

next five minute change was 0.101 percent with a standard deviation of the mean of 0.068 percent. The means are thus noticeably larger than the overall mean of 0.00047 percent, but they are within two standard deviations of the overall mean.

The same thing was done for the price changes in Table 1 that have no associated events. The price changes with ‘‘none’’ beside them in Table 1 were used. Some changes could not be used because the relevant future data were not available. Also, the change for 11/05/82 at 3:16 pm was not used even though it has ‘‘none’’ after it because the earlier one in the day was used. A total of 113 changes were used, 49 positive and 64 negative. For the positive changes, the mean of the next five minute change was 0.159 percent with a standard deviation of the mean of 0.120 percent. For the negative changes, the mean of the next five minute change was -0.078 percent with a standard deviation of the mean of 0.057 percent. Again, the means are within two standard deviations of the overall mean. If 1987 is excluded, there are 89 changes, 38 positive and 51 negative. In this case the mean was -0.037 percent for the positive changes with a standard deviation of the mean of 0.044 percent and -0.109 percent for the negative changes with a standard deviation of 0.061 percent.

There is thus little evidence that the five minute price change five minutes after an initial large change differs on average from any other randomly chosen five minute change. This is true following both large price changes with associated events and those without.

4 Implications for Other Studies

It is clear that no simple model of stock price determination can explain the facts in Table 1. There have, for example, been hundreds of important macroeconomic announcements between 1982 and 1999, and only a small fraction have led to a large stock price change. An adequate model would need to explain why the particular events in Table 1 led to large price changes, while many other seemingly similar events did not. There is also the problem from a model building perspective that there are many large price changes for which there appear to be no obvious causes.

A number of statistical studies have examined the effects of announcements on *daily* changes in stock prices (i.e., the change from the close of one day to the close of the previous day). The daily percent change in a stock index is regressed on estimates of the ‘‘surprise’’ components of announcements, and the components are tested for their statistical significance. The surprise component of an announcement is the difference between the announced value and an estimate of its expected value. The expected value is usually either taken from a survey or to be a prediction from an autoregressive equation.

This literature generally finds that surprise monetary announcements are significant, but little else seems to matter. Schwert (1981), Pearce and Roley (1985), and Hardouvelis (1987) find surprise monetary announcements significant, and McQueen and Roley (1993) find inflation surprises sometimes significant after controlling for different stages of the business cycle. Jain (1988) finds surprise monetary and CPI announcements significant. The results in Table 1 suggest that if anything is to be

found significant in explaining stock prices it is likely to be monetary announcements, which is what the literature tends to find. The ‘‘facts’’ in Table 1 thus provide some support to the statistical results using daily data, but they also suggest that an adequate model of stock price determination is likely to be more complicated than the models that have been used so far for the statistical tests.

As noted in Section 1, Cutler, Poterba, and Summers (1989) chose the 50 largest daily changes in the S&P 500 index from 1946 through 1987 and attempted to find an explanation of each change in the next day's New York Times. Of the 50 changes, 17 occurred between 1982 and 1987, which are years included in Table 1. It is interesting that 6 of these 17 changes occurred on days not listed in Table 1, in other words, on days in which there was not at least one large five minute price change. Of the 11 changes that occurred on days that are listed in Table 1, none of the price changes has an event associated with it. Table 2 lists the 11 changes and the New York Times explanation that Cutler, Poterba, and Summers (1989, Table 4) found. It is clear that none of the explanations in Table 2 are obvious causes of the stock price changes. The results in Table 1 are consistent with this in that no events could be found to explain the large price changes on these days.

Haugen, Talmor, and Torous (1991) examine daily changes in the Dow Jones Industrial Average between 1897 and 1988. They compute a measure of volatility using the daily data and choose periods of increased and decreased volatility. For the 217 periods of increased volatility that were chosen, they identified events for 28 of them. For the 224 periods of decreased volatility, they identified 18 events. Again, it is difficult with daily data to find events, which is probably the main reason they

Table 2
Eleven Large Daily S&P 500 Price Changes

Day	Percent Change	New York Times Explanation
8/17/82	4.76	Interest rates decline.
11/30/82	3.22	‘‘Analysts were at a loss to explain why the Dow jumped so dramatically in the last two hours.’’
9/11/86	-4.81	Foreign governments refuse to lower interest rates; crackdown on triple witching announced.
10/16/87	-5.16	Fear of trade deficit; fear of higher interest rates; tension with Iran.
10/19/87	-20.47	Worry over dollar decline and trade deficit; fear of US not supporting dollar.
10/20/87	5.33	Investors looking for ‘‘quality stocks.’’
10/21/87	9.10	Interest rates continue to fall; deficit talks in Washington; bargain hunting.
10/22/87	-3.92	Iranian attack on Kuwaiti oil terminal; fall in markets overseas; analysts predict lower prices.
10/26/87	-8.28	Fear of budget deficits; margin calls; reaction to falling foreign stocks.
10/29/87	4.46	Deficit reduction talks begin; durable goods orders increase; rallies overseas.
10/30/87	3.33	Dollar stabilizes; increase in prices abroad.

Taken from Table 4 in Cutler, Poterba, and Summers (1989).

found so few events over such a long period of time.

Fleming and Remolona (1997) (FR) examine five minute price changes for the five year U.S. Treasury note for the period August 23, 1993-August 19, 1994. They chose the 25 largest five minute price changes over this period, and they find that each of these changes was preceded by a macroeconomic announcement. Of these 25 changes, 17 are on days for which S&P 500 futures data exist. Data for these 17 days are presented in Table 3. The five minute bond price change is presented (taken from Table 3 in Fleming and Remolona (1997)) along with the five minute S&P 500 futures price change.

Table 3
Five Minute Bond and Stock Price Changes

Day	Bond Interval	Bond Change	Stock Interval	Stock Change	Announcement
1/07/94	8:30-8:35am	.282	8:28-8:33am	.06	8:30am: Employment
2/04/94	8:30-8:35am	.315	8:29-8:34am	.19	8:30am: Employment
2/04/94	11:05-11:10am	-.259	11:04-11:09am	-.14	11:05am: Federal funds rate
2/11/94	8:30-8:35am	.223	8:29-8:34am	.30	8:30am: PPI, retail sales
4/13/94	8:30-8:35am	.224	8:29-8:34am	.09	8:30am: CPI, retail sales
5/06/94	8:30-8:35am	-.536	8:28-8:33am	-.35	8:30am: Employment
5/11/94	1:40-1:45pm	-.223	1:40-1:45pm	-.31	1:42pm: Ten-year-note auction results
5/12/94	8:30-8:35am	.384	8:29-8:34am	.46	8:30am: PPI, retail sales
5/17/94	2:35-2:40pm	.221	2:25-2:30pm	.29	2:26pm: Federal funds rate
			2:35-2:40pm	.00	
5/27/94	8:30-8:35am	-.343	8:29-8:34am	-.21	8:30am: GDP
6/03/94	8:40-8:45am	-.265	8:40-8:45am	-.20	8:30am: Employment
7/08/94	8:30-8:35am	-.440	8:29-8:34am	-.38	8:30am: Employment
7/12/94	8:30-8:35am	.222	8:29-8:34am	.29	8:30am: PPI
7/14/94	8:30-8:35am	.253	8:29-8:34am	.12	8:30am: Retail sales
7/29/94	8:30-8:35am	.407	8:29-8:34am	.30	8:30am: GDP
8/05/94	8:30-8:35am	-.590	8:29-8:34am	-.36	8:30am: Employment
8/16/94	1:45-1:50pm	-.266	1:16-1:21pm	.26	1:17pm: Federal funds rate
			1:45-1:50pm	-.20	

Notes:
No stock trades at 8:29am on 1/07/94 and 5/06/94.
Changes are percent changes.
Bond results and announcement information taken from Table 3 in Fleming and Remolona (1997).

In some cases I used slightly different time intervals than did FR. For the 8:30 am announcements, I generally used 8:29-8:34am instead of 8:30-8:35am, since at least in the S&P 500 futures data an 8:30 am announcement affects the 8:30 am price. For the June 3, 1994, 8:30 am employment announcement, FR used 8:40-8:45am and I did also. There was very little change in price before 8:40 am. For the 2:26 pm announcement of the Federal funds rate on May 17, 1994, FR used 2:35-2:40pm. I present the stock price change for both 2:25-2:30pm and 2:35-2:40pm. Finally,

for the 1:17 pm announcement of the Federal funds rate on August 16, 1994, FR used 1:45-1:50pm, and I present the stock price change for both 1:16-1:21pm and 1:45-1:50pm.

The stock price changes in Table 3 are in general fairly large, although not nearly as large as 0.75 percent, the Table 1 cutoff. It is remarkable that in every case except the last one the bond and stock price changes are in the same direction. The direction is the same in the last case if the same time 1:45-1:50pm is used, but not if 1:16-1:21pm is used for the stock price. As FR point out (p. 32), bond and stock prices need not move in the same direction following an announcement, since stock prices depend on expectations of both earnings and interest rates, whereas bond prices depend only on expectations of interest rates. The fact that they do move in the same direction suggests that the announcements mostly affect interest rate expectations.

Finally, Gwilym, McMillan, and Speight (1999) examine five minute stock price changes for the U.K. market using FTSE-100 data. The data are for the January 24, 1992-June 30, 1995 period. Their data show that price volatility is higher around announcement times than otherwise. Although Table 1 shows that there are many cases of high volatility at non announcement times, it is the case that plots of the GLOBEX data by minute show in general higher volatility after an 8:30 am announcement than otherwise.

Appendix: Table 1A

As noted in the text, Table 1 omits some of the price changes in a day that follow the initial price change of the day. Table 1A, which is in pdf format on the website mentioned in the introductory footnote, lists all the price changes. Click ‘‘Table 1A’’ near the bottom of the main page for this table.

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Table 1
Five Minute Price Changes Greater than 0.75 Percent in Absolute Value

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
6/11/82	10:05am	-0.83	-0.83	-0.34	none
6/17/82	10:05am	0.76	0.76	0.26	10:00am: Current account surplus $1.18 billion.
6/23/82	1:42pm	0.85	1.08	1.40	none
6/23/82	1:43pm	0.80	1.12	1.33	-
6/24/82	3:28pm	-0.80	-1.27	-1.76	none
6/25/82	4:14pm	0.85	0.26	na	4:10pm: M1 down $2.3 billion.
7/06/82	3:36pm	0.79	0.62	0.73	none
7/06/82	3:37pm	0.95	0.87	0.82	-
7/06/82	3:38pm	0.75	0.91	0.94	-
7/09/82	4:11pm	0.79	0.99	na	4:10pm: M1 down $3.7 billion.
7/09/82	4:12pm	1.02	1.31	na	-
7/09/82	4:13pm	1.09	1.36	na	-
7/16/82	4:14pm	-0.76	0.56	na	4:10pm: M1 up $5.9 billion.
8/17/82	2:20pm	0.89	3.13	2.67	none
8/17/82	2:21pm	1.00	3.28	2.66	-
8/19/82	10:17am	0.88	0.98	0.62	none
8/19/82	2:09pm	-0.98	-0.88	0.75	?time: Rumor that a major US bank in trouble over
8/19/82	2:10pm	-0.90	-0.84	1.03	Mexican loans.
8/19/82	2:30pm	1.01	1.03	0.58	NY Fed denied rumor about 2:30pm.
8/19/82	2:31pm	0.83	1.03	0.39	-
8/19/82	2:32pm	0.94	1.27	0.26	-
8/19/82	2:33pm	0.84	1.50	0.33	-
8/19/82	2:34pm	1.01	1.76	0.25	-
8/19/82	2:36pm	0.98	2.01	0.23	-
8/19/82	2:39pm	-1.05	0.72	0.25	-
8/19/82	2:51pm	-0.94	0.39	0.05	-
8/19/82	2:52pm	-0.86	0.26	0.21	-
8/23/82	3:37pm	0.88	3.03	3.78	none
8/23/82	3:38pm	0.82	3.16	3.68	-
8/24/82	1:42pm	-0.81	-1.34	-1.04	1:40pm: GM mid August sales down to 81,597 from 134,949.
8/24/82	3:20pm	-0.76	0.39	-0.89	none
8/24/82	3:22pm	-0.79	0.02	-1.03	-
8/24/82	3:23pm	-0.83	-0.05	-0.93	-
8/24/82	3:30pm	-0.83	-0.95	-0.98	-
8/25/82	10:15am	0.76	0.76	0.41	none
9/02/82	2:56pm	0.76	2.66	2.65	none
9/03/82	10:05am	0.95	0.95	1.63	none
9/03/82	10:24am	0.78	1.82	1.57	-
9/03/82	11:58am	0.77	1.78	1.44	-
9/03/82	12:43pm	0.76	2.53	2.69	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
9/03/82	1:06pm	-0.76	2.09	na	-
9/03/82	1:07pm	-0.83	1.97	2.08	-
9/14/82	3:35pm	-0.76	-0.73	-0.60	3:27pm: Rostenkowski said tax boost needed for defense budget.
10/01/82	4:13pm	-0.91	0.76	na	4:10pm: M1 up $0.4 billion.
10/01/82	4:14pm	-0.92	0.75	na	-
10/01/82	4:15pm	-0.78	0.71	na	-
10/11/82	3:47pm	0.80	0.53	0.67	none
10/13/82	12:38pm	-0.87	1.36	1.48	none
10/13/82	2:10pm	0.82	3.99	3.98	-
10/13/82	2:11pm	0.80	3.95	3.95	-
10/13/82	3:24pm	0.96	2.66	2.85	-
10/13/82	3:25pm	1.19	2.95	2.77	-
10/13/82	3:26pm	1.12	2.98	2.79	-
10/13/82	3:27pm	1.21	3.41	2.76	-
10/13/82	3:28pm	0.88	3.38	2.75	-
10/22/82	4:14pm	-1.04	-1.64	na	4:10pm: M1 up $3.2 billion.
10/26/82	2:37pm	0.76	1.22	0.26	none
10/26/82	2:38pm	0.76	1.40	-0.05	-
10/26/82	2:58pm	-0.80	-0.05	0.06	-
10/26/82	2:59pm	-0.89	-0.30	0.08	-
10/26/82	3:00pm	-0.91	-0.34	0.41	-
11/05/82	11:47am	-1.11	0.15	0.35	none
11/05/82	11:48am	-1.06	0.39	0.48	-
11/05/82	3:16pm	0.83	0.95	1.01	none
11/05/82	4:11pm	-0.85	0.33	na	4:10pm: M1 up $2.7 billion.
11/05/82	4:12pm	-1.10	0.06	na	-
11/05/82	4:13pm	-1.18	0.10	na	-
11/05/82	4:14pm	-1.07	0.16	na	-
11/16/82	3:15pm	0.79	1.50	0.60	?time: Larry Speakes reported to have said Fed will
11/16/82	3:16pm	0.86	1.71	0.59	reduce discount rate. Denied at 3:33pm.
11/16/82	3:17pm	0.95	1.82	0.54	-
11/16/82	3:18pm	0.89	1.90	0.45	-
11/30/82	2:59pm	0.88	3.10	na	none
12/01/82	2:27pm	-0.88	0.67	0.13	none
12/01/82	2:28pm	-0.81	0.73	0.13	-
12/01/82	2:29pm	-0.81	0.66	0.20	-
12/02/82	2:38pm	-0.79	-0.23	0.24	2:30pm: New home sales down 0.4%.
12/06/82	3:27pm	0.86	2.47	2.87	none
12/06/82	3:28pm	0.91	2.52	2.85	-
12/07/82	2:55pm	-0.88	-0.04	-0.50	none
12/08/82	2:49pm	-0.82	-0.03	0.50	none

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
12/09/82	3:24pm	-0.81	0.23	-0.43	?time: Howard Baker withdrew bill to reduce capital
12/09/82	3:25pm	-0.92	0.16	-0.42	gains holdings to 6 months.
12/09/82	3:26pm	-0.98	0.05	-0.41	-
12/14/82	1:39pm	-0.83	-2.60	-2.68	none
12/14/82	2:02pm	-0.90	-3.51	-3.35	-
12/14/82	2:03pm	-1.10	-3.70	-3.15	-
12/14/82	2:04pm	-0.75	-3.43	-2.99	-
12/14/82	3:28pm	-0.81	-4.66	-4.29	-
12/15/82	11:00am	-0.86	-0.90	-0.99	10:56am: Murray Weidenbaum testified that deficit an obstacle to recovery
12/21/82	3:40pm	0.96	2.74	2.43	none
12/21/82	3:41pm	0.80	2.81	2.48	-
12/21/82	3:42pm	0.83	2.97	2.57	-
12/21/82	3:43pm	1.00	3.10	2.53	-
12/21/82	3:44pm	0.75	3.08	2.53	-
12/28/82	2:57pm	-0.84	-0.87	-0.94	none
1/06/83	12:09pm	0.76	1.64	1.64	none
5/30/84	2:38pm	0.78	1.52	1.22	none
8/06/84	10:33am	0.86	2.23	1.70	none
1/08/86	3:48pm	-0.85	-4.02	-3.64	none
1/08/86	3:49pm	-1.17	-4.43	-3.65	-
1/08/86	3:50pm	-1.00	-4.32	-3.64	-
2/07/86	12:02pm	-0.85	-0.41	0.11	12:00pm: Three judge panel ruled part of Gramm-Rudman
2/07/86	12:03pm	-0.92	-0.51	0.19	law unconstitutional
2/07/86	12:04pm	-0.95	-0.50	0.13	-
2/07/86	12:05pm	-0.80	-0.56	0.19	-
2/07/86	12:10pm	0.96	0.41	0.21	-
9/11/86	11:36am	-0.79	-3.37	-2.47	none
9/11/86	11:37am	-0.94	-3.63	-2.41	-
9/11/86	11:54am	0.79	-2.34	-3.09	-
9/12/86	10:13am	-0.76	-2.68	-2.97	none (10 more through 12:17pm)
9/18/86	9:46am	0.77	1.12	0.85	none
9/18/86	11:23am	0.78	2.23	1.59	-
9/19/86	3:31pm	-0.79	0.31	0.68	none
9/19/86	3:32pm	-0.81	0.30	0.75	-
9/25/86	11:02am	-0.77	-1.47	-1.65	none
9/25/86	11:03am	-0.81	-1.56	-1.64	-
9/25/86	11:04am	-0.80	-1.61	-1.65	-
10/03/86	11:09am	-0.97	-1.79	-1.69	none
10/03/86	11:10am	-1.03	-2.00	-1.69	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
10/03/86	11:11am	-1.30	-2.26	-1.67	-
10/03/86	11:12am	-1.43	-2.52	-1.68	-
10/03/86	11:13am	-1.08	-2.46	-1.54	-
10/06/86	10:06am	0.94	1.34	0.89	none
10/06/86	10:07am	0.90	1.46	0.81	-
12/11/86	11:15am	-0.83	-1.46	-1.69	none
12/11/86	11:16am	-1.20	-1.88	-1.67	-
12/11/86	11:17am	-1.28	-2.13	-1.49	-
1/23/87	2:21pm	-0.78	0.47	-1.64	none (14 more during day)
3/09/87	9:35am	-0.82	-0.82	-0.57	none
3/09/87	9:36am	-0.87	-0.92	-0.61	-
3/30/87	9:47am	-0.92	-1.33	-1.40	none
3/30/87	9:48am	-1.10	-1.71	-1.38	-
3/30/87	9:49am	-0.98	-1.68	-1.36	-
4/13/87	3:37pm	-0.81	-2.10	-2.41	none
4/27/87	12:27pm	0.85	1.18	2.12	none
4/27/87	12:43pm	0.77	1.50	1.71	-
4/27/87	12:44pm	0.95	1.79	1.74	-
4/27/87	12:45pm	0.78	1.75	1.81	-
4/27/87	12:46pm	0.82	1.97	1.97	-
5/11/87	4:00pm	-0.89	-2.13	na	none
5/11/87	4:01pm	-0.77	-2.09	na	-
6/02/87	10:08am	-0.88	-0.92	0.04	none
10/16/87	1:27pm	-0.80	-3.55	-3.78	none (15 more during day)
10/19/87	9:35am	1.70	1.70	-0.10	none (165 more during day)
10/20/87	9:35am	3.75	3.75	7.64	none (212 more during day)
10/21/87	9:36am	1.00	0.54	3.34	none (104 more during day)
10/22/87	9:36am	5.95	4.27	11.39	none (160 more during day)
10/23/87	9:35am	-2.81	-2.81	-0.85	none (42 more during day)
10/26/87	9:35am	1.93	1.93	1.40	none (38 more during day)
10/27/87	9:35am	-1.72	-1.72	-1.95	none (25 more during day)
10/28/87	9:38am	0.86	0.91	1.05	none (31 more during day)
10/29/87	9:35am	1.70	1.70	1.13	none (11 more during day)
10/30/87	9:48am	0.76	0.90	0.61	none (5 more during day)

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
11/03/87	9:36am	0.79	0.55	-0.28	none (21 more during day)
11/04/87	9:47am	0.84	0.54	-0.10	none
11/04/87	9:48am	1.00	0.70	-0.08	-
11/09/87	2:34pm	-0.80	-1.08	-0.33	none
11/10/87	9:35am	-0.84	-0.84	-0.77	none
11/10/87	9:36am	-0.77	-0.95	-0.75	-
11/19/87	4:03pm	-0.83	-3.09	na	none
12/01/87	4:01pm	-0.89	-1.18	na	none
12/04/87	1:52pm	-0.76	-0.88	-1.06	none
12/10/87	3:40pm	-0.79	0.50	-0.76	none
12/10/87	3:41pm	-0.78	0.46	-0.59	-
1/08/88	3:40pm	-0.86	-5.78	-7.90	none (7 more through 3:51pm)
1/11/88	9:56am	-0.90	-0.51	-0.07	none (6 more through 10:13am)
1/15/88	9:46am	-0.76	-0.78	-0.83	none
1/20/88	1:16pm	-0.78	-1.28	-1.76	none
1/21/88	10:15am	-0.79	-1.62	-1.14	none
4/14/88	2:30pm	-0.84	-2.56	-2.56	none (10 more through 2:43pm)
3/17/89	9:42am	-1.22	-1.22	-0.78	none
3/17/89	9:43am	-1.44	-1.44	-0.74	-
10/13/89	3:04pm	-0.79	-2.64	-3.09	none (17 more through 3:49pm)
10/16/89	9:35am	1.40	1.40	0.33	none (15 more during day)
10/17/89	11:26am	0.79	-0.37	-0.27	none
10/17/89	11:27am	0.80	-0.32	-0.15	-
10/24/89	10:25am	-0.88	-1.95	-1.51	none (12 more during day)
1/12/90	2:36pm	-0.85	-2.06	-1.43	none
1/12/90	2:37pm	-0.87	-2.16	-1.32	-
7/23/90	10:32am	-0.80	-2.08	-2.33	none (8 more through 10:55am)
8/03/90	9:48am	-1.04	-2.05	-1.67	?time: Iraq invaded Kuwait.
8/03/90	9:49am	-1.20	-2.46	-1.65	-
8/03/90	9:50am	-0.84	-2.29	-1.56	-
8/03/90	1:48pm	-0.88	-3.69	-2.64	-
8/03/90	1:49pm	-0.93	-3.74	-2.48	-
8/03/90	1:52pm	-0.79	-3.60	-2.54	-
8/03/90	2:01pm	0.76	-3.11	-2.63	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
8/03/90	2:02pm	0.98	-2.89	-2.59	-
8/03/90	2:03pm	0.98	-2.96	-2.60	-
8/03/90	2:04pm	0.78	-2.71	-2.53	-
8/17/90	12:17am	-0.89	-1.89	-1.45	12:11pm: Pentagon recommended maybe calling up reserves.
8/21/90	9:43am	-0.90	-1.31	-0.92	none
8/21/90	11:17am	1.08	-1.46	-1.31	11:13am: Iraq's Aziz says ready to discuss Gulf situation.
8/21/90	11:18am	1.03	-1.47	-1.38	-
8/21/90	11:19am	0.77	-1.63	-1.44	-
8/23/90	9:42am	-2.05	-2.05	-0.90	none
8/23/90	9:43am	-1.83	-1.83	-0.96	-
8/23/90	9:47am	1.28	-0.77	-1.11	-
8/23/90	9:48am	0.93	-0.89	-1.26	-
8/27/90	9:42am	1.53	1.53	1.33	9:39am: Tom Pickering on Today show says US hopeful crisis can be resolved.
9/20/90	10:25am	-0.82	-0.97	-0.67	none
9/27/90	11:00am	-0.80	-1.95	-1.78	none
10/01/90	12:19am	0.91	2.59	2.11	none
10/02/90	9:40am	0.78	0.97	0.59	none
10/09/90	3:46pm	-0.81	-2.83	-2.58	3:39pm: (?) Brazil's central bank president sees rescheduling needed.
10/10/90	3:28pm	-0.84	-2.00	-1.26	none
10/10/90	3:29pm	-0.81	-2.19	-1.30	-
10/15/90	10:46am	-1.11	-1.90	-1.19	none
10/15/90	10:47am	-0.78	-1.66	-1.25	-
12/04/90	3:33pm	0.85	0.53	0.95	?time: British TV reports Iraq makes new offer on Kuwait.
12/04/90	3:34pm	1.08	0.97	0.90	-
12/04/90	3:35pm	1.15	1.31	0.90	-
12/04/90	3:36pm	1.17	1.38	0.86	-
12/04/90	3:37pm	1.27	1.49	0.91	-
12/04/90	3:38pm	0.85	1.38	0.93	-
12/18/90	3:28pm	0.97	1.13	1.07	none
12/18/90	3:29pm	1.22	1.40	1.07	-
12/18/90	3:30pm	1.26	1.42	1.02	-
12/18/90	3:31pm	0.98	1.36	1.04	-
1/04/91	12:12am	0.80	-0.62	-0.75	none
1/04/91	12:13am	0.92	-0.48	-0.74	-
1/09/91	1:58pm	-1.72	-0.68	-1.02	none
1/09/91	1:59pm	-3.22	-2.20	-0.98	-
1/09/91	2:00pm	-3.17	-2.14	-1.01	-
1/09/91	2:01pm	-2.27	-1.39	-1.05	-
1/09/91	2:02pm	-1.37	-0.97	-1.28	-
1/09/91	2:04pm	0.99	-1.20	-1.15	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
1/09/91	2:05pm	1.13	-1.01	-1.29	-
1/14/91	3:19pm	0.84	0.37	-0.08	none
1/14/91	3:20pm	0.83	0.45	-0.01	-
1/16/91	12:44am	0.95	1.41	0.76	none
3/19/91	9:43am	-0.76	-1.04	-0.47	none
4/30/91	9:35am	0.76	0.76	0.75	9:30am: Fed cut discount rate to 5.5%.
8/19/91	9:44am	-1.47	-1.47	-1.58	none
11/15/91	3:42pm	-0.91	-4.62	-3.45	none
11/15/91	3:47pm	1.01	-3.61	-3.62	-
11/15/91	3:48pm	0.78	-3.63	-3.63	-
11/26/91	11:59am	-0.78	-1.51	-1.01	none
1/02/92	4:06pm	0.80	0.96	na	none
7/02/92	10:22am	-0.91	-0.92	-0.74	?time: Fed cut discount rate to 3.0% from 3.5%;
7/02/92	10:23am	-0.82	-0.94	-0.78	anemic employment report earlier.
10/05/92	10:27am	-0.96	-2.33	-2.37	none
10/05/92	10:28am	-0.98	-2.37	-2.37	-
10/05/92	10:29am	-0.89	-2.37	-2.37	-
10/05/92	11:16am	-0.92	-4.03	-2.78	-
10/05/92	11:17am	-0.99	-4.12	-2.70	-
2/16/93	10:43am	-0.76	-2.00	-1.28	none
3/02/94	5:15am	-1.33	-1.71	na	none
3/02/94	5:16am	-1.93	-2.39	-1.26	-
3/02/94	5:17am	-1.82	-2.39	na	-
3/02/94	5:20am	0.87	-0.85	-1.30	-
3/02/94	5:21am	1.43	-0.95	-1.42	-
3/02/94	5:22am	1.46	-0.93	na	-
3/31/94	10:56am	-0.76	-2.05	-1.34	none
10/13/94	8:34am	0.86	0.85	0.78	8:30am: PPI down .5%; core up .1%.
11/15/94	2:38pm	-0.79	-0.99	-0.11	2:37pm: Fed raised discount rate to 4.75% from 4.0%.
11/15/94	2:39pm	-0.85	-1.09	-0.09	-
11/22/94	3:52pm	-0.82	-1.77	-2.07	none
2/26/96	3:28pm	-0.76	-1.24	-0.93	none
3/08/96	8:34am	-1.17	-1.12	-1.42	8:30am: Payrolls up 705,000; largest increase in 12 years.
3/08/96	8:35am	-1.56	-1.61	-1.45	-
3/08/96	8:36am	-1.08	-1.27	-1.45	-
3/08/96	3:05pm	-0.98	-2.75	-2.45	none

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
3/08/96	3:06pm	-0.84	-2.75	-2.29	-
3/08/96	3:28pm	0.87	-1.80	-2.32	-
3/08/96	3:29pm	0.81	-1.80	-2.25	-
5/03/96	8:31am	0.86	0.46	0.57	8:30am: Payrolls up 2,000.
5/03/96	8:32am	1.03	0.67	0.55	-
5/03/96	8:33am	1.13	0.96	0.53	-
6/07/96	8:33am	-1.14	-1.22	-1.39	8:29am: Payrolls up 348,000.
6/07/96	8:34am	-1.66	-1.61	-1.45	-
6/07/96	8:35am	-1.39	-1.71	-1.50	-
6/07/96	8:36am	-1.00	-1.69	-1.53	-
7/16/96	12:22am	-0.80	-1.79	na	none (10 more during day)
8/02/96	8:31am	0.88	0.86	1.11	8:29am: Payrolls up 193,000.
8/02/96	8:32am	1.17	1.18	1.12	-
8/02/96	8:33am	1.22	1.22	1.14	-
8/02/96	8:34am	1.28	1.24	1.14	-
8/02/96	8:35am	0.79	1.17	1.16	-
9/06/96	8:31am	-0.83	-0.90	-0.19	8:30am: Payrolls up 250,000.
9/13/96	8:33am	0.89	0.86	0.82	8:30am: CPI up .1%; core up .1%. Also retail sales data.
9/13/96	8:34am	0.77	0.73	0.82	-
1/10/97	8:38am	-0.79	-1.35	-1.21	8:29am: Payrolls up 262,000.
1/23/97	3:46pm	-0.82	-1.37	-1.31	none
1/23/97	3:47pm	-0.84	-1.49	-1.51	-
1/23/97	4:00pm	0.91	-1.43	na	-
1/23/97	4:01pm	0.77	-1.39	na	-
2/26/97	10:04am	-0.88	-0.86	-0.88	10:00am: Greenspan testimony; angst about stock market.
2/26/97	10:05am	-1.27	-1.30	-0.79	-
2/26/97	10:06am	-1.34	-1.60	-0.69	-
2/26/97	10:07am	-1.28	-1.78	-0.78	-
2/26/97	10:08am	-1.21	-1.80	-0.78	-
2/26/97	10:09am	-0.92	-1.78	-0.90	-
3/07/97	8:31am	-0.92	-0.74	0.23	8:30am: Payrolls up 339,000.
3/27/97	3:37pm	-0.89	-3.69	-2.61	none
3/27/97	3:38pm	-0.87	-3.79	-2.59	-
3/30/97	6:30pm	-1.28	0.05	0.29	none
3/30/97	6:32pm	-1.17	0.16	0.34	-
4/15/97	8:32am	0.94	0.86	0.80	8:29am: CPI up .1%; core up .2%.
4/15/97	8:33am	0.94	0.90	0.81	-
4/15/97	8:34am	0.88	0.84	0.81	-
4/29/97	8:31am	0.90	0.71	1.03	8:30am: Employment cost index up .6% in first quarter.
4/29/97	8:32am	1.07	0.87	1.06	-
4/29/97	8:33am	1.13	0.98	1.14	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
4/29/97	8:34am	1.14	0.99	1.20	-
4/29/97	8:35am	0.77	0.92	1.17	-
5/20/97	2:17pm	0.89	1.03	0.87	2:15pm: Fed kept rates unchanged.
5/20/97	2:18pm	0.83	0.99	0.96	-
6/06/97	8:35am	-0.76	-0.26	-0.28	8:30am: Payrolls up 138,000.
7/09/97	3:38pm	-0.78	-2.34	-1.66	none
7/18/97	10:09am	-0.85	-1.42	-1.34	none
7/18/97	10:10am	-0.75	-1.41	-1.42	-
8/01/97	10:11am	-0.84	-1.29	-1.22	10:00am: (?) New orders up 1.2%; strong NAPM report;
8/01/97	10:12am	-1.09	-1.53	-1.23	Michigan sentiment revised up.
8/01/97	10:13am	-0.96	-1.53	-1.27	-
8/01/97	10:14am	-0.78	-1.53	-1.31	-
8/08/97	8:29am	-0.94	-1.39	-0.89	none
8/08/97	8:30am	-0.94	-1.41	-0.88	-
8/08/97	8:31am	-0.76	-1.25	-0.90	-
8/13/97	8:32am	0.97	0.76	1.56	8:30am: PPI down .1%; core down .1%. Also retail
8/13/97	8:33am	1.28	1.09	1.48	sales data.
8/13/97	8:34am	1.52	1.42	1.49	-
8/13/97	8:35am	1.09	1.29	1.46	-
8/13/97	8:36am	0.80	1.33	1.44	-
8/13/97	10:23am	-0.81	-2.08	-1.10	none
8/13/97	10:25am	-0.81	-2.09	-1.21	-
8/13/97	10:26am	-0.80	-2.08	-1.20	-
10/03/97	8:32am	0.88	1.05	1.32	8:30am: Payrolls up 215,000.
10/03/97	8:33am	0.83	1.02	1.34	-
10/03/97	8:34am	0.78	0.99	1.31	-
10/10/97	8:31am	-1.00	-0.77	-0.61	8:30am: PPI up .5%; core up .4%.
10/10/97	8:32am	-1.09	-0.90	-0.63	-
10/10/97	8:33am	-1.04	-0.90	-0.70	-
10/10/97	8:34am	-1.03	-0.90	-0.68	-
10/27/97	1:52pm	-0.80	-2.87	-2.62	none (13 more during day)
10/27/97	7:02pm	-1.02	0.03	-0.04	none
10/28/97	6:48am	-0.77	0.18	na	none
10/28/97	6:49am	-0.93	-0.06	-0.12	-
10/28/97	6:50am	-0.80	-0.05	-0.12	-
10/28/97	9:43am	0.86	0.17	-0.70	none (27 more during day)
10/30/97	10:02am	0.76	1.00	0.45	none
11/13/97	4:47pm	-0.95	0.29	0.35	none
11/16/97	6:25pm	-1.07	-0.86	0.07	none
11/16/97	6:30pm	0.91	0.06	na	-

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
12/05/97	8:31am	-0.84	-0.77	-0.71	8:30am: Payrolls up 404,000.
12/05/97	8:32am	-1.01	-0.98	-0.68	-
12/05/97	8:33am	-1.12	-1.10	-0.68	-
12/05/97	8:34am	-1.08	-1.09	-0.73	-
4/30/98	8:32am	0.95	0.74	0.98	8:30am: Employment cost index up .7% in first quarter.
4/30/98	8:33am	0.95	0.74	0.93	Also GDP data (Real growth 4.2%).
4/30/98	8:34am	0.95	0.79	0.96	-
8/04/98	3:44pm	-0.76	-3.98	-4.23	none
8/05/98	9:43am	-0.89	-0.79	0.23	none
8/05/98	9:44am	-0.95	-0.97	0.22	-
8/05/98	9:45am	-0.83	-0.93	0.11	-
8/05/98	3:45pm	0.75	0.48	0.92	none
8/05/98	3:46pm	0.98	0.78	0.91	-
8/27/98	11:39am	-0.85	-2.20	-1.75	none
8/27/98	11:40am	-0.91	-2.19	-1.62	-
8/27/98	11:41am	-0.88	-2.39	-1.61	-
8/27/98	11:42am	-0.82	-2.70	-1.58	-
8/27/98	2:47pm	0.75	-1.53	-1.16	none
8/27/98	2:48pm	0.78	-1.41	-1.20	-
8/27/98	2:49pm	0.76	-1.26	-1.22	-
8/31/98	10:09am	-1.00	-2.12	-1.96	none
8/31/98	10:10am	-0.80	-2.18	-1.93	-
8/31/98	3:08pm	-0.92	-4.56	-4.38	none (17 more through 3:45pm)
9/01/98	9:35am	1.31	1.31	1.17	none (26 more during day)
9/03/98	3:43pm	0.78	1.05	0.90	none
9/04/98	3:41pm	0.79	-2.33	-1.59	none
9/04/98	3:42pm	0.76	-2.07	-1.57	-
9/11/98	9:47am	0.96	0.44	2.47	none (13 more during day)
9/16/98	3:44pm	0.77	0.52	0.44	none
9/29/98	2:18pm	-1.00	-1.12	-1.26	2:17pm: Fed cut funds rate 25 basis points.
9/29/98	2:19pm	-1.01	-1.31	-1.41	-
9/29/98	2:20pm	-1.31	-1.40	-1.29	-
9/29/98	2:21pm	-1.35	-1.52	-1.18	-
9/29/98	2:22pm	-0.94	-1.49	-1.05	-
10/02/98	10:18am	-0.78	-1.37	-1.65	none
10/02/98	12:42am	0.75	1.26	1.10	none
10/05/98	3:44pm	0.78	0.27	-0.50	none
10/07/98	2:56pm	0.84	-1.83	-1.59	none
10/08/98	11:54am	-0.78	-1.78	-1.76	none (11 more during day)

			Change From Open:		
Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
10/15/98	3:16pm	1.16	3.13	4.49	3:14pm: Fed cut funds rate and discount rate 25 basis
10/15/98	3:17pm	2.17	4.03	4.64	points (not a normal FOMC meeting)
10/15/98	3:18pm	3.50	5.32	4.61	-
10/15/98	3:19pm	4.74	6.44	4.59	-
10/15/98	3:20pm	4.49	6.60	4.67	-
10/15/98	3:21pm	2.92	6.05	4.82	-
10/15/98	3:22pm	0.96	4.99	4.94	-
10/15/98	3:23pm	-1.37	3.95	4.97	-
10/15/98	3:24pm	-2.34	4.11	5.26	-
10/15/98	3:25pm	-2.10	4.50	5.43	-
10/15/98	3:26pm	-1.80	4.25	5.45	-
10/15/98	3:27pm	-0.77	4.21	5.55	-
10/15/98	3:45pm	0.75	5.43	5.25	-
11/17/98	2:20pm	1.07	0.74	0.44	2:15pm: Fed cut funds rate and discount rate 25 basis points.
11/17/98	2:21pm	1.00	0.70	0.54	-
11/17/98	2:22pm	1.17	0.77	0.54	-
11/17/98	2:23pm	0.97	0.65	0.60	-
1/15/99	8:12am	0.78	0.41	1.33	8:10am: Estado said Brazil central bank won't intervene
1/15/99	8:13am	0.79	0.62	1.35	in foreign exchange market.
2/23/99	10:04am	-0.81	-0.48	-0.25	10:00am: Greenspan testimony; economy may be stretched.
2/23/99	10:05am	-0.84	-0.60	-0.39	-
5/12/99	9:48am	-1.51	-1.56	-0.52	?time: Rubin to announce resignation;
5/12/99	9:49am	-2.06	-2.06	-0.51	Summers is successor.
5/12/99	9:50am	-1.68	-1.62	-0.37	-
5/12/99	9:51am	-0.93	-0.99	-0.31	-
5/12/99	9:53am	0.86	-0.70	-0.49	-
5/12/99	9:54am	1.13	-0.92	-0.62	-
5/18/99	2:13pm	-0.76	-0.53	-1.32	2:11pm: Fed let rates stand; adopted tightening bias.
6/16/99	8:31am	0.82	-0.17	-0.37	8:30am: CPI unchanged; core up .1%.
6/16/99	8:32am	0.78	-0.16	-0.35	-
6/30/99	2:17pm	0.83	0.51	1.37	2:15pm: Fed raised funds rate 25 basis points; adapted
6/30/99	2:18pm	1.04	0.66	1.30	neutral bias.
6/30/99	2:19pm	1.34	1.00	1.33	-
6/30/99	2:20pm	1.39	1.10	1.36	-
6/30/99	2:21pm	1.08	1.17	1.39	-
6/30/99	2:22pm	0.94	1.45	1.38	-
8/06/99	8:31am	-0.87	-0.26	-0.28	8:29am: Payrolls up 310,000.
8/06/99	8:32am	-0.79	-0.21	-0.35	-
9/03/99	8:31am	1.04	1.28	1.73	8:30am: Payrolls up 124,000.
9/03/99	8:32am	1.22	1.47	1.77	-
9/03/99	8:33am	1.18	1.43	1.87	-
9/03/99	8:34am	1.15	1.45	1.78	-
9/15/99	8:31am	0.87	0.87	0.77	8:29am: CPI up .3%; core up .1%.
9/15/99	8:32am	0.80	0.86	0.83	-

Day	Current Time	5 Min. Change	Current Time	20 Min. Later	Events
		Change From Open:			
9/15/99	8:33am	0.85	0.88	0.85	-
9/15/99	8:34am	0.83	0.85	0.82	-
10/05/99	2:13pm	-0.98	-0.24	-0.10	2:12pm: Fed let rates stand; adopted tightening bias.
10/05/99	2:14pm	-0.83	-0.09	-0.15	-
10/05/99	2:15pm	-0.85	-0.08	-0.12	-
10/05/99	2:16pm	-0.86	-0.08	-0.24	-
10/13/99	4:25pm	-0.89	-1.15	-1.09	none
10/13/99	4:27pm	0.84	-0.77	-1.08	-
10/15/99	8:32am	-0.85	-1.77	-2.34	8:29am: PPI up 1.1%; core up .8%.
10/15/99	8:33am	-1.01	-1.73	-2.37	-
10/15/99	8:34am	-1.02	-1.76	-2.38	-
10/20/99	4:24pm	-1.17	-0.78	0.43	none
10/20/99	4:30pm	0.82	0.63	0.37	-
10/20/99	4:31pm	1.21	0.58	0.34	-

Notes:
na = no trades during the minute, usually because the market is closed.
CPI = consumer price index; core excludes food and energy.
PPI = producers price index; core excludes food and energy.
Percentage changes are at monthly rates except for the change in the employment cost index, which is at a quarterly rate, and GDP growth, which is at an annual rate.