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The Weekend Effect: Trading Patterns of Individual and Institutional Investors

JOSEF LAKONISHOK and EDWIN MABERLY*

ABSTRACT

In this paper, we document regularities in trading patterns of individual and institutional investors related to the day of the week. We find a relative increase in trading activity by individuals on Mondays. In addition, there is a tendency for individuals to increase the number of sell transactions relative to buy transactions, which might explain at least part of the weekend effect.

RECENT EMPIRICAL RESEARCH HAS documented systematic patterns in mean returns, variability of returns, bid-ask spread, and trading volume. In most cases, the patterns documented are not predicted by any existing theory and are considered quite perplexing. One of the most puzzling anomalies is the so-called weekend effect, the finding that stock returns are significantly negative over the weekend.¹

In this paper, we document some interesting regularities in trading patterns of individual and institutional investors related to the day of the week. We find that NYSE trading volume on Monday is lower than on other days of the week. In contrast, we find that individuals tend to trade more on Mondays, which implies that low NYSE trading volume on Mondays is a result of less trading by institutions. In addition, the increase in activity by individuals on Mondays is not symmetric for buy and sell transactions. There is a tendency for individuals to increase the number of sell relative to buy transactions. This phenomenon, increased selling activity by individuals on Mondays, might explain at least part of the weekend effect.

In a recent paper, Ritter (1988) proposed that the January effect is caused by the buying and selling behavior of individual investors. The regularities in trading patterns of individual and institutional investors that we document in this paper

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¹ Numerous papers have documented and offered various conjectures to explain the weekend effect. The following is a short list: French (1980), Gibbons and Hess (1981), Lakonishok and Levi (1982), Keim and Stambaugh (1984), Jaffe and Westerfield (1985), Harris (1986), Penman (1987), Admati and Pfleiderer (1988b), Porter (1988), and Lakonishok and Smidt (1988). In summary, we are still in search of an explanation. This does not preclude that some of the explanations offered can account for at least part of the phenomenon.

are related to Ritter's hypothesis. Both are based on the buying and selling behavior of investors and suggest that these decisions are related to calendar time. Our empirical evidence suggests that there exists a day-of-the-week effect in the trading pattern of individual investors that is related to the day-of-the-week effect observed for stock prices. We do not claim to show a cause-and-effect relationship between trading and price effects. The empirical evidence that we present in this paper is consistent, however, with selling pressure on Monday providing at least a partial explanation of the weekend effect.² A more powerful test could be performed if intraday trading data of various market participants were made available.

The trading patterns of institutions and individuals are examined by making use of a unique data set: NYSE odd-lot sales and purchases, sales and purchases of cash-account customers of a major brokerage house, and NYSE block transactions.

The remainder of the paper is organized as follows: Section I discusses trading patterns of individuals and institutions; Section II describes the data set; Section III reports the empirical results; and Section IV contains a summary and conclusions.

I. Trading Patterns of Individuals and Institutions

In recent papers, Admati and Pfleiderer (1988a,b) and Foster and Viswanathan (1988) develop models in which the interaction between various traders leads to patterns in trading volume, bid-ask spread, variability, and returns. For example, Admati and Pfleiderer (1988b) show that interaction among potentially informed investors whose private information is short-lived, discretionary liquidity traders, and market makers will lead to patterns in price changes. This pattern is a result of buy and sell volume being concentrated in distinct periods.

In an earlier paper, Osborne (1962) also predicts a pattern in activities of market participants. Osborne predicts that, since individual investors have more time to devote to financial decisions during the weekend, they are relatively more active in the market on Monday. He also predicts that institutional investors are less active in the market on Monday because Monday tends to be a day of strategic planning. A study prepared for the Securities and Exchange Commission (1971) entitled "Institutional Investor Study Report" provides some evidence that there are fewer stocks involved in NYSE block trades on Monday than on other days of the week.

We conjecture that in making sell decisions individuals are basically left on their own and, therefore, there is a tendency toward making these decisions over the weekend. Empirical evidence shows that financial analysts produce substantially more buy recommendations than sell recommendations. A study by Groth,

² Intraday studies provide evidence (see Smirlock and Starks (1986) and Harris (1986)) that the bulk of Monday's decline seems to occur between Friday's close and Monday's open, at least for the more recent years. Information about Monday's trading activity of individual and institutional investors at the open and during the day could help in providing additional insight in explaining the weekend effect.

Lewellen, Schlarbaum, and Lease (1979), based on a sample of 6000 recommendations, reports one sell recommendation for six buy recommendations. In a recent study, Dimson and Marsh (1986) examine recommendations made by U.K. financial analysts and find similar results.³ During the weekend, individual investors have more time to digest information, and, as a result, the propensity to transact on Monday is relatively high. Sell transactions, however, tend to increase by more than buy transactions. There are two additional reasons why the propensity to sell at the beginning of the week might be more pronounced than the propensity to buy. First, an investor might decide to wait for the sell transaction to be executed before he or she engages in a buy transaction. This might be especially true for transactions with limit orders. We are not saying that individual investors must sell stocks in order to buy. There are many ways in which to finance purchases. Our conjecture is that, on average, individuals are selling more and buying less on Monday. The second reason is similar to the "parking of the proceeds" hypothesis suggested by Ritter (1988).

Ritter provides an explanation of why individuals are realizing losses at the end of December but wait until January to reinvest the proceeds. His argument is as follows:

Instead, individuals typically 'park' the proceeds in their brokerage accounts for a period of time, and only later reinvest them. Discussions with stock-brokers indicate that, throughout the year, it is common for individuals who have sold stocks to wait for several days or weeks before reinvesting the proceeds.

Therefore, in our case, the propensity by individuals to sell on Mondays might be higher than the propensity to buy.

We conducted a survey from a number of brokerage houses to obtain information on the time lag between a sell transaction and a subsequent buy transaction in stocks. The sample consisted of 100 customers who did not withdraw funds from their account and who eventually (within one year) reinvested the proceeds in stocks. In only 17 percent of the cases were the sales proceeds reinvested the same day, and in only 22 percent of the cases were the sales proceeds reinvested within the same week. An obstacle to reinvesting the same day might be that before buying the investor wants to know the exact proceeds from the sale. These results show that there is a substantial lag between sell and buy transactions and provide support for Ritter's argument.

Monday's decline in the S&P 500 index over the period 1962–1986 is, on average, equal to 0.12 percent. For a typical stock trading on the NYSE at \$40, this is equivalent to a five cent drop in price, and, for a typical AMEX stock, the drop in price is only two to three cents. Such a drop in price is easily contained

³ There are two reasons why sell recommendations are not produced at the same frequency as buy recommendations. Buy recommendations are, in general, more cost-efficient because every investor can respond to a buy recommendation but only the investors that are holding the particular stock can respond to a sell recommendation. The second reason is that for financial analysts it is important to have a working relationship with a company that they follow. The conventional wisdom is that sell recommendations are not popular with management and therefore should be avoided.

within 12.5 cents, which for most stocks represents one "tick". Including even minimal transaction costs makes it difficult to benefit from this anomaly. It is possible that selling pressure at the beginning of the week precipitated by the trading pattern of individual investors could cause such a small drop in price.⁴

II. Data

The main data employed in this study consist of daily NYSE trading volume (number of shares) and daily odd-lot sales and purchases (number of shares). The data were collected from the Standard & Poor's *Daily Stock Price Record* for the NYSE. This publication started in 1962, and our data cover the period 1962–1986. Odd-lot transaction data are the only data available for a long period of time that record trades by individual investors. Individual investors do not trade only in odd-lots; therefore, we view these data as a proxy for the activity of individual investors.

In addition, we obtained daily dollar volume of sales and purchases of New York Stock Exchange listed common stocks by Merrill Lynch cash-account customers (non-institutional investors who do not have margin accounts) from November 1978 through May 1986. These data were utilized by Ritter (1988) to study the buying and selling behavior of individuals at the turn of the year. Merrill Lynch also provided us with data on NYSE block trades for the period April 23, 1987 to October 3, 1988, where block trades are defined as trades of 10,000 or more shares.

III. Empirical Results

A. Trading Volume by Day of the Week

Table I contains results for NYSE trading volume (in millions of shares) by day of the week. The results are presented for the 25-year period 1962–1986 and for five nonoverlapping, five-year subperiods. The evidence indicates that, for the period 1962–1986, trading volume is lowest on Monday relative to other days of the week. The average trading volume on Monday is 33.77 million shares, versus an average of 37.28 million shares across all days of the week and 38.12 million shares for Tuesday through Friday. This implies a decrease of more than ten percent in trading volume on Monday. Monday's trading volume is significantly different from the trading volume of the remaining four days of the week at the one percent level (based on a *t*-test). The null hypothesis that the mean trading volume is the same across all days of the week *can* be rejected at the five percent level (based on an *F*-test). Excluding Monday, the null hypothesis that the mean trading volume is the same Tuesday through Friday *cannot* be rejected. The results reported for the median trading volume are similar to those reported for the mean.

The results for the five subperiods are, in general, consistent with the total

⁴ Some recent evidence on the price pressure hypothesis is provided by Mikkelsen and Partch (1985) and Asquith and Mullins (1986).

Table I
NYSE Trading Volume in Millions of Shares by Day of the Week

Source: Standard & Poor's *Daily Stock Price Record* for the NYSE, 1962-1986. The *t*-statistic is testing the hypothesis that the mean trading volume on the particular day is equal to the average across the other four trading days of the week. The *F*₁-statistic is testing the hypothesis that the mean trading volume across all days of the week is the same. The *F*₂-statistic is testing the hypothesis that the mean trading volume across the four days of the week, excluding Monday, is the same.

	Monday	Tuesday	Wednesday	Thursday	Friday	All Days	<i>F</i> ₁	<i>F</i> ₂
(Period 1962-1986)								
Mean	33.77	37.93	39.02	38.62	36.89	37.28	3.12 ^b	0.59
Median	16.69	18.58	19.01	18.84	17.88	18.28		
<i>t</i> -statistic	-3.54 ^a	0.62	1.62	1.24	-0.36			
(Period 1982-1986)								
Mean	97.44	108.93	113.82	112.31	107.36	108.09	8.93 ^a	1.88
Median	93.67	105.28	108.69	107.69	101.37	103.62		
<i>t</i> -statistic	-6.05 ^a	0.45	3.08 ^a	2.19 ^b	-0.35			
(Period 1977-1981)								
Mean	36.84	40.41	41.39	41.01	38.80	39.73	4.36 ^a	1.62
Median	35.38	38.23	41.52	38.30	37.44	37.91		
<i>t</i> -statistic	-3.66 ^a	0.86	2.09 ^b	1.58	-1.18			
(Period 1972-1976)								
Mean	16.37	18.34	18.67	18.61	17.55	17.92	7.00 ^a	1.95
Median	15.39	17.09	17.83	17.62	16.34	16.82		
<i>t</i> -statistic	-4.98 ^a	1.27	2.30 ^b	2.06 ^b	-1.14			
(Period 1967-1971)								
Mean	11.29	12.26	12.59	12.30	11.84	12.06	5.10 ^a	1.98
Median	10.41	11.29	11.68	11.91	11.20	11.33		
<i>t</i> -statistic	-3.69 ^a	0.92	2.69 ^a	1.20	-1.22			
(Period 1962-1966)								
Mean	5.19	5.46	5.53	5.52	5.25	5.39	1.79	1.20
Median	4.89	4.99	5.29	5.22	4.99	5.07		
<i>t</i> -statistic	-1.92 ^c	0.59	1.33	1.24	-1.38			

^a Significant at the one percent level for a two-tailed test.

^b Significant at the five percent level for a two-tailed test.

^c Significant at the ten percent level for a two-tailed test.

period; the lowest trading volume always occurs on Monday. In addition, trading volume appears to be slightly higher in the middle of the week, especially on Wednesday. A comparison of Monday versus Tuesday through Friday indicates a tendency for Monday to become less active in the more recent subperiods. For example, in the first subperiod (1962–1966), Monday's trading volume was only four percent below the mean trading volume for all days, versus ten percent in the most recent subperiod. This finding is consistent with lower institutional trading activity on Monday since it is well known that the role of institutional investors in the market relative to individual investors increased substantially over the last ten years. (See Schwartz and Whitcomb (1988).)

B. Trading Activity by Individuals and Institutions by the Day of Week

Table II contains results by day of the week for the relative trading activity of individual investors. Odd-lot sales plus odd-lot purchases as a percentage of NYSE trading volume was used as a proxy for this measure. The results indicate that individual investors are most active in the market on Monday. Over the period 1962–1986, Monday's odd-lot trading was 6.55 percent of NYSE trading volume, versus an average of 5.82 percent for Monday through Friday and an average of 5.64 percent for Tuesday through Friday. On Monday the relative activity of individuals increases by about 15 percent. Based on a *t*-test, activity by individuals on Monday is significantly larger (at the one percent level) than activity on Tuesday through Friday. Tuesday is the only other day on which the activity of individual investors is above the weekly average. The null hypothesis that the mean activity is the same across all days of the week can be rejected at the one percent significance level. Excluding Monday, the null hypothesis of equal means Tuesday through Friday cannot be rejected. The results reported for the median confirm the results presented for the mean.

For each of the five subperiods, the most active day for individuals is always Monday; Tuesday is the next most active day, with activity on Wednesday through Friday below the overall average. In all subperiods, Monday's relative trading volume is statistically above that recorded for Tuesday through Friday. These results are consistent with those reported for the total period.

From Table II, it is apparent that odd-lot transactions have decreased substantially over time. For the subperiod 1962–1966, odd-lot transactions were 15.6 percent of NYSE trading volume; however, they decreased to less than one percent for the subperiod 1982–1986. There are two obvious explanations for the decrease over time in odd-lot transactions. First, the role of institutional investors has increased substantially in the last ten years. Second, the average price of a security listed on the NYSE has not changed much over the period 1962–1986. For example, the average price in 1966 was \$45,⁵ which is higher than today's average price. Thus, in real terms, the average value of a round lot trade was substantially higher in prior years.

Table III contains volume results for NYSE block trades as a percentage of NYSE volume by day of the week. Any implications should be tempered given

⁵ This information is provided in the *New York Stock Exchange Fact Book* (1966).

Table II
NYSE Odd-Lot Sales Plus Odd-Lot Purchases as a Percentage of NYSE Trading Volume
 Source: Standard & Poor's *Daily Stock Price Record* for the NYSE, 1962-1986. The *t*-statistic is testing the hypothesis that odd-lot sales plus odd-lot purchases divided by trading volume on the particular date is equal to the average across the other four trading days of the week. The *F1*-statistic is testing the hypothesis that the trading of individual investors is the same across all days of the week. The *F2*-statistic is testing the hypothesis that the trading of individual investors is the same across all days of the week, excluding Mondays.

	Monday	Tuesday	Wednesday	Thursday	Friday	All Days	F1	F2
(Period 1962-1986)								
Mean	6.55	5.88	5.57	5.52	5.61	5.82	6.46 ^a	1.00
Median	4.26	3.73	3.46	3.51	3.54	3.67		
<i>t</i> -statistic	4.45 ^a	0.39	-1.75 ^c	-2.12 ^b	-1.41			
(Period 1982-1986)								
Mean	0.70	0.63	0.58	0.57	0.60	0.61	70.99 ^a	18.26 ^a
Median	0.69	0.62	0.57	0.57	0.54	0.60		
<i>t</i> -statistic	13.43 ^a	2.08 ^b	-7.11 ^a	-8.48 ^a	-2.55 ^b			
(Period 1977-1981)								
Mean	1.42	1.26	1.17	1.16	1.21	1.24	25.74 ^a	5.00 ^a
Median	1.36	1.21	1.14	1.13	1.17	1.19		
<i>t</i> -statistic	8.52 ^a	0.88	-4.14 ^a	-4.56 ^a	-1.86 ^c			
(Period 1972-1976)								
Mean	4.18	3.69	3.48	3.42	3.54	3.66	22.82 ^a	3.50 ^b
Median	4.45	3.98	3.74	3.70	3.80	3.87		
<i>t</i> -statistic	8.13 ^a	0.53	-3.25 ^a	-4.33 ^a	-2.17 ^b			
(Period 1967-1971)								
Mean	9.32	8.36	7.96	7.89	8.05	8.31	10.52 ^a	1.39
Median	9.16	8.18	7.64	7.64	7.83	7.98		
<i>t</i> -statistic	5.77 ^a	0.31	-2.24 ^b	-2.68 ^a	-1.61			
(Period 1962-1966)								
Mean	17.17	15.91	14.99	14.81	15.12	15.60	45.25 ^a	11.90 ^a
Median	16.87	15.57	14.73	14.33	14.83	15.22		
<i>t</i> -statistic	11.45 ^a	2.45 ^b	-4.85 ^a	-6.03 ^a	-3.64 ^a			

^a Significant at the one percent level for a two-tailed test.

^b Significant at the five percent level for a two-tailed test.

^c Significant at the ten percent level for a two-tailed test.

Table III
NYSE Block Volume as a Percentage of Total NYSE Volume

Block trades are defined as trades of 10,000 or more shares. Source: Merrill Lynch, April 23, 1987–October 3, 1988. The *t*-statistic is testing the hypothesis that block volume as a percentage of total NYSE volume on a particular day is equal to the average across the other four trading days of the week. The *F*₁-statistic is testing the hypothesis that the ratio is the same across all days of the week. The *F*₂-statistic is testing the hypothesis that the ratio is the same across all days of the week, excluding Monday.

	Monday	Tuesday	Wednesday	Thursday	Friday	All Days	<i>F</i> ₁	<i>F</i> ₂
(Period 4/23/87–10/3/88)								
Mean	40.1	41.7	43.3	43.1	43.5	42.3	9.52 ^a	2.91 ^b
Median	40.1	41.8	43.5	43.2	44.1	42.5		
<i>t</i> -statistic	-4.12 ^a	-1.21	1.61	1.57	1.63			

^a Significant at the one percent level for a two-tailed test.

^b Significant at the five percent level for a two-tailed test.

the short time period (about 18 months) analyzed. Consistent with previous results, the day with the lowest activity by institutional investors is Monday. These results indicate that trading activity by institutions on Monday is significantly lower than on other days of the week.

Table IV presents results for odd-lot sales minus odd-lot purchases as a percentage of NYSE trading volume by day of the week. This variable is denoted as *SP*.⁶ For the total period, Monday's *SP* statistic is 0.58 percent, while it is 0.47 percent Monday through Friday and 0.45 percent Tuesday through Friday. The *SP* statistic is 29 percent higher on Monday relative to Tuesday through Friday, and this difference is statistically significant (t -statistic = 4.87). Tuesday is the only other day on which the *SP* statistic is above the average. (According to previous studies, the return on Tuesday is, in general, the second lowest after Monday.) The null hypothesis that the *SP* statistic is equal across all the days of the week can be rejected at a significance level of one percent. Although statistically significant, differences in the *SP* statistic Tuesday through Friday are much less pronounced. As in the previous tables, the results for the median are similar to those for the mean.

The results for the five subperiods are similar to those reported for the total period. In all five subperiods, the *SP* statistic is the highest on Monday, with Tuesday being the only other day of the week with a relatively high *SP* statistic.

In summary, the results in Table IV indicate that there exists more selling activity by individual investors on Monday relative to other days of the week. We tested the null hypothesis that odd-lot sales (purchases) are identical across the days of the week for the entire period. For odd-lot sales, we obtained an F -statistic of 25.0 and, for odd-lot purchases, an F -statistic of 4.9. This result is consistent with our conjecture that odd-lot sales are much more concentrated and odd-lot purchases more evenly distributed across the days of the week.

C. Trading Activity of Individual Investors by Day of the Week—Merrill Lynch Data

The results reported in Table V are based on the transactions of cash-account customers at Merrill Lynch for the period November 1978 through May 1986. In Panel A, we present results for sales plus purchases as a percentage of NYSE trading volume and, in Panel B, sales minus purchases as a percentage of NYSE trading volume. (Note that sales and purchases as reported by Merrill Lynch are in dollar amounts, whereas NYSE trading volume is in number of shares.) The results are similar to those reported for odd-lot transactions. Trading activity and selling pressure by individual investors are the highest on Monday.

If anything, the propensity of individuals to sell stocks on Monday might be underestimated using odd-lot transaction data. For example, based on the results

⁶ The fact that the *SP* variable is positive suggests that individuals were net sellers of stock during this period. This is consistent with the results reported by Goldman Sachs (1989), which show that, except for 1976, the household sector has sold stock on balance in each of the last twenty years. In addition, individuals who start with a round lot investment may end up with an odd-lot because of stock splits, stock dividends, and dividend reinvestment plans. This will also tend to increase the *SP* statistic.

Table IV
NYSE Odd-Lot Sales Minus Odd-Lot Purchases as a Percentage of NYSE Trading Volume
 Source: Standard & Poor's *Daily Stock Price Record* for the NYSE, 1962-1986. The *t*-statistic is testing the hypothesis that odd-lot sales minus odd-lot purchases as a percentage of trading volume on a particular day is equal to the average across the other four trading days of the week. The *F*₁-statistic is testing the hypothesis that the ratio is the same across all days of the week. The *F*₂-statistic is testing the hypothesis that the ratio is the same across all days of the week, excluding Monday.

	Monday	Tuesday	Wednesday	Thursday	Friday	All Days	<i>F</i> ₁	<i>F</i> ₂
(Period 1962-1986)								
Mean	0.58	0.51	0.46	0.42	0.40	0.47	9.58 ^a	4.48 ^a
Median	0.48	0.45	0.42	0.39	0.38	0.42		
<i>t</i> -statistic	4.87 ^a	1.86 ^c	-0.62	-2.50 ^b	-3.41 ^a			
(Period 1982-1986)								
Mean	0.28	0.25	0.22	0.21	0.23	0.24	36.48 ^a	8.66 ^a
Median	0.27	0.24	0.22	0.21	0.22	0.23		
<i>t</i> -statistic	10.02 ^a	1.85 ^c	-4.78 ^a	-5.22 ^a	-3.22 ^a			
(Period 1977-1981)								
Mean	0.51	0.46	0.43	0.42	0.43	0.45	24.24 ^a	6.00 ^a
Median	0.50	0.45	0.42	0.41	0.41	0.44		
<i>t</i> -statistic	8.44 ^a	0.65	-3.45 ^a	-4.24 ^a	-2.92 ^a			
(Period 1972-1976)								
Mean	1.00	0.87	0.80	0.77	0.77	0.84	12.22 ^a	3.81 ^a
Median	0.98	0.85	0.80	0.78	0.78	0.82		
<i>t</i> -statistic	5.48 ^a	1.45	-1.85 ^c	-3.04 ^a	-3.02 ^a			
(Period 1967-1971)								
Mean	0.82	0.74	0.70	0.62	0.51	0.68	3.19 ^b	2.51
Median	0.94	0.84	0.82	0.78	0.60	0.81		
<i>t</i> -statistic	2.21 ^b	1.20	0.31	-0.98	-2.80 ^a			
(Period 1962-1966)								
Mean	0.31	0.24	0.19	0.08	0.08	0.18	0.87	1.04
Median	0.29	0.35	0.35	0.23	0.20	0.28		
<i>t</i> -statistic	1.70 ^c	0.88	0.07	-1.20	-1.25			

^a Significant at the one percent level for a two-tailed test.

^b Significant at the five percent level for a two-tailed test.

^c Significant at the ten percent level for a two-tailed test.

Table V
Transactions of Less Than 10,000 Shares of Cash-Account Customers at Merrill Lynch by Day of the Week

Purchases and sales are expressed in dollar amounts and NYSE trading volume in number of shares, November 1978–May 1986. The *t*-statistic is testing the hypothesis that the mean on the particular day is equal to the average across the other four trading days of the week. The *F*₁-statistic is testing the hypothesis that the mean across all days of the week is the same. The *F*₂-statistic is testing the hypothesis that the mean across the four days of the week, excluding Monday, is the same.

	Monday	Tuesday	Wednesday	Thursday	Friday	All Days	<i>F</i> ₁	<i>F</i> ₂
A. Sales Plus Purchases Divided by NYSE Trading Volume (in Percent)								
Mean	0.8322	0.7498	0.7228	0.7168	0.7347	0.7436	29.32 ^a	3.10 ^b
Median	0.8533	0.7625	0.7266	0.7206	0.7406	0.7386		
<i>t</i> -statistic	10.44 ^a	-0.10	-4.32 ^a	-5.19 ^a	-2.30 ^b			
B. Sales Minus Purchases Divided by NYSE Trading Volume (in Percent)								
Mean	0.1041	0.0882	0.0792	0.0778	0.0749	0.0871	8.06 ^a	2.01
Median	0.0985	0.0875	0.0755	0.0736	0.0678	0.0801		
<i>t</i> -statistic	4.35 ^a	0.31	-2.17 ^a	-2.77 ^a	-3.10 ^a			

^a Significant at the one percent level for a two-tailed test.

^b Significant at the five percent level for a two-tailed test.

presented in Table IV, the *SP* statistic is 20 percent higher on Monday relative to Tuesday through Friday (average of subperiods 1982–1986 and 1977–1981). The comparable statistic based on the data supplied by Merrill Lynch is 30 percent.

IV. Concluding Remarks

In this paper, we document regularities related to trading patterns of individual and institutional investors. We employ unique data: NYSE odd-lot sales and purchases, sales and purchases of cash-account customers of Merrill Lynch, and NYSE block transactions. We find that Monday is the day with the lowest trading volume; that the propensity of individuals to transact on Monday is highest relative to other days of the week and that that of institutions is the lowest; and that the propensity of individuals to sell on Monday is higher than their propensity to buy. For example, our results show that odd-lot sales minus odd-lot purchases relative to total NYSE trading volume is 29 percent higher on Monday than the average for Tuesday through Friday.

These results are consistent with Osborne's argument that there is a day-of-the-week effect in processing information. We do not claim, however, to provide a cause-and-effect relationship between trading and price effects. Recent work by Admati and Pfleiderer (1988a,b) and Foster and Viswanathan (1988) shows that interaction among various traders leads to patterns in trading volume, bid-ask spread, variability, and return. Their theoretical findings are also consistent with our results.

The decrease in the S&P 500 index on Mondays is about 0.12 percent over the period 1962–1986, which is five cents for a typical NYSE stock and two to three cents for a typical AMEX stock. Since the magnitude of these changes is substantially below one tick, the selling pressure that we document on Monday could provide a partial explanation for the minute price drop on Monday.

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