Discussion Paper No. 599

DAY-OF-THE-WEEK EFFECTS ON A THIN STOCK MARKET

by

Tom Berglund*
Eva Liljeblom*
and
Bjorn Wahlroos**

Revised July 1984

---

*Swedish School of Economics and Business Administration, Helsinki, Finland.

**J. L. Kellogg Graduate School of Management, Northwestern University, Evanston, Illinois 60201.

DAY-OF-THE-WEEK EFFECTS ON A THIN STOCK MARKET

1. Introduction

A considerable portion of current empirical asset market research is based on daily return data. This fact alone makes the question of whether these return observations can be considered independent drawings from the same distribution highly relevant. Significant level differences between average returns recorded for different days of the week would, moreover, imply the presence of arbitrage and hence violate the efficient market hypothesis.

Among the first to focus on this question was Fama, who in his 1965 paper reported a variance of weekend returns some 20% higher than the variance of other daily returns. Similar results were also reported by Godfrey, Granger and Morgenstern (1964). While such results did not directly conflict with the notion of an efficient market, more recent studies by Cross (1973), French (1980), and Gibbons and Hess (1981), all uncovering weekend returns significantly lower than the average daily return, were more problematic in this respect.

A common feature of the above studies has been the implicit assumption of immediate settlement of transactions. Recently Lakonishok and Levi (L-L) (1982) pointed out that stock market contracts mostly contain a settlement delay. Their attempt to explain daily return variations found in US data by taking account of the two-day extension of the settlement period associated with Friday transactions, must be considered at least partly succesful.

The present paper focuses on day-of-the-week effects on a markedly thin stock market, the Helsinki Stock Exchange (HESE) in Finland. According to HESE rules, all transactions should be settled within three banking days. While the NYSE five-day rule implies a six day effective settlement delay due to the time required for the actual transfer of funds, the effective delay on the HESE is five banking days. As shown by L-L, a six day effective settlement delay can explain previously observed subnormal weekend and supernormal Friday returns. The same argument implies that a five day effective settlement delay, such as the delay on the HESE, should produce a day-of-the-week return distribution similar to the one expected under immediate settlement. Weekend returns should be higher than average and little variation should be observed in average Tuesday through Friday returns.

Another exceptional feature of the HESE is that the exchange is closed during summer Mondays. Since the banking system together with the rest of the economy remains open during summer Mondays, our data make possible an analysis of the specific effects of the absence of stock market trading on stock returns. More specifically, we will, within the institutional restrictions implied by our data, be able to provide new evidence relating to the trading vs. calendar day hypotheses (French 1980, French and Roll 1984).

Of these, the calendar day hypothesis is treated as a natural prior in an efficient stock market. Since other assets, such as bonds and other debt instruments, yield a calendar-based return, non-calendar based stock returns imply the presence of arbitrage. However, since we are dealing with daily returns, margins are very small indeed. Even for enormous batches, transaction costs are therefore likely to exceed the expected returns on arbitrage operations designed to take advantage of differences in average daily returns. Hence arbitrage opportunities are typically limited to traders who by previous commitment to a given transaction have already sunk (most of) their transaction costs. Whether the volume of such trade is sufficient to eliminate arbitrage must remain an essentially empirical question.

Thin HESE trading presents us with several problems. As shown by Fisher

(1966), absence of trading induces serial correlation in any market index based on the last recorded closings, even where none of the underlying individual returns are serially correlated. Morevover, any seasonal pattern in the underlying returns will be diffused when average returns are measured by changes in such an index (Theobald 1983). In the present paper this problem is dealt with by the consistent omission of all returns other than those over adjacent trading days with actual closings recorded.

Another problem with daily HESE data is that even for frequently traded stocks, individual returns are serially correlated (Berglund, Wahlroos and Ornmark 1983). To control for this, a model which facilitates separation of the component induced by first-order serial correlation from the independent return component, will be developed.

The paper is organized as follows. In section 2 the L-L hypothesis is reformulated and its implications for HESE price behavior are explored in some detail. Section 3 presents the data, and section 4 the method of adjusting for serial correlation. Sections 5, and 6 contain estimation results and a summary, respectively.

2. The Lakonishok-Levi Hypothesis and the HESE

According to HESE rules a transaction is to be settled within three banking days. This is taken to mean that within three banking days from a purchase, the buyer's broker must initiate a transfer of the funds. An additional lag of two banking days is then created by the delay in the transfer itself. According to the transfer rules of the Finnish banking system, the recipient earns interest on the amount transferred starting from the second banking day after the day in which the transfer was initiated. Hence, independently of the weekday of the original transaction, the funds will be available to the seller on the same weekday the following week.

In order to make it possible for his broker to initiate a transfer to the seller on the third day after the transaction, the buyer must transfer the funds from his own to his broker's account on the day following the transaction. Again, independently of the weekday of the transaction, the previous banking day, i.e., the day of the actual transaction, is the last day for which the buyer earns interest on the funds involved. The difference between the present values of the price paid by the buyer and that received by the seller consists of interest earned by the banks on funds in transfer. It should perhaps be pointed out that we are assuming that the transaction costs associated with any other mode of transfer such as payment by check or cash will exceed the interest lost in automatic transfer.

Interestingly enough, this institutional setting precludes the existence of any weekday premium effect such as that predicted for the NYSE by the L-L hypothesis and the six-day settlement delay. Since, in terms of interest lost, the buyer will always have to pay the next (calendar) day, and the seller always receives payment one week from the day of the transaction, the expected stock market returns for any weekday should be exactly the same as the ones expected under immediate settlement.

This would seem to make the HESE exceptionally suitable for an examination of the L-L hypothesis on the weekend effect and the calendar vs. the trading day hypotheses of stock returns. If the low weekend returns typically observed on the NYSE are indeed caused by a L-L-effect due to the six-day settlement delay, returns being calendar-determined, then on the HESE we would correspondingly expect to find a weekend return which (in logarithms) is more than three times the average weekday return. Moreover, if the calendar day hypothesis holds true, we would expect to find no significant differences between Friday through Tuesday returns in the months of September through May when the exchange is open on Mondays, and in summer months when it is not.

3. The Data

The analysis will be based on daily stock returns measured by logarithmic first differences for stocks listed on the HESE during January 1977 through December 1982. On the HESE, stocks are auctioned issue by issue in the same order every trading day. It usually takes between 1 to 2 hours for the auction to cover all the stocks listed. After the conclusion of the price-fixing auction, free trading at prices within the closing bid-asked spread commences. In the present analysis all returns save those based on actual trading prices recorded for adjacent trading days are omitted. Returns over holiday periods are also excluded from the sample. The stock prices from which rates of return are computed are average daily trading prices corrected for dividends, stock dividends and issues. The corrections are based on the assumption that all proceeds are reinvested in the stock from which they derive at no transaction cost. A detailed description of the corrections is given in Berglund, Wahlroos and Grandell (1983).

During the 1977-82 sample period a total of 66 stocks were listed on the HESE. The average annual return to a value-weighted index of stock returns was 14.7 or .038 percent per calendar day. Because of the rather large differences between the sampled stocks, the sample was subdivided into groups of different trading frequency. Some portions of the analysis could feasibly be performed only for the more frequently traded stocks. All averages reported are equally weighted and computed exclusively on returns contained in a given sample.

4. Adjustment for Serial Correlation

The observed serial correlation of HESE stock returns (Berglund, Wahlroos and Ornmark 1983) constitutes a serious problem in that it may distort any pattern present in daily returns. Because of this, stock returns, in addition to being analyzed in raw form, will also be adjusted for serial correlation and subjected to further analysis.

In what follows, a numerical weekday subscript 1,...,5, referring to the day of the week in which a position is closed, will be used. A daily return (r_t, t = 1,...,5) can now be expressed as

$$r_t = E(\bar{r}) + r_{dt} + \varepsilon_t \tag{1}$$

where $E(\bar{r})$ denotes the average expected daily return, r_{dt} denotes the coefficient for the relevant day-of-the-week dummy, and ε_t is an error term.

Since the error term is first order serially correlated, we can write

$$\varepsilon_t = \rho_t(r_{t-1} - E(r_{t-1})) + \mu_t \tag{2}$$

where μ_t is assumed to be i.i.d. Now,

$$E(r_{t-1}) = E(\bar{r}) + r_{dt-1} \tag{3}$$

Inserting (3) into (2), ~~and~~ the results into (1) and rearranging yields

$$r_{et} = k_t + \rho_t r_{et-1} + \mu_t \tag{4}$$

where $r_{et} = r_t - E(\bar{r})$, and $k_t = r_{dt} - \rho_t r_{dt-1}$.

Expression (4) is readily estimable by OLS. The only remaining question is how the daily dummy coefficient r_{dt} can be recovered from the estimate of k_t. From the definition of k_t we however obtain

$$(5) \qquad \begin{aligned} r^*_{d5} &= k^*_5 + \rho^*_5 r^*_{d4} \\ &= k^*_5 + \rho^*_5(k^*_4 + \rho^*_4 r^*_{d3}) \\ &\;\cdot \\ &\;\cdot \\ &= k^*_5 + \\ &\quad \rho^*_5(k^*_4 + \\ &\quad\quad \rho^*_4(k^*_3 + \\ &\quad\quad\quad \rho^*_3(k^*_2 + \\ &\quad\quad\quad\quad \rho^*_2(k^*_1 + \\ &\quad\quad\quad\quad\quad \rho^*_1 r^*_{d5})))), \end{aligned}$$

where an asterisk denotes estimated value.

Solving this for r^*_{d5} we obtain

$$(6) \qquad r^*_{d5} = \frac{1}{1 - \Pi\rho^*_i} \; r^*_{d5} + \rho^*_5(k^*_4 + \rho^*_4(k^*_3 + \rho^*_3(k^*_2 + \rho^*_2(k^*_1))))$$

where Π denotes the product over $i = 1,\ldots,5$.

Estimates of the RHS coefficients of (6) are obtained by running 5 separate OLS regressions of (4), one for each day of the week. Estimates of $r^*_{d1},\ldots,r^*_{d4}$ are obtained in a similar fashion.

5. Results

Initial tests are based on equation (7). This is the equation originally estimated by Gibbons and Hess (1981) from average returns.

$$(7) \qquad r_t = \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 + \varepsilon_t$$

where r_t is the daily return, D_t is a daily dummy, and $\beta_1, \ldots, \beta_5$ are regression coefficients. Note that, due to the suppression of the intercept $\beta_t = r^*_{dt} + E(\bar{r})$.

Table 1 reports the coefficient estimates separately for equally weighted indeces of (1) September through May returns to all 66 stocks, (2) September through May returns to the 36 most traded stocks, (3) June through August returns to all 66 stocks, and (4) June through August returns to the 36 most traded stocks. In cases (3) and (4) the Monday dummy is omitted.

INSERT TABLE 1 HERE

The results of table 1 do not support a calendar day hypothesis. Weekend returns, expected to be three times higher than, exceed the average weekday return by only 20 to 40 percent or .5 to 1.1 std-units during winter months, and by 25 to 50 percent or less than half a std-unit in summer months. Instead, the results may be interpreted to lend some credence to a trading day hypothesis of stock returns. To further test whether weekend returns are significantly different from average weekday returns, all returns were regressed on a weekend dummy. Results reported in table 2 do not permit rejection of the trading day null hypothesis.

INSERT TABLE 2 HERE

Since, however, HESE returns are highly leptokurtic, a calendar day weekend premium may be hidden by a few extremely high positive returns for some other weekday, or for that matter, by a few extremely low weekend returns. To eliminate this possibility we computed the number of occurrences of an index return exceeding the weekday median (excluding weekend returns) for each day of the week. The ratios obtained are reported in table 3.

INSERT TABLE 3 HERE

All of the ratios are close to the 50% expected under the null hypothesis. In fact, none of the ratios pass a 5-percent level binomial test based on the fact that in the absence of any day-of-the-week premia the probability of a randomly chosen return to exceed the median is .5 for each day of the week.

Our next step was to correct for first order serial correlation in the return data. The method by which this was done was extensively described in section 4. The influence of serial correlation on the outcome of previously reported tests is highlighted by the estimated first-order serial correlation coefficients of table 4. These correlations, it should be remembered, are based on returns for adjacent trading days only.

INSERT TABLE 4 HERE

The serial correlation coefficients are indeed highly significant, especially for equally weighted indeces. The Fisher effect is rather dramatically exemplified by the fact that the serial correlation of the average returns is significantly stronger than the serial correlation of individual stock returns as measured by coefficient averages.

Using the estimation procedure described in section 4, estimates of the corrected average weekday specific returns (r^*_{dt}) were computed separately for each of the 36 most traded stocks. These estimates were in turn used to create a new index of individual stock returns corrected for autocorrelation.

$$(8) \qquad \bar{r}_j = \frac{\sum_{i=1}^{h_j} r_{ij} - \rho^*_{it}(r_{eij-1} - r^*_{dit-1})}{h_j} = \frac{\sum_{i=1}^{h_j} r_{ij} - \rho^*_{it}(\varepsilon^*_{ij-1})}{h_j}$$

where r is total, r_e is excess, and r_{dt} is weekday specific return as defined in equations (1) and (4). j is a continuous time index, t = 1,...,5 is a weekday index, and i = 1,...,h_j ≤ 36 is a stock index where h_j is the number of stocks for which a return is recorded in day j.

Several observations are, however, lost due to the correction procedure. For purposes of comparison, table 5 reports estimation results for equation (7) using both an uncorrected index of stock returns and the corrected index defined by (8), derived from the same sample of observations.

INSERT TABLE 5 HERE

The correction for autocorrelation does not alter the conclusions drawn from table 1. The most significant difference between results for corrected and uncorrected data in table 5 is the slightly higher weekend return in the corrected data.

In tables 6 and 7 the sample of the 36 most traded stocks is further divided into three subsamples of 12 stocks each depending on trading frequency. Table 6 reports September through May, and table 7 reports June through August returns.

INSERT TABLES 6 AND 7 HERE

This subdivision reveals an interesting fact. Table 6 shows that for September through May the differences in index returns between different days of the week are almost exclusively due to variation in the returns to the 12 most traded stocks. In this group the variation in average daily returns is larger, and the cross-sectional standard deviations are smaller than in any other subsample. A similar pattern is also present in the summer returns of table 7. Here, however, higher return variability as reflected in the standard deviations requires cautious interpretation.

To test the differences for statistical significance, daily index returns adjusted for serial correlation were again regressed on a weekend dummy. Results are reported in tables 8 and 9.

INSERT TABLES 8 AND 9 HERE

The estimated weekend premium now turns out to be significant for the 12 most traded stocks in both subsamples. For these stocks the weekend premium is also higher for the three-day summer weekends than for the two-day winter ones, as expected. The magnitude of the weekend premium even for the 12 most traded stocks is, however, smaller than that predicted by the calendar day hypothesis. For September through May data the premium, expected to equal twice, amounts to only 120 percent of the average daily return of .038 percent. For summertime data the premium exceeds the average daily return by a factor of two, although by the calendar day hypothesis, it should be three times higher. If weekend premia are compared to actual average weekday returns, they appear even smaller. Even though significantly positive weekend premiums are recorded for the most traded stocks, the results can therefore hardly be viewed as strongly supportive of the calendar day hypothesis.

Finally, to test whether these results are sensitive to assumptions regarding the distribution of daily stock returns, the number of times an individual daily return exceeds the median for all one-day returns was calculated. These results are reported in table 10.

INSERT TABLE 10 HERE

For September through May data the null hypothesis that weekend returns are binomially distributed with p=.5 around the median of all one-day returns is clearly rejected both for the 36 stock and the 12 stock indices. For summertime data the null hypothesis can be rejected only for the 12 most traded stocks. For the 36 stock sample a majority of summertime weekend return observations actually fall below the median weekday return.

The last prediction of the calendar-day hypothesis to be studied is that returns for three-day summer weekends should exceed the returns to the two-day September through May weekends by roughly 50 percent. This proposition can easily be tested on our data. In table 11, weekend, i.e. Monday or, for summer months, Tuesday returns are regressed on a September through May dummy. If the calendar day hypothesis holds, we would expect this dummy to receive a negative coefficient. The same hypothesis also predicts that Friday through Tuesday returns should be the same, independently of whether the exchange is open on Mondays or not. As an additional test, table 11 also reports on regressions of the four-day Friday-Tuesday returns on the September through May dummy. Both tests are of course sensitive to seasonal variation in stock returns, such as that uncovered in Wahlroos-Berglund (1983). To control for this, index returns were also adjusted for the difference in average weekly returns between the September-May and June-August subperiods.

INSERT TABLE 11 HERE

In none of the cases studied are we able to reject the hypothesis that returns are the same. The absence of a Monday premium in summer weekend returns would seem to support the trading-day hypothesis. However, when returns are adjusted for the year-end effect, Monday trading does not add to Friday-Tuesday returns. Even in the absence of the adjustment, September through May returns recorded for Friday-Tuesday periods exceed the corresponding summer returns by only one std-unit.

5. Summary and Conclusions

This paper has reported on several tests of the properties of daily stock returns on the Helsinki Stock Exchange. It was initially found that institutional conditions on the HESE and in Finnish banking would, under what has become known as the calendar day hypothesis, cause the daily returns to exhibit exactly the same properties as those expected in an efficient market with immediate settlement. This fact made it possible to test the joint hypothesis that arbitrage between bond and stock markets is sufficiently strong to force stock returns to be based on calendar rather than trading days, that the market is efficient, and that the settlement structure is L-L with a five day delay.

Initially we found that the average weekday (one-day) return on the HESE was higher than the overall average daily return. While the overall return averaged $.38 \cdot 10^{-3}$, the average weekday return was $.6 \cdot 10^{-3}$ in September through May and $.5 \cdot 10^{-3}$ in June through August. Average daily returns for periods when the exchange has been closed, such as weekend and holidays, are clearly less than weekday returns. We also found that midweek returns, especially for frequently trading stocks, tended to be lower than either Friday or weekend returns. Due to very high variance of daily stock returns, the variation in average returns between different weekdays was not significant however.

Before correction for serial correlation two- or three-day weekend returns were only insignificantly higher than average weekday returns. When the fairly strong autocorrelation was controlled for, weekend 'premia' for frequently trading stocks turned out to pass a 5 percent level test of significance. Controlling for non-normality of the return distribution did not change this outcome. The weekend premia were, however, still much smaller than expected, In September-May the weekend premium on the most frequently traded stocks amounted to roughly three quarters of the average weekday return and barely exceeded the average overall daily return. For less frequently trading stocks average weekend returns exceeded average weekday returns by less than a third of a std-unit in September through May while actually falling below the average weekday return in summer months.

Our results can thus hardly be interpreted as favourable to a calendar day hypothesis of stock returns. They cannot, however, be taken as evidence in favour of a trading day hypothesis either. Trade does not appear to be the generator of stock returns since we fail to record any statistically significant difference in Friday through Tuesday returns between the months of September through May when the exchange is open on Mondays, and June through August when it is not.

Since the hypothesis underlying the testing was a joint one, several explanations to the results obtained can be given. The high variability of daily returns as evidenced in both time-series and cross-sectional variances, cautions against speculation however. As such, the results highlight our lack of a thorough understanding of the microstructure of security markets, especially crucial in dealing with thin exchanges. On these exchanges even seemingly minuscule departures from the efficient form of trading may produce observable, at times significant, departures from the outcomes predicted by mainstream efficient market theory.

References

Berglund, T. and E. Liljeblom (1983), "Return Distributions on a Thin Security Market: Empirical Evidence and a Possible Explanation," Swedish School of Economics and Business Administration, Working Paper No. 104.

Berglund, T., B. Wahlroos and L. Grandell (1983), "The KOP and the UNITAS Indeces for the Helsinki Stock Exchange in the Light of a New Value Weighted Index," Finnish Journal of Business Economics 32, pp. 30-41.

Berglund, T., B. Wahlroos and A. Ornmark (1983), "The Weak Form Efficiency of the Finnish and Scandinavian Stock Exchanges: A Comparative Note on Thin Trading," Scandinavian Journal of Economics 85, No. 4, pp. 521-530.

Cross, F. (1973), "The Behavior of Stock Prices on Fridays and Mondays," Financial Analysts Journal 29, Nov.-Dec., pp. 67-69.

Fama, E. F. (1965), "The Behavior of Stock Market Prices," Journal of Business 38, January, pp. 34-105.

Fisher, L. (1966), "Some New Stock Market Indexes," Journal of Business 39, April, pp. 191-225.

French, K. R. (1980), "Stock Returns and the Weekend Effect," Journal of Financial Economics 7, March, pp. 56-69.

French, K. R. and R. Roll (1984) "Is Trading Self-Generating?", mimeo, Graduate School of Business, University of Chicago.

Gibbons, M. R. and P. Hess (1981), "Day of the Week Effects and Asset Returns," Journal of Business 54, No. 4, pp. 579-596.

Godfrey, M., C. Granger and D. Morgenstern (1964), "The Random Walk Hypothesis and Stock Market Behavior," Kyklos 17, January, pp. 1-30.

Lakonishok, J. and M. Levi (1982), "Weekend Effects on Stock Returns: A Note," Journal of Finance 37, June, pp. 883-889.

Theobald, M. (1983), "The Analytic Relationship Between Intervailing and Notrading Effects in Continuous Time," Journal of Financial and Qunatitative Analysis 18, June, pp. 199-209.

Theobald, M. and V. Price (1983), "Seasonality Estimation in Thin Markets," Proceedings of the European Finance Association's 10th Annual Meeting.

Wahlroos, B. and T. Berglund (1983), "The January Effect on a Small Stock Market: Lumpy Information and Tax Loss Selling," CMSEMS Discussion Paper 579, Northwestern University.

Appendix

As noted in the text, observations are lost due to the sampling procedure employed. Only returns recorded between adjacent days with actual closings recorded are used. Moreover, when returns are corrected for autocorrelation, a third adjacent day is required. If trading is less likely to take place under conditions of rising than under falling prices and if the probability that a trade will take place varies between weekdays, our results may be biased. To check on this, trading frequencies were computed for each stock and day of the week. As can be seen from Table A-1 below, the variation in trading frequency between days of the week is very small.

Table A-1. Average proportion of days on which trading occurs in a stock.

Data	Monday (%)	Tuesday (%)	Wednesday (%)	Thursday (%)	Friday (%)
1. All stocks, Sept.-May	51.8	52.6	54.3	53.8	53.3
2. 36 most traded, Sept.-May	81.0	81.8	83.6	83.3	82.9
- 1-12	96.5	96.7	98.0	97.8	97.5
- 13-24	84.9	86.0	88.1	88.3	87.3
- 25-36	61.7	62.6	64.7	64.0	63.8
3. All stocks, June-August		51.0	51.5	48.9	48.1
4. 36 most traded, June-August		80.0	80.8	77.3	76.6
- 1-12		96.6	96.3	95.6	95.2
- 13-24		83.8	85.0	81.1	79.9
- 25-36		59.5	61.1	55.2	54.8

Table 1. Mean daily returns and standard deviations of the means (in parentheses) for an equally weighted index. All numbers in the table are multiplied by 1000.

Sample	Monday	Tuesday	Wednesday	Thursday	Friday
1. 66 stocks, September-May	0.8586	0.6616	0.3018	0.7005	0.7242
	(.2206)	(.2741)	(.2388)	(.2068)	(.2247)
2. 36 most traded, September-May	0.7447	0.7000	0.4035	0.5783	0.7658
	(.2216)	(.2597)	(.2448)	(.2148)	(.2281)
3. 66 stocks, June-August		0.6333	0.8203	0.2443	0.4411
		(.5117)	(.4420)	(.3972)	(.4271)
4. 36 most traded, June-August		0.6444	0.7506	0.2873	0.2644
		(.5257)	(.4619)	(.3873)	(.3933)

*****

Table 2. Daily returns regressed on a weekend dummy. Coefficient estimates and standard deviations (in parentheses) are multiplied by 1000.

Sample	Intercept	Dummy	F
1. 66 stocks, September-May	0.5946	0.2640	
	(.1167)	(.2642)	0.999
2. 36 most traded, September-May	0.6099	0.1347	
	(.1169)	(.2645)	0.260
3. 66 stocks, June-August	0.5035	0.1299	
	(.2531)	(.5199)	0.062
4. 36 most traded, June-August	0.4405	0.2039	
	(.2528)	(.5194)	0.154

Table 3. The number of times an individual (index) return exceeds the median for all one-day returns. Medians are multiplied by 1000.

Sample		66 Most Traded	36 Most Traded
September-May	Median for Tuesday-Friday	.6943	.6926
	Return exceeds median		
	Monday	53.81%	51.90%
	Tuesday	50.47%	48.11%
	Wednesday	47.44%	48.84%
	Thursday	51.39%	51.85%
	Friday	50.46%	50.93%
June-August	Median for Wednesday-Friday	.3333	.3682
	Return exceeds median		
	Tuesday	48.57%	50.00%
	Wednesday	50.70%	53.52%
	Thursday	50.00%	47.44%
	Friday	48.61%	48.61%

*****

Table 4. Autocorrelation coefficients and standard deviations (in parentheses) for different samples, September-May. All numbers are multiplied by 1000; an (*) indicates that figures in parentheses are cross-sectional standard deviations.

Data	Monday	Tuesday	Wednesday	Thursday	Friday
1. Equally weighted index,	0.5361	0.6928	0.4997	0.3879	0.4485
66 stocks	(.0573)	(.0729)	(.0473)	(.0509)	(.0690)
2. Equally weighted index,	0.5231	0.6467	0.5764	0.4127	0.5353
36 most traded stocks	(.0561)	(.0687)	(.0509)	(.0518)	(.0646)
3. Stock specific returns	0.3273	0.3614	0.3536	0.3091	0.3123
(36 stocks, average)	(.1629)	(.2076)	(.1983)	(.2073)	(.1386)
1-12* (most traded)	0.3867	0.4291	0.4025	0.3144	0.3455
	(.1397)	(.1750)	(.1711)	(.1706)	(.1073)
13-24*	0.3366	0.3152	0.3296	0.3556	0.3137
	(.1209)	(.1484)	(.1427)	(.2190)	(.1612)
25-36* (least traded)	0.2587	0.3400	0.3285	0.2572	0.2776
	(.2031)	(.2584)	(.2676)	(.2330)	(.1454)

Table 5. Daily mean returns and standard deviations of the means for two equally weighted indexes based on the same sample. All numbers are multiplied by 1000.

Sample	Monday	Tuesday	Wednesday	Thursday	Friday
1. 36 most traded, September-May, index uncorrected for auto-correlation	0.7973 (.2319)	0.6563 (.2592)	0.4629 (.2571)	0.4531 (.2215)	0.7425 (.2250)
2. 36 most traded, September-May, index corrected for auto-correlation	0.8462 (.2003)	0.6846 (.2132)	0.4790 (.2064)	0.5139 (.1812)	0.7694 (.1946)

*****

Table 6. Daily mean returns and standard deviations of the means (in parentheses) for equally weighted indeces corrected for autocorrelation, September-May. All numbers are multiplied by 1000.

Sample	Monday	Tuesday	Wednesday	Thursday	Friday
1. 26 most traded	0.8462	0.6846	0.4790	0.5139	0.7694
	(.2003)	(.2132)	(.2064)	(.1812)	(.1946)
1-12 (most traded)	1.1027	0.7266	0.3757	0.5100	0.9212
	(.1841)	(.2310)	(.2072)	(.2216)	(.2047)
13-24	0.8138	0.6385	0.7592	0.5951	0.9377
	(.3172)	(.3366)	(.3471)	(.2712)	(.2717)
25-36 (least traded)	0.4578	0.6670	0.4305	0.3510	-0.0295
	(.4203)	(.2925)	(.3137)	(.2626)	.3720

Table 7. Daily mean returns and standard deviations of the means (in parentheses) for equally weighted indeces corrected for autocorrelation, June-August. All numbers are multiplied by 1000.

Sample	Tuesday	Wednesday	Thursday	Friday
1. 36 most traded	0.6826	0.6592	0.1980	0.3324
	(.4343)	(.2821)	(.3305)	(.2950)
2. 1-12 (most traded)	0.8538	−0.0408	−0.0921	0.1818
	(.5177)	(.3285)	(.3301)	(.3465)
3. 13-24	0.5366	1.5393	0.4217	0.4269
	(.6463)	(.5612)	(.5100)	(.5535)
4. 25-36 (least traded)	0.1679	0.6464	0.3504	0.7944
	(.5310)	(.3333)	(.2896)	(.3944)

*****

Table 8. Daily index returns corrected for autocorrelation, September-May, regressed on a weekend dummy. Coefficient estimates and standard deviations are multiplied by 1000.

Sample	Intercept	Dummy	F
1. 36 most traded	0.6116	0.2346	
	(.0996)	(.2247)	1.090
2. 1-12 (most traded)	0.6332	0.4694	
	(.1053)	(.2376)	3.905
3. 13-24	0.7330	0.0808	
	(.1549	(.3495)	0.053
4. 25-36 (least traded)	0.3528	0.1050	
	(.1675)	(.3788)	0.077

Table 9. Daily index returns corrected for autocorrelation, June-August, regressed on a weekend dummy. Coefficient estimates and standard deviations are multiplied by 1000.

Sample	Intercept	Dummy	F
1. 36 most traded	0.3900	0.2927	
	(.1912)	(.3898)	0.564
2. 1-12 (most traded)	0.0136	0.8402	
	(.2216)	(.4519)	3.458
3. 13-24	0.7825	-0.2459	
	(.3279)	(.6685)	0.135
4. 25-36 (least traded)	0.5902	-0.4223	
	(.2261)	(.4611)	0.839

*****

Table 10. The number of times an individual (index) return exceeds the median for all one-day returns. Medians are multiplied by 1000. An asterisk (*) indicates significance at the 5% level and a double asterisk (**) significance at the 1% level.

Sample		36 Most Traded (corrected for autocorrelation)	12 Most Traded (corrected for (autocorrelation)
September-May	Median for Tuesday-Friday	.6305	.5201
	Return exceeds median		
	Monday	55.71%*	58.10%**
	Tuesday	49.53%	53.30%
	Wednesday	52.09%	50.23%
	Thursday	49.07%	42.13%*
	Friday	49.07%	54.17%
June-August	Median for Wednesday-Friday	.4197	.0567
	Return exceeds median		
	Tuesday	47.14%	60.00%*
	Wednesday	52.11%	54.93%
	Thursday	50.00%	48.70%
	Friday	47.22%	45.83%

Table 11. Weekend returns and Friday-Tuesday returns regressed on a September-May dummy. Coefficient estimates and standard deviations for the uncorrected regressions are multiplied by 1000.

Sample	Intercept	Dummy	F
1. Weekend returns, index uncorrected	0.6353 (.4432)	0.2140 (.5127)	0.174
2. Weekend returns, index corrected for differences in average weekly returns	0.3544 (.1915)	-0.0785 (.2216)	0.125
3. Friday-Tuesday returns, index uncorrected	0.6353 (.7250)	0.8966 (.8388)	1.143
4. Friday-Tuesday returns, index corrected for differences in average weekly returns	0.5218 (.2487)	0.0203 (.2858)	0.005