Pertanika 11(1), 107–114 (1988)

Stock Returns and the Weekend Effect: the Malaysian Experience

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ABSTRAK

Gelagat pasaran pulangan saham dan kesan mingguan telah dikaji. Kajian kami mengesahkan wujudnya kesan mingguan dipasaran saham Malaysia. Secara khususnya, dalam tempoh masa 1975–85, pulangan purata terendah berlaku pada hari Selasa dan kedua-dua pulangan purata pada hari Isnin dan Selasa adalah negatif.

ABSTRACT

Market behaviour of stock returns and the weekend effect were investigated. Our study confirms the presence of the day of the week effect or Monday effect in the Malaysian Stock Market. In particular, over the 1975–1985 periods, the lowest mean return occurred on Tuesday and both Monday and Tuesday returns were negative.

INTRODUCTION

One of the most important areas of academic research in finance over the past twenty years has been on efficient capital markets. An efficient capital market is one in which security prices adjust rapidly to the infusion of new information and current stock prices fully reflect all available information. An efficient market is also one in which prices provide accurate signals for resource allocation, providing a rendezvous in which firms can make production-investment decisions and investors can choose among securities that represent ownership of a firm's activities.

An initial and very important assumption of an efficient market is that a large number of profit maximising participants are concerned with the analysis and valuation of securities and that these participants operate independently of each other. Another assumption is that new information regarding securities comes to the market in a random fashion and independent of one another. A final assumption is that investors adjust security prices rapidly to reflect the effect of new information.

Although the price adjustment mechanism may not be perfect, it is normally assumed to be unbiased (sometimes there is an over-adjustment, sometimes an under-adjustment but we don't know for sure what it will be). Furthermore security prices that prevail at any time should be an unbiased reflection of all currently available information. The previous price of a security should be an unbiased estimate of the current true instrinsic value of the security at that time, given all the information available. Hence the return implicit in the price should reflect the risk involved so that expected return is a function of risk. Although a preponderance of evidence supports the efficient market hypothesis, several studies have provided evidence that is inconsistent with the efficient capital market hypothesis.

Empirical research on capital market documenting size, weekend, January and recently monthly effects on stock returns represent interesting and puzzling empirical evidence on capi-

tal market anomalies. One of the earliest evidence on the capital market anomalies is the Monday or weekend effect.

Stock markets in developed countries like United States, Japan, Australia, United Kingdom and Canada exhibit a strong tendency of seasonal effects: Cross (1973), French(1980), Gibbon and Hess (1981), Keim and Stambaugh (1984), Jaffe and Westerfield (1985a & 1985b), Harris (1986), Smirlock and Starks (1986), Wong and Ho (1986), Condoyanni *et al.* (1987) and Penman (1987) provide interesting empirical evidence that the average return on Friday is abnormaly high while the average return on Monday is abnormaly low. Notably the average return for Monday (close Friday to close Monday) is significantly negative. This so-called day of the week effect or weekend effect is an empirical regularity for which no theoretical explanation has been found.

This paper intends to extend some empirical results found in developed stock markets to a new market place. In particular the paper provides an examination of the day-to-day behaviour of stock market returns for Malaysia.

Review of Literature

Evidence of the day of the week effect or weekend effect on stock prices has generally been obtained from studies of daily close to close returns in broad market indices. These studies have conclusively identified systematic returns pattern – in particular the average return for Monday (close Friday to close Monday) to be significantly negative.

French (1980) studied daily return on the Standard and Poor's Composite portfolio of the 500 largest firms on the NYSE over the period 1953–1977. He concluded that the average returns on Monday was significantly negative overall and during each of the five year sub-periods.

Keim and Stambaugh (1984) doubled the length of period as examined by French (1980). Their results indicated consistently negative Monday returns (close Monday to close Friday) throughout the 55-year period. They found negative Monday returns as early as 1928. They also reported that in periods with Saturday trading, Friday's return was generally lower than that of Saturday.

Rogalski (1984) found the presence of weekend effect using Friday's close to Monday's open. He discovered that all the average negative returns from Friday close to Monday close occurred during the non trading period from Friday close to Monday open. In addition, average trading day returns (open to close) were identical for all days of the week. He also showed that the size-January effect was interrelated with the weekend effect.

In another paper, Jaffe and Westerfield (1985a) found weekly seasonal effects on the Japanese stock markets. They found that the lowest means return in the Japanese stock market occurred on Tuesday and not Monday as in the United States. However, their results were consistent with Keim and Stambaugh's (1984) suggestion that in periods with Saturday trading, Friday's return is generally lower than Saturday's return.

In providing international evidence on the weekend effect, Jaffe & Westerfield (1985b) tabulated similar behaviour of stock returns pattern in the United Kingdom, Japanese, Canadian, and Australian stock markets. In particular they found the lowest means return for the Japanese and Australian stock markets ocurring on Tuesday.

Smirlock and Starks (1986) examined day of the week effect using hourly data of the Dow Jones Industrial Average. They confirmed the results found by Rogalski (1984) which indicated that the weekend effect was due to the negative average returns from Friday close to Monday open.

Harris (1986) found that for large firms, negative Monday returns accrued between Friday close and Monday open; for smaller firms they accrued primarily during the Monday's trading day.

Wong and Ho (1986) examined the Singapore Stock Exchange All Share Index and six sectorial indexes. They found a weekly seasonal pattern similar to those in U.K., U.S. and Canada.

Condoyanni *et al.* (1987) examined the weekend effect on seven stock exchanges namely, New York, Sydney, Toronto, London, Tokyo, Paris and Singapore. They tentatively suggest that the weekend effect which was documented on the seven stock exchanges appear to be the norm rather than the exception in a range of capital markets around the world.

Penman (1987) found that firms tend to

publish bad news earning reports on Mondays, coincident with the negative Monday effect in stock returns.

Suggested Explanation

Previous authors have mentioned settlement procedures and measurement errors as plausible reasons for such behaviour. Settlement procedures refer to delay of cash payment for stock purchase and cash receipt for selling before stock certificates exchange hands. For example, according to Lakonishok and Levi (1981), since 1968 it has been the established practice in the U.S for the settlement on stocks to take place five business days after trading. In an ordinary week that does not contain any holidays, this means that payment is due on the same day of the week as the trade, but in the following week. Cheques normally take one business day to clear from the time they are delivered to the commercial banks to the time that usable funds are debited and credited. This clearing delay means that in weeks without a holiday, stocks purchased on business days other than Friday gives the buyer eight calender days before losing funds for stock purchases. These eight days are the five business days for settlement, the two weekend days and the cheque clearing day. However, payment for stock purchased on Friday will not occur until the second following Monday, ten calendar days after the trade. These ten days are the five business days for settlement, the two weekends and the cheque clearing day. Buyers should therefore be prepared to pay more on a Friday than any other by the amount of the two days interest. The sellers of stock should also require a higher price for stocks sold on a Friday because of the two extra day delay before being paid. Hence the equilibrium expected rate of return on Friday should be higher than on other days. As such, the equilibrium expected rate of return on Monday should be lower by two days of interest than the return expected.

Measurement errors could be caused by upwardly biased quotes at Friday closing price. For example, Keim and Stambaugh (1984) suggest that Friday's closing price might be affected by random errors which are generally positive and Monday's closing price might be affected by generally negative random errors. They found a higher than average negative correlation between returns on these two days for U.S data, thus suggesting a possibility of random type of measurement errors.

Another immediate natural reaction to explain this phenomenon is that firms wait until after the close of the market on Friday to announce bad news. The news is then reflected in the stock price on Monday. The problem is that if the market is efficient, it would anticipate such behaviour and discount Friday prices to account for the bad news.

MATERIALS AND METHODS

Previous studies on the Malaysian capital markets focus on the market efficiency and risk return relationship. These include those of Othman Yong (1987), Neoh (1986), Khoo and Tan (1986), Nassir (1983), Dawson (1981), Cheng (1978), Lim (1980), Laurence (1986) and Barnes (1986). Most of these studies documented weak form efficiency and inefficiency of the Malaysian stock market[1] Little has been done or known on the stock market anomalies particularly the Monday effect. Studies (see Cootner, 1964 and Fama 1965) in daily stock market prices have shown that the behaviour of stock prices closely follow a multiplicative random walk where

$$P_t = P_{t-1}[\exp [E(R_t) + e_t] - D_t$$

where P_t is the price at the end of period t, D_t the dividend paid during period t, $E(R_t)$ the expected return in period t and e_t a serially independent random variable whose expected value is zero. This model is equivalent to

$$R_t = \ln [(P_t + D_t/P_{t-1})] = E(R_t) + e_t$$

where R_t is the continuously compounded return observed in period t.

To test the hypothesis about daily return behaviour, it is assumed that, for any particular day of the week, the expected return is constant

1/ A survey of empirical studies on market efficiency of the KLSE is summarised in Annuar *et. al* (1987)

and that the error term is drawn from a stationary normal distribution. This assumption implies that the expected return for every Friday is the same and that every Friday error term is drawn from the same distribution. This can be summarized as follows:

$$R_t = E(R_d) + e_{dt}$$

where subscript d indicates the day of the week in which the return is observed.

Following the model of daily stock returns, two measures of returns are suggested

$$R_t = \ln (V_t/V_{t-1}) * 100 \quad (1)$$

$$R_t = (V_t - V_{t-1}/V_{t-1}) * 100 \quad (2)$$

where V_t indicates common stock market index at the end of day t.

Since daily returns are used, the difference between the two measures of returns are very close (Refer to Appendix A). We adopted the 2nd. measure in our study.

The main objectives of the paper are to:

a. test the presence of the Monday effect,
b. test whether the average return for each day is significantly different from zero.
c. test differences in mean return across the five trading days.
d. provide day-to-day and year-to-year behaviour of stock return.

Data

The daily returns of the New Strait Times Industrial Index are used. The period of study covered from July 1975 till December 1985. Any return for a period which include a holiday is omitted. For example, if Thursday is a holiday, the return for the succeeding Friday is omitted.

RESULTS AND DISCUSSION

Table 1 shows summary statistics of day-to-day returns over the 10-year period. On average there

Appendix A

Differences in normal and log measure of return

	Obs	Stock Index	Normal[a/] Measure of Return	Log[b/] Measure of Return
1	1381.49			
2	1386.39	1382.47	0.354691	0.354064
3	1388.95	1386.39	0.184648	0.184477
4	1389.03	1388.95	0.005765	0.005765
5	1388.95	1389.05	–0.005765	–0.005765
6	1395.91	1388.95	0.501104	0.499453
7	1404.17	1395.91	0.591729	0.589986
8	1419.77	1404.17	1.110975	1.104849
9	1427.23	1419.77	0.525434	0.524059
10	1425.5	1427.23	–0.121212	–0.121286

a/ $R_t = \dfrac{V_t\ V_{t-1}}{V_{t-1}} \times 100$

b/ $R_t = \log \left[\dfrac{V_t}{V_{t-1}}\right] \times 100$

V_t = value of stock index at period t

TABLE 1

Average percent return from close of the previous trading day to close of the day indicated and its standard deviation (S.D.)

	Monday		Tuesday		Wednesday		Thursday		Friday		All days
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean
1975	0.1224	0.796	0.06351	0.9286	0.0506	0.871	−0.0274	0.6919	−0.0815	0.4805	0.02344
1976	−0.0169	0.8812	−0.0581	0.8298	0.1968	0.477	0.01773	0.4469	0.029	0.3993	0.03271
1977	−0.032	0.376	−0.08711	0.6277	0.1132	0.4134	0.06506	0.2926	0.1095	0.3503	0.03116
1978	0.1428	0.979	0.0182	0.9895	0.01029	0.7426	0.152	0.7026	0.2251	0.7626	0.1100
1979	0.1773	0.73	0.0698	0.4696	0.06156	0.4437	0.1049	0.335	−0.05034	0.6982	0.09282
1980	0.1678	0.8548	−0.0451	0.738	0.4063	0.6831	0.3747	0.672	0.4611	0.6884	0.2747
1981	−0.0744	0.916	−0.1003	0.7697	0.3618	0.6067	0.1526	0.58	0.09538	1.2106	0.09521
1982	−0.3367	1.077	−0.06374	1.029	−0.127	0.8164	−0.07081	0.6357	0.2796	0.8017	−0.00350
1983	−0.042	0.890	0.0306	0.7552	−0.1685	0.7284	0.3064	0.4353	0.3217	0.3756	0.1761
1984	−0.0795	0.9367	−0.1333	0.5512	−0.0391	0.6956	−0.07248	0.4814	0.1236	0.6024	−0.03877
1985	−0.088	0.6693	−0.03498	0.6806	−0.1338	0.6165	0.0543	0.6785	0.7207	0.6175	−0.01554

* Only for the last 6 months for the year.

were more negative returns than positive returns for Monday and Tuesday over the 10-year period. In particular about 70% of the yearly returns on Monday were negative. Similarly for Tuesday, the negative yearly returns constituted 70% over the 10-year period. For all other days, the average yearly returns were about 80% positive and 20% negative. For all days inclusive, the highest return occurred in 1980 which registered a 27.47% return.

Table 2 further provides evidence of the day of the week effect on the Malaysian stock market. Over the 1975–1985 periods, the lowest mean return occurred on Tuesday (–0.036%) and both Monday and Tuesday returns were negative. This results show similarities with that found in the Japanese and Australian stock markets. It was also found that the average return on Friday was highest over all other trading days. (Table 2). Similar results were also found for sub-periods 1976 – 80 and 1981 – 85.

Table 3 shows summaries of statistics to test significance of average returns for each day and cross sectional differences across the five trading days. For the 1975 – 1985 period, t-statistics show that except for Monday and Tuesday, each other days average returns were significantly different from zero. F-value indicates the hypothesis that the mean return across the five trading days equalling to zero can be rejected at the 5% significant level. For sub-period results, t-statistics indicate that the average return for each day is significantly different from zero. F-value further supports the differences in mean return across the five trading days to be significantly different from zero. In particular the negative Monday and Tuesday returns being significantly different from zero conform with earlier studies on the weekend effect in other markets. It is also observed that the negative returns extend till Tuesday which conform to the findings on the Japanese and Australian markets.

CONCLUSION

An investigation into the day of the week effect found Monday and Tuesday returns to be significantly negative. This finding conforms swith that of other markets especially with those of the Japanese and Australian markets. The lowest mean return for the Malaysian market was found to occur on Tuesday and both Monday and Tuesday returns were significantly negative. It was also found that the average return on Friday was highest over all other trading days. This study partly supports the contention that the Malaysian Stock Market is weakly inefficient as documented by Barnes (1986) and Othman (1987). The pre-

TABLE 2

Mean, Standard Deviation Statistics of average per cent return over all trading days

	Monday	Tuesday	Wednesday	Thursday	Friday	All day
1975 – 1985						
Mean	– 0.009496	– 0.03607	0.1254	0.1021	0.1672	0.071
Std. Deviation	0.9653	0.08444	0.7868	0.7275	0.7957	0.369
Observation	476	491	492	498	505	2462
1976 – 1980						
Mean	0.8504	– 0.02023	0.1555	0.1439	0.1739	0.1078
Std. Deviation	0.3478	0.3318	0.2533	0.232	0.265	0.129
Observation	228	233	232	233	236	1162
1981 – 1985						
Mean	– 0.1029	– 0.05967	0.1045	0.0771	0.1899	0.04071
Std. Deviation	0.4	0.334	0.3084	0.251	0.335	0.146
Observation	223	230	231	236	240	1160

TABLE 3

t – Statistic and F Value

	Monday	Tuesday	Wednesday	Thursday	Friday	All days
1975 – 1985						
t-statistic	–0.2146	–0.9466	3.535[a]	3.132[a]	4.724[a]	9.56[a]
$(t = \bar{x} - \mu / s\sqrt{n}$ d.f n–1						
F-value (explained variance) unexplained variance d.f (r–1) numerator r (n–1) denominator	F = 29.29[a]					
1976 – 1980						
t-statistic	3.692[a]	– 0.93	9.35[a]	9.462[a]	10.09[a]	28.48[a]
F-value	86.13[a]					
1981–1985						
t-statistic	– 4.514[a]	– 2.709[a]	5.15[a]	4.72[a]	8.78[a]	9.473[a]
V-Value	1516[a]					

a – sig a – Significant at 5%

sence of the weekend effect implies that the market is not able to absorb all available information to discount share prices on Friday, as we assumed good news is leaked while the market is still open and bad news after the closure of the market which is then reflected on Monday's price. If the market had been efficient then all good and bad news should have been absorbed by the market into stock prices on Friday itself, and if good news exceed the bad news, the returns on stock prices may still be positive; otherwise the returns will be negative.

Based on such return behaviour, one simple investment strategy would be for an individual to purchase the market portfolio every Monday and sell these investments on Friday, holding cash over the weekend. This is currently being observed in our market but further research is warranted to find out whether the transaction costs incurred makes such an investment strategy feasible to investors.

Suggestion for Further Research

Further research on the day of the week effect in the following areas are suggested:

(i) comprehensive examination for other broad market indexes and stock returns of individual companies,

(ii) further evidence on measurement errors and settlement procedures,

(iii) effects of transaction costs on investor investment strategy.

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(Received 27 March, 1987)