CHANGES IN FTSE 100 INDEX AND SHAREHOLDERS' RETURNS

PHILIP McILKENNY, KWAKU K. OPONG and IAIN D. WATSON

University of Ulster at Jordanstown

ABSTRACT

This study examines whether significant excess returns accrue to the shareholders of firms coming in and out of the FTSE around the day of the FTSE Steering Committee Meeting. It appears that there is a gradual rise in cumulative excess returns for firms entering the FTSE about nine days before the Steering Committee Meeting takes place. There is slight positive gain in price for firms entering the FTSE. The findings of the study indicate that firms going out of the FTSE experience negative excess returns three days prior to the Steering Committee Meeting, as well as significant abnormal trading activity on some days following the meeting.

INTRODUCTION

A number of hypotheses are posited to explain a stock's share price and volume reaction as a result of being added (deleted) to (from) an index. The purpose of this paper is to examine price and volume effects associated with changes in the constituents of the Financial Times Stock Exchange 100 (FTSE) announced by the FTSE Steering Committee. The Committee meets quarterly to decide those firms which will be included (excluded) in (from) the FTSE. The FTSE 100 Share Index commenced on 31 December 1983 and comprises the 100 quoted UK companies with the largest market capitalisation. The FTSE accounts for approximately 70 per cent of the total market value of the London Stock Exchange (Sutcliffe, 1993, p. 20). The index is an arithmetic weighted index, where the weights are market capitalisations. The FTSE Steering Committee's decision to add (delete) a firm to (from) the index

is based solely on the firm's market valuation on the day before the meeting takes place.

PRICE AND VOLUME EFFECTS OF INCLUSION IN (EXCLUSION FROM) AN INDEX

Four hypotheses are posited to explain the changes in a stock's price and volume caused by its addition (deletion) to (from) an index. These are the Information Content Hypothesis, Price Pressure Hypothesis, Imperfect Substitutes Hypothesis and Liquidity Hypothesis (Sutcliffe, 1993, p. 18). The Information Content Hypothesis (IC) posits that the inclusion (exclusion) of a firm in (from) an index conveys to the market information about the firm's future prospects (Jain, 1987; Dhillon and Johnson, 1991). The implications of the IC are that trading volume may increase temporarily whilst a permanent and immediate adjustment to share prices is recorded. Whilst the criteria for including (excluding) a firm in (from) the FTSE are informationless, the actual announcement of the addition (deletion) may alter the investors' perception of the share's investment appeal. The Price Pressure Hypothesis (PP) postulates that including (excluding) a firm in (from) an index results in a temporary increase (decrease) in the firm's share price and a temporary increase in the volume of shares being traded (see Pruitt and Wei, 1989; Arnott and Vincent, 1986; Harris and Gurel, 1986; and Shleifer, 1986, among others). However, through time, as investors substitute between shares, the share price of the firm added to the index reverts to its original level (relative to the market). Thus, the share price appreciation (depreciation) is merely temporary. If the addition of a stock to an index results in the institutional investors or index fund managers purchasing the stock, then this increase in demand leads to a rise in both price and volume.

The Imperfect Substitutes Hypothesis (IS) posits that because other assets are not perfect substitutes for the share included in the index, the share price appreciation is permanent. Demand curves have to shift to eliminate excess demand and to reflect a new equilibrium price. Price reversals are therefore not anticipated (see Shleifer, 1986; Dhillon and Johnson, 1991). The Liquidity Hypothesis (LH) suggests that including a share in an index increases its liquidity and this leads to a permanent share price appreciation. The shares are also heavily traded because it is

more closely tracked by analysts and investors. The volume of shares traded therefore increases permanently (Woolridge and Ghosh, 1986). This paper makes a major contribution to the extant literature by providing some evidence regarding the information content hypothesis.[1]

PREVIOUS STUDIES

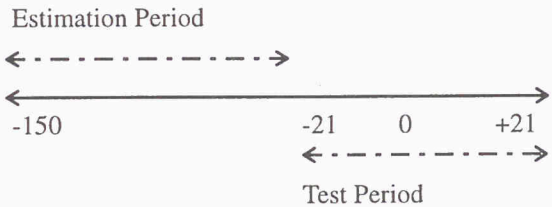
Jain (1987) provides strong evidence that decisions on changes in the composition of Standard and Poors (S&P) have information content. Stocks added to the index generate excess returns of +3 per cent on the first trading day after the announcement, whilst those deleted from the index experienced -1 per cent excess return. Jain suggests that the price reaction occurs because companies included in the S&P's index are perceived to be more stable and less risky. Furthermore, the close monitoring of the constituents of the index may suggest an increased level of quality with relation to the management team. Dhillon and Johnson (1991) support Jain's (1987) conclusions concerning the Information Hypothesis. They find that stocks, bonds and calls for companies added to the S&P 500 have price increases on the date of the announcement while put prices decline. They find no evidence in support of the PP hypothesis either for all sampled firms or for a subset of the sample firms. However, a subset of sampled firms (Dhillon and Johnson, 1991, p. 79) had the tendency of a persistent price decline contrary to the PP hypothesis.

Pruitt and Wei (1989) report that an additional 2 per cent of share capital is bought by institutional investors when a stock is added to the S&P 500 index. Arnott and Vincent (1986) demonstrate that addition (deletion) to (from) the S&P 500 is invariably accompanied by share price appreciation (decline) on the date of addition (deletion) and the appreciation (decline) is sustained over the subsequent week and month. Harris and Gurel (1986) find that prices increase by more than 3 per cent immediately following an addition announcement but that the increase is nearly reversed after two weeks. Harris and Gruel (1986) and Shleifer (1986) suggest that the increase is caused by the increased demand from index funds managers who wish to include the stock in their portfolio. Lamoureux and Wansley (1987) find a temporary increase in both returns and volume and suggest that this is consistent with the PP. Support for the imperfect substitute hypothesis is provided

by Shleifer (1986) and Dhillon and Johnson (1991). The reported results of Woolridge and Ghosh (1986) suggest that both trading volume and price are affected by the revisions in S&P 500. They caution that neither the price pressure hypothesis nor the imperfect substitute hypothesis, by itself, can fully explain their observed results.

RESEARCH DESIGN

This study examines excess returns accruing to shareholders and abnormal volume on the announcement that a particular firm is to be either included in or excluded from the FTSE. Each firm is analysed in two time periods, namely, an estimation period made up of 129 trading days prior to the beginning of the test period and a test period made up of 21 trading days prior to the announcement day and 21 days subsequent to the announcement day.



Normal daily returns were generated using the standard market model (see Fama, 1965).

The market model is given by

$$R_{i,t} = \alpha + \beta(R_{m,t}) + \varepsilon_{i,t} \qquad (1)$$

where

ε_{it} is the excess returns accruing to shareholders in firm i on day t relative to the FTSE Steering Committee's meeting,

$R_{i,t}$ is the daily returns to shareholders adjusted for dividends and other capital changes,

$R_{m,t}$ is the daily returns on the Financial Times All Share Index,

α and β are parameter estimates.

The market model parameters in the estimation period are estimated using the 129 daily price observations (from day -150 to day -22) before the date of the Steering Committee's meeting. Fisher (1966) first pointed out the problems that are caused by non-synchronous prices in the calculation of returns. The importance of this problem becomes amplified with a shorter differencing interval and infrequently traded securities. Scholes and Williams' (1977) procedure for overcoming the problem of non-synchronous trading is adopted in this study.[2]

The daily excess returns were computed as:

$$e_{i,t} = R_{i,t} - (\alpha + \beta(R_{m,t})) \qquad (1b)$$

where $e_{i,t}$, $R_{i,t}$ α, β and $R_{m,t}$ are as defined previously.

The daily excess returns were averaged across the observations according to

$$AR_t = \frac{1}{N}\sum_{i=1}^{i=N} e_{i,t} \qquad (2)$$

Daily averages of excess returns are calculated for each of the days from day -21 to day +21. These averaged daily excess returns were tested for significance according to

$$t_{AR} = \frac{AR_t}{Se_{i,t}} \qquad (3)$$

where $Se_{i,t} = [\text{var}(AR_t)]^{1/2}$ with var estimated over the 129 days, -150 to -22. In addition, cumulative average excess returns (CARs) are calculated over various holding periods from day K to L:

$$CAR_{K,L} = \sum_{t=K}^{t=L} AR_t \qquad (4)$$

where K and L are the beginning and ending day of the holding periods respectively.

The significance of CARs is tested using the following (see Rubac, 1982; Bonnier and Bruner, 1989):

$$t_{CAR_{K,L}} = CAR_{K,L} / S(CAR_{K,L}) \quad (5)$$

where $S(CAR_{K,L}) = [T(var(AR_t)) + 2(T-1)cov(AR_t,AR_{t-1})]^{½}$, with var and cov estimated over the 129 days -150 to -22 and T = L-K + 1.

SAMPLE SELECTION

The Steering Committee of the FTSE meets every quarter to review those firms that constitute the FTSE index. Prior to June 1992, the meetings took place on the third Wednesday of the quarter. Thus there were meetings on the third Wednesday in March, June, September and December. A firm is either deleted or added on the first working day of the following month. Beginning June 1992, the meetings took place on the second Wednesday of the quarter and a firm is deleted or added after seven working days excluding the day of the meeting. For a firm already in the FTSE to be deleted, it must fall below the hundred and tenth in terms of market value of all the UK firms listed on the London Stock Exchange. Conversely, for a firm to be included in the FTSE, it must rise above being the UK's ninetieth largest company. The Steering Committee selects those companies to be added or deleted based on their closing market values on the day preceding the meeting. There are times when firms are deleted from the FTSE because of events like mergers and takeover. Such firms were deleted from the study. The process of including and deleting firms from the FTSE by Steering Committee started in 1984. The sample therefore consists of all those firms that have been deleted from or included in the FTSE from March 1984 to December 1992. The initial sample of firms coming in and out of the FTSE since 1984 totalled 180. The final sample of firms chosen for the study had to satisfy the following criteria:

(1) The deletion or inclusion of a firm from (in) the FTSE must be the result of a firm satisfying the market value criteria.

(2) There must not be any interim or final earnings announcements during the test period.

(3) Daily share price data must be available for both the estimation and test period.

The rationale for criteria (1) and (2) is to exclude other variables that could have confounding effects on the study and for criterion (3) it is to enable the estimation of the parameters for the models used in the study and to standardise data across firms. The date of the announcement that a particular firm is to be included in or deleted from the FTSE is taken as the date that the FTSE Steering Committee's quarterly meeting took place. The final sample that met the criteria above was 70 out of the 180. Of the 70 firms, 30 were additions and 40 were deletions (see Appendix 1).

Dates of the FTSE Steering Committee meetings were obtained from the Stock Exchange Quotations department in London. Share price, dividend and trading volume data were obtained from Datastream International.

TRADING VOLUME ANALYSIS

Because of data constraints, the number of firms used in the volume analysis was 22 for firms coming out of the FTSE and 14 for firms joining the FTSE. The methodology adopted for the analysis of trading volume in the period when firms either come into the FTSE or out of it follows that of Beaver (1968). The methodology is a volume market approach where the volume of shares traded on a particular day for an individual firm is assumed to have a linear relationship with the volume of shares traded on the market as a whole. This method is particularly suitable for firms that are frequently traded. All the firms in the sample are large and therefore it is reasonable to assume that they will not be thinly traded.

The expected volume of shares traded in a particular day is given by:

$$V_{i,t} = \alpha_i + \beta_i V_{m,t} + \varepsilon_{i,t} \qquad (6)$$

where

> $V_{i,t}$ is the percentage of firm *i*'s shares traded in day *t* and $V_{m,t}$ is the percentage of the total London Stock Exchange equity capitalisation traded in day *t*. α_i and β_i are estimates from equation (6) based on 129 daily observations in the estimation period from day -150 to -22.

Abnormal trading volume is therefore given by

$$\varepsilon_{i,t} = V_{i,t} - (\alpha_i + \beta_i V_{m,t}) \quad (7)$$

Abnormal volume is estimated over test period days -21 to +21. Because of the sample size for the volume analysis, normal parametric tests will not be suitable for significance tests. A non-parametric method is therefore adopted following Walmsley and Rees (1993). This method is a non-parametric procedure based on ranks. For each observation, the absolute values of abnormal trading volume for the test period days are ranked. The mean rank for all observations for each day is then computed and tested for significance. A description of the procedure is as follows:

Let $x_{i,t}$ be the rank of abnormal trading volume for firm *i* on day *t*

$$\bar{x}_t = \frac{1}{N} \sum_{i=1}^{i=N} x_{i,t} \quad (8)$$

Under the null hypothesis that successive x_i's are independent,

$$VAR(\bar{x}_t) = \frac{Var(x_{i,t})}{N} \quad (9)$$

Therefore,

$$SE(\bar{x}_t) = \frac{\sqrt{var(x_{i,t})}}{\sqrt{N}} \quad (10)$$

The significance of x_t is tested using the following test statistic:

$$z_t = \frac{(\bar{x}_t - E(\bar{x}_t))}{SE(\bar{x}_t)} \quad (11)$$

$E(\bar{x}_t)$ is the expected mean rank. If ranks were assigned to the abnormal returns in the test period on a random uniform basis, the ranks

will range from 1 to 43, i.e. there are 43 days in the test period. The mean of the rank, $E(\overline{x}_t)$, therefore equals 22.

RESULTS

Table 1 presents the results of mean excess returns for all firms coming into the FTSE during the test period. Column one in **Table 1** represents the day relative to the day that the Steering Committee of FTSE met. Column two in the table represents the mean excess returns for all sampled firms during the test period and column three shows the t-statistics for the values in column two. A most remarkable feature of **Table 1** is the preponderance of negative excess returns from day +10. Significant excess returns are experienced by companies coming into the FTSE on test period days -21, -7, 0, 1, 4 and 7. It must be noted that on all the days that excess returns were statistically significant, the returns were positive. **Table 2** shows the excess returns that accrue to shareholders of firms going out of the FTSE. Significant negative excess returns were experienced 14 trading days before the Steering Committee's meeting as well as on days -3 and 9. Of the four days that excess returns were statistically significant in the test period, three showed negative excess returns with the exception of day +1 which is the day subsequent to the Steering Committee's meeting.

Tables 3 and **4** provide the results of excess returns calculated over three-day holding periods for the firms coming both in and out of the FTSE in the test period. From **Table 4**, none of the holding period excess returns associated with the firms deleted from the FTSE is significant at any reasonable probability level. With respect to those firms included in the FTSE, however, the excess returns over the various holding periods show that significant excess returns are earned not only on the day of the Steering Committee meeting but also for holding period days -21 to -19, -3 to -1 and 7 to 9 (see **Table 3**). One can infer from the figures that firms coming into the FTSE experience positive gains. **Figure 1** provides a plot of the cumulative excess returns for firms entering and leaving the FTSE over the test period reported in **Tables 1** and **2**. It appears that there is a gradual rise in cumulative excess returns for firms entering the FTSE about nine days before the Steering Committee Meeting takes place. The cumulative excess returns

peak to about nine days after the Steering Committee Meeting. It appears from **Figure 1** that the slight positive gain in price for firms entering the FTSE is lost by about 21 days after the Steering Committee Meeting. **Figure 1** appears to indicate that firms leaving the FTSE experience slight negative excess returns. The results above support the IC hypothesis which postulates that the inclusion (exclusion) of a firm in (from) an index conveys information about the firm's future prospects to the market. The inclusion of a firm in an index may provide signals to the market that such a firm is expected to do well in future. The inclusion or exclusion may also have cash-flow consequences which affect price.

Tables 5 and **6** present the results of the trading volume analysis. Because of unavailable volume data for some firms, the samples used in the volume analysis were 14 for those entering the FTSE and 22 for those going out. Pruitt and Wei (1989) report that the inclusion of a firm in the S&P500 leads to an increase in demand for the firm's shares. The reason for the increased demand for the shares is assumed to be the fact that companies included in an index will be more actively followed, leading to an increase in trading of the firm's shares. Results in **Table 5** indicate that there is no significant abnormal trading activity in the shares of firms included in the FTSE. This could be because institutions may already have the right proportion of shares in these firms in their portfolios and therefore they need take no action when the firms are actually included in the FTSE. However, **Table 6** appears to show that significant abnormal trading activity is experienced on some days during the test period for those firms leaving the FTSE. This could also be because shares in firms leaving the FTSE may be held disproportionately to their perceived importance. Fund managers who track the index take action by rebalancing their shareholding in the firms leaving the FTSE. However, no significant abnormal trading activity takes place on the day of the Steering Committee Meeting. It must be borne in mind that the sample size for the volume study is quite small.

Table 1: Excess Returns around FTSE Steering Committee Meeting (Firms coming into the FTSE)

Day	Mean Excess Returns	t-Statistic
-21	0.0063	2.3972**
-20	0.0042	1.5870
-19	0.0017	0.6305
-18	0.0023	0.8618
-17	-0.0030	-1.1368
-16	0.0004	0.1412
-15	-0.0017	-0.6443
-14	0.0022	0.8458
-13	0.0011	0.4244
-12	0.0005	0.2039
-11	-0.0017	-0.6596
-10	0.0020	0.7740
-9	0.0018	0.6949
-8	-0.0028	-1.0676
-7	0.0057	2.1470*
-6	0.0038	1.4368
-5	0.0019	0.7347
-4	0.0021	0.8149
-3	0.0050	1.8868
-2	0.0017	0.6376
-1	0.0042	1.5933
0	0.0056	2.1364*
1	0.0061	2.3028*
2	-0.0032	-1.2284
3	-0.0014	-0.5283
4	0.0063	2.4019**
5	0.0026	0.9988
6	-0.0031	-1.1643
7	0.0066	2.4969**
8	0.0029	1.1129
9	0.0015	0.5543
10	-0.0007	-0.2755
11	-0.0026	-0.9864
12	-0.0032	-1.2158
13	-0.0034	-1.2799
14	-0.0008	-0.2985
15	-0.0031	-1.1724
16	-0.0026	-0.9854
17	0.0008	0.3165
18	-0.0001	-0.0213
19	-0.0022	-0.8358
20	-0.0025	-0.9545
21	0.0023	0.8613

* Significant at 0.05 level

** Significant at 0.01 level.

Table 2: Excess Returns around FTSE Steering Committee Meeting (Firms going out of FTSE)

Day	Mean Excess Returns	t-Statistic
-21	-0.0033	-0.9924
-20	-0.0045	-1.3355
-19	-0.0013	-0.3880
-18	0.0003	0.0973
-17	-0.0021	-0.6367
-16	0.0023	0.6777
-15	-0.0027	-0.7992
-14	-0.0082	-2.4293**
-13	0.0020	0.5874
-12	0.0030	0.8928
-11	-0.0014	-0.4017
-10	-0.0008	-0.2416
-9	0.0038	1.1394
-8	-0.0057	-1.6901
-7	0.0059	1.7424
-6	-0.0010	-0.2985
-5	0.0032	0.9537
-4	-0.0019	-0.5762
-3	-0.0106	-3.1433**
-2	-0.0010	-0.2838
-1	0.0003	0.1007
0	-0.0009	-0.2726
1	0.0066	1.9471*
2	-0.0034	-1.0096
3	0.0022	0.6455
4	0.0036	1.0600
5	0.0020	0.5786
6	-0.0023	-0.6856
7	0.0000	0.0061
8	-0.0017	-0.4890
9	-0.0069	-2.0537*
10	0.0055	1.6293
11	-0.0016	-0.4872
12	0.0027	0.8024
13	0.0016	0.4710
14	-0.0043	-1.2782
15	-0.0008	-0.2235
16	0.0037	1.0945
17	0.0039	1.1598
18	0.0037	1.0957
19	0.0027	0.7918
20	-0.0011	-0.3393
21	0.0042	1.2319

* Significant at 0.05 level

** Significant at 0.01 level.

Figure 1: Cumulative Abnormal Returns Additions and Deletions to FTSE

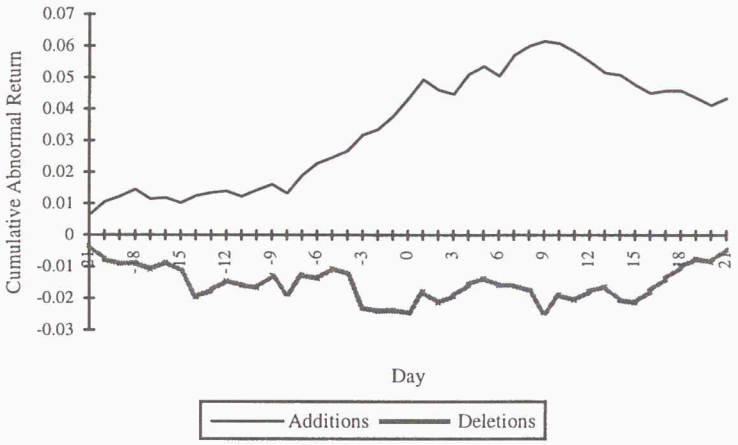


Table 3: Holding Period Excess Returns around FTSE Steering Committee Meeting (Firms coming into FTSE)

Return Period (DAY K–L)	Mean Excess Return	t-Statistic
-21, -19	0.0122	2.6720**
-18, -16	0.0004	-0.0774
-15, -13	0.0017	0.3624
-12, -10	0.0008	0.1843
-9, -7	0.0047	1.0273
-6, -4	0.0079	1.7292
-3, -1	0.0109	2.3843**
0	0.0056	2.1336*
1, 3	0.0014	0.3162
4, 6	0.0059	1.2949
7, 9	0.0110	2.4111**
10, 12	-0.0065	-1.4347
13, 15	-0.0073	-1.5928
16, 18	-0.0018	-0.3996
19, 21	-0.0024	-0.5380

** Significant at 0.01 level
* Significant at 0.05 level.

Table 4: Holding Period Excess Returns around FTSE Steering Committee Meeting (Firms going out of FTSE)

Return Period (DAY K–L)	Mean Excess Return	t-Statistic
-21,-19	-0.0092	-1.3632
-18,-16	0.0047	0.0694
-15,-13	-0.0089	-1.3257
-12,-10	0.0008	0.1252
-9, -7	0.0040	0.5982
-6, -4	0.0003	0.0396
-3, -1	-0.0112	-1.6696
0	-0.0009	-0.2838
1, 3	0.0053	0.7945
4, 6	0.0032	0.4783
7, 9	-0.0085	-1.2731
10, 12	0.0066	0.9760
13, 15	-0.0035	-0.5173
16, 18	0.0113	1.6815
19, 21	0.0057	0.8455

Table 5: Mean Abnormal Volume and Rank of Firms coming into the FTSE 100

Day	Mean Abnormal Volume	Mean Rank	t-Statistic	N = 14
-21	-0.0050	19.0000	-0.9005	
-20	-0.0081	22.7143	0.2291	
-19	-0.0047	22.9286	0.3345	
-18	-0.0040	25.6429	0.9745	
-17	-0.0025	17.4167	-1.3824	
-16	-0.0029	21.9286	-0.0215	
-15	-0.0011	25.3571	0.9985	
-14	-0.0021	21.2857	-0.2121	
-13	0.0003	22.3571	0.1077	
-12	0.0009	20.0833	-0.4671	
-11	-0.0019	18.0000	-1.2834	
-10	-0.0040	19.7857	-0.8823	
-9	-0.0019	27.2143	1.8758	
-8	-0.0051	24.1429	0.7828	
-7	0.0023	17.2857	-1.5691	
-6	-0.0070	18.5000	-1.2385	
-5	-0.0027	22.7143	0.2172	
-4	-0.0045	21.3571	0.1876	
-3	-0.0071	20.0000	-0.5729	
-2	-0.0037	18.6429	-1.0196	
-1	-0.0018	18.0714	-1.1890	
0	-0.0068	20.4286	-0.4739	
1	-0.0086	25.0000	0.8018	
2	-0.0099	24.4615	0.7173	
3	-0.0072	18.1538	-1.5044	
4	-0.0049	22.5385	0.1653	
5	-0.0020	19.6429	-0.6586	
6	0.0016	18.9286	-0.7497	
7	-0.0026	21.2500	-0.1828	
8	-0.0012	17.9091	-1.3198	
9	0.0026	21.8462	-0.0516	
10	0.0010	20.6000	-0.3625	
11	0.0011	17.2727	-1.3553	
12	-0.0017	21.0769	-0.2683	
13	0.0013	18.2857	-1.1213	
14	-0.0039	24.9231	1.2232	
15	-0.0084	16.7273	-1.4929	
16	-0.0067	20.5714	-0.4031	
17	-0.0049	28.0714	1.8525	
18	-0.0045	22.2143	0.0651	
19	-0.0025	19.3571	-1.1916	
20	-0.0036	18.2857	-1.0886	
21	-0.0038	23.7143	0.5477	

Notes: Expected mean ranking = 22
N = number of firms in the sample.

Table 6: Mean Abnormal Volume and Rank of Firms going out of FTSE 100

Day	Mean Abnormal Volume	Mean Rank	t-Statistic	N = 22
-21	0.0017	24.6818	1.0045	
-20	0.0012	20.9091	-0.3780	
-19	0.0009	22.2273	0.0978	
-18	0.0013	23.6818	0.7021	
-17	-0.0020	15.4375	-2.4893**	
-16	0.0001	20.3636	-0.6006	
-15	0.0009	20.7727	-0.4468	
-14	0.0033	26.1818	1.5265	
-13	0.0009	20.5909	-0.5808	
-12	0.0009	16.7619	-2.0412*	
-11	-0.0005	17.2273	-1.8786	
-10	0.0008	23.3636	0.4824	
-9	0.0012	24.3182	1.2271	
-8	0.0005	23.7727	0.8015	
-7	0.0012	19.6364	-1.0969	
-6	-0.0008	22.3636	0.1604	
-5	-0.0008	19.4091	-0.9675	
-4	-0.0002	16.3636	-2.0001*	
-3	0.0021	25.8636	1.7329	
-2	0.0003	22.3636	0.1533	
-1	-0.0005	21.9091	-0.0439	
0	-0.0005	19.7273	-0.7708	
1	0.0012	25.2727	1.1212	
2	0.0015	21.6500	-0.1244	
3	0.0008	15.3500	-2.9443**	
4	-0.0001	18.5000	-1.5765	
5	0.0007	19.1818	-1.0299	
6	0.0002	21.2727	-0.2607	
7	0.0005	22.4444	0.1711	
8	0.0018	18.0625	-1.2926	
9	0.0027	15.5714	-2.4752**	
10	0.0023	23.7222	0.4909	
11	0.0027	20.6842	-0.4171	
12	0.0004	20.7727	-0.5875	
13	0.0021	24.6364	1.4444	
14	0.0005	19.1429	-1.0379	
15	-0.0005	18.5789	-1.2444	
16	-0.0016	22.9091	0.4146	
17	-0.0011	25.0952	1.3997	
18	-0.0004	16.0952	-2.3411**	
19	-0.0005	21.4091	-0.2074	
20	0.0013	24.7273	0.9794	
21	0.0030	24.1364	0.8012	

* Significant at 0.05 level

** Significant at 0.01 level

Note: Expected mean rank = 22; N = number of firms in the sample.

CONCLUSION

This study has examined whether significant excess returns accrue to the shareholders of those firms coming in and out of the FTSE. The results of the study indicate that firms going out of the FTSE experience negative excess returns three days prior to the FTSE Steering Committee Meeting as well as significant abnormal trading activity on some days following the Steering Committee Meeting. It appears that firms coming into the FTSE experience significant price activity on the day of the Steering Committee Meeting. This study does not support the Liquidity Hypothesis which suggests that there is significant trading activity for firms entering FTSE. Any interpretation of the volume analysis should, however, be made with care because of the small sample size. This study calls for more research on the effects of the inclusion or exclusion of firms in the FTSE especially on the price pressure and liquidity hypotheses.

ACKNOWLEDGEMENTS

An earlier version of this paper was presented at the Irish Accounting and Finance Association Annual Conference, University College Dublin, 1/2 April 1993 and the Market Based Accounting Research Conference, University of Manchester, 9/10 September 1993. This paper has benefited from the comments of participants at the above conferences. All errors and omissions are entirely ours.

NOTES

1 Investigation of the price pressure hypothesis and imperfect substitutes hypothesis and liquidity hypothesis require a longer event window. This was pointed out to us by the referees, for which we are grateful. Because of data availability, the three hypotheses cannot be examined in the present study.

2 It is assumed that beta is stationary over time which may not be the case. However, Chandra, Moriarity and Willinger (1990) suggest in their simulation analysis that researchers need not be overly concerned with parameter non-stationarity when using the market model in event studies.

APPENDIX 1

	Additions	Deletions
1984	Lonhro Granada	Scottish & Newcastle Barratt Development
1985	Abbey Life Ranks Hovis McD Argyll	Lonhro Ranks Hovis McD Dalgety RMC Berisford Int.
1986	Coats Viyella Unigate Burmah Saatchi & Saatchi Hillsdown	Smith Industries Bank of Scotland Abbey Life Harrisons & Crosfield
1987	Rothmans Hammerson Argyll	Saatchi & Saatchi Unigate GKN Scottish & Newcastle Lucas Burmah
1988	Lonhro Lucas	Dixons Group
1989	Harrisons & Crosfield Carlton Communications Standard & Chartered	Storehouse Amstrad Williams Holdings Next
1990	Harrisons & Crosfield Anglian Water Willis Corroon	Cookson Burton Group Carlton Communications
1991	Northern Foods Rentokil	Standard & Chartered Ultramar Ranks Hovis McD Harrisons & Crosfield Hammerson Dalgety
1992	Tomkins MB-Caradon Laporte ECC Siebe Coats Viyella Royal Insurance	Asda Lucas Lonhro Trafalgar House Royal Insurance Tarmac Laporte BICC

REFERENCES

Arnott, R.D. and Vincent, S.J. (1986). 'S&P Addition and Deletions: A Market Anomaly', *Journal of Portfolio Management*, Vol. 13, No. 1, Fall, pp. 29–33.

Beaver, W.H. (1968). 'Information Content of Annual Earnings Announcements', *Journal of Accounting Research* (Supplement), pp. 67–92.

Bonnier, K. and Bruner, R.F (1989). 'An Analysis of Stock Price Reaction to Management Change in Distressed Firms', *Journal of Accounting and Economics*, No. 11, pp. 95–106.

Chandra, R., Moriarity, S. and Willinger, G.L. (1990). 'A Re-examination of the Power of Alternative Return-generating Models and the Effect of Accounting for Cross-sectional Dependencies in Event Studies', *Journal of Accounting Research*, No. 28, pp. 93–115.

Dhillon, J. and Johnson, H. (1991). 'Changes in the Standard and Poors' List', *Journal of Business*, Vol. 64, No. 1, pp. 75–85.

Fama, E. (1965). 'The Behaviour of Stock Market Prices', *Journal of Business*, January, pp. 34–105.

Fisher, L. (1966). 'Some New Market Indexes', *Journal of Business*, Vol. 39, No. 1, Pt. 2, January.

Harris, L. and Gurel, E. (1986). 'Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures', *Journal of Finance*, Vol. 41, No. 4, September, pp. 815–829.

Jain, P.C. (1987). 'The Effect on Stock Price of Inclusion in or Exclusion from the S&P 500', *Financial Analysts Journal*, No. 43, pp. 58–65.

Lamoureux, C.G. and Wansley, J.W. (1987). 'Market Effects of Changes in the Standard & Poors' 500 Index', *The Financial Review*, Vol. 22 No. 1, February.

Pruitt, S.W. and Wei, K.C. (1989). 'Institutional Ownership and Changes in the S&P 500', *The Journal of Finance*, Vol. 44, No. 2, June.

Ruback, R. (1982). 'The Effect of Discretionary Price Control Decisions on Equity Values', *Journal of Financial Economics*, Vol. 10, pp. 46–60.

Scholes, M and Williams J. (1977). 'Estimating Betas from Non-synchronous Data', *Journal of Financial Economics*, December, pp. 309–327.

Shleifer, A. (1986). 'Do Demand Curves for Stocks Slope Down?', *Journal of Finance*, July, pp. 579–590.

Sutcliffe, C.M.S. (1993). *Stock Index Futures — Theories and International Evidence*, London: Chapman and Hall.

Walmsley, T. and Rees, W. (1993). 'The Information Content of Analysts Meetings: Trading Activity and Market Spread', Market Based Accounting Research Conference, University of Manchester, September.

Woolridge, J.R. and Ghosh, C. (1986). 'Institutional Trading and Security Prices: The Case of Changes in the Composition of the S&P 500 Index', *The Journal of Financial Research*, Vol. 9, No. 1 Spring.