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# Stock Returns, Earnings Classification and Persistence

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# Stock Returns, Earnings Classification and Persistence

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**JEL Classification:** M41

Table 1
Extent of Extraordinary Items ($EI$) Reporting for the period 1960-1987

| Year | Total number of firms | +$EI$ | −$EI$ | $EI$ | Total % of firms reported $EI$ |
|---|---|---|---|---|---|
| | | STUDY SAMPLE | | | CICA Survey (300-325 firms) |
| | | % of firms reported | | | |
| 1960 | 57 | 3.51 | 0.00 | 3.51 | N/A |
| 1961 | 58 | 5.17 | 0.00 | 5.17 | N/A |
| 1962 | 64 | 7.81 | 1.56 | 9.37 | N/A |
| 1963 | 70 | 4.29 | 1.43 | 5.72 | N/A |
| 1964 | 73 | 1.37 | 0.00 | 1.37 | N/A |
| 1965 | 75 | 1.33 | 1.33 | 2.66 | N/A |
| 1966 | 75 | 2.67 | 2.67 | 5.34 | N/A |
| 1967 | 75 | 13.33 | 1.33 | 14.66 | N/A |
| 1968 | 75 | 17.33 | 2.67 | 20.00 | N/A |
| 1969 | 75 | 24.00 | 9.33 | 33.33 | 28 |
| 1970 | 75 | 18.67 | 21.33 | 40.00 | 36 |
| 1971 | 75 | 22.67 | 12.00 | 34.67 | 35 |
| 1972 | 75 | 21.33 | 14.67 | 36.00 | 38 |
| 1973 | 75 | 24.00 | 6.67 | 30.67 | 37 |
| 1974 | 75 | 26.67 | 8.00 | 34.67 | 34 |
| 1975 | 75 | 21.33 | 16.00 | 37.33 | 33 |
| 1976 | 75 | 28.00 | 6.67 | 34.67 | 38 |
| 1977 | 75 | 20.00 | 16.00 | 36.00 | 32 |
| 1978 | 75 | 29.33 | 8.00 | 37.33 | 38 |
| 1979 | 75 | 28.00 | 8.00 | 36.00 | 34 |
| 1980 | 75 | 22.67 | 14.67 | 37.34 | 31 |
| 1981 | 75 | 32.00 | 13.33 | 45.33 | 36 |
| 1982 | 75 | 18.67 | 18.67 | 37.34 | 32 |
| 1983 | 75 | 22.67 | 8.00 | 30.67 | 36 |
| 1984 | 75 | 17.33 | 14.67 | 32.00 | 37 |
| 1985 | 75 | 17.33 | 20.22 | 37.33 | 38 |
| 1986 | 75 | 25.33 | 17.33 | 42.66 | 44 |
| 1987 | 75 | 22.67 | 14.66 | 37.33 | 39 |

Table 2
Summary of firm specific time series structure identification

| ARIMA models | | Earnings before extraordinary items BEPS | Earnings after extraordinary items AEPS | Extraordinary Items EI |
|---|---|---|---|---|
| Random | $x_t = \alpha + \varepsilon_t$ | 11 | 19 | 54 |
| AR1 | $x_t = \alpha + \phi x_{t-1} + \varepsilon_t$ | 44 | 35 | 14 |
| Random walk | $x_t = \alpha + x_{t-1} + \varepsilon_t$ | 10 | 9 | 0 |
| MA1 | $x_t = \alpha + \varepsilon_t - \theta \varepsilon_{t-1}$ | 6 | 6 | 7 |
| AR2 | $x_t = \alpha + \phi_1 x_{t-1} + \phi_2 x_{t-2} + \varepsilon_t$ | 3 | 4 | 0 |
| AR3 | $x_t = \alpha + \phi_1 x_{t-1} + \phi_2 x_{t-2} + \phi_3 x_{t-3} + \varepsilon_t$ | 0 | 1 | 0 |
| MA2 | $x_t = \alpha + \varepsilon_t - \theta_1 \varepsilon_{t-1} - \theta_2 \varepsilon_{t-2}$ | 1 | 1 | 0 |
| | Total | 75 | 75 | 75 |

Table 3

Summary statistics of persistence measures

Panel A : $t$-test, $H_0 : \mu = 0$ $vs.$ $H_1 : \mu \neq 0$

|  | Mean | Std.Dev | $t$-ratio | p-value |
|---|---|---|---|---|
| $APM_{FS}$ | 2.707 | 2.962 | 7.91 | .000 |
| $BPM_{FS}$ | 3.241 | 3.041 | 9.23 | .000 |
| $BPM_{210}$ | 6.676 | 4.029 | 14.35 | .000 |
| $BPM_{FS} - APM_{FS}$ | 0.535 | 1.854 | 2.50 | .015 |
| $BPM_{210} - BPM_{FS}$ | 3.434 | 3.915 | 7.60 | .000 |

Panel B : Pearson Correlation's Coefficients

|  | $APM_{FS}$ | $BPM_{FS}$ |
|---|---|---|
| $BPM_{FS}$ | 0.810 | |
| $BPM_{210}$ | 0.372 | 0.414 |

$APM_{FS}$, produced from firm specific ($FS$) ARIMA model, is the persistence measure for $AEPS$, earnings after extraordinary items.

Similarly $BPM_{FS}$ is the persistence measure for $BEPS$, earnings before extraordinary items produced from firm specific($FS$) ARIMA models.

Whereas $BPM_{210}$ is the persistence measure for $BEPS$ produced from a standard ARIMA(2,1,0) model.

Table 4
Explanatory power, adjusted $R^2$, of returns-earnings regression of different window lengths

| | Not adjusted for persistence | | | Adjusted for persistence | | | | |
| | | | | Firm specific ARIMA model | | | ARIMA(2,1,0) | |
| | $AES$ | $BES + EI$ | $BES$ | $AES^a$ | $BES^a + EI$ | $BES^a$ | $BES^a + EI$ | $BES^a$ |
|---|---|---|---|---|---|---|---|---|
| $Model$ | $M1$ | $M2$ | $M3$ | $M4$ | $M5$ | $M6$ | $M5'$ | $M6'$ |
| $CAR_{-5,+5}$ | 0.4 | 8.3 | 9.6 | 0.7 | 7.6 | 8.8 | 10.1 | 11.3 |
| $CAR_{-2,+2}$ | 1.0 | 5.6 | 6.6 | 1.6 | 6.3 | 6.9 | 6.5 | 7.3 |
| $CAR_{-1,+1}$ | 6.3 | 16.7 | 17.4 | 7.0 | 16.3 | 16.1 | 19.8 | 19.8 |
| $CAR_{0,+1}$ | 5.8 | 13.7 | 13.9 | 6.3 | 12.2 | 11.4 | 17.2 | 16.6 |
| $CAR_{0,+1}$ | 4.8 | 6.4 | 5.9 | 5.0 | 9.5 | 8.1 | 7.5 | 6.3 |
| $CAR_{0,+2}$ | 2.0 | 2.0 | 3.2 | 2.2 | 4.1 | 5.1 | 2.1 | 3.2 |

All $R^2$s are in percentages.

$CAR_{n1,n2}$ are abnormal stock returns cumulated over the period $n1$ to $n2$ days around earnings announcement date.

$AES$, $BES$ and $EI$ are respectively earnings surprises for $AEPS$ and $BEPS$ (earnings after and before extraordinary items) and extraordinary items.

Superscript '$a$' indicates adjusted for earnings persistence.

Table 5

Detailed results of returns-earnings regression for $CAR_{-1,+1}$

Panel A : Not adjusted for earnings persistence

| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 AES$ | | | $F$ | p-value | adj$R^2$ |
|---|---|---|---|---|---|---|---|---|
| | .0055 | | .0087 | | | 6.00 | .017 | 6.3% |
| | (1.53) | | (2.45) | | | | | |
| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 BES$ | $+$ | $\beta_2 EI$ | | | |
| | .0045 | | .0416 | | .0029 | 8.44 | .001 | 16.7% |
| | (1.33) | | (3.98) | | (0.67) | | | |
| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 BES$ | | | | | |
| | .0048 | | .0422 | | | 16.55 | .000 | 17.4% |
| | (1.41) | | (4.07) | | | | | |

Panel B : Adjusted for earnings persistence

| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 AES^a$ | | | $F$ | p-value | adj$R^2$ |
|---|---|---|---|---|---|---|---|---|
| | .0058 | | .0039 | | | 6.61 | .012 | 7.0% |
| | (1.65) | | (2.57) | | | | | |
| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 BES^a$ | $+$ | $\beta_2 EI$ | | | |
| | .0034 | | .0145 | | .0047 | 8.19 | .001 | 16.3% |
| | (0.97) | | (3.92) | | (1.08) | | | |
| $CAR_{-1,+1} =$ | $\alpha$ | $+$ | $\beta_1 BES^a$ | | | | | |
| | .0037 | | .0145 | | | 15.18 | .000 | 16.1% |
| | (1.09) | | (3.90) | | | | | |

$t$-ratios are in parentheses.

$AES$, $BES$ and $EI$ are, respectively, earnings surprise for earnings after and before extraordinary items and extraordinary items.

Superscript '$^a$' indicates adjusted for earnings persistence using persistence maesure computed from parameter estimated from firm specific ARIMA model.

Table 6
Results of returns-earnings regressions in respect of partitioned sample

| | N | $CAR_{-1,+1} = \alpha + \beta ES + \varepsilon$ | | | | | $CAR_{-1,+1} = \alpha + \beta ES^a + \varepsilon$ | | | | |
| | | $\alpha$ | $\beta$ | F | p-value | adj$R^2$ | $\alpha$ | $\beta$ | F | p-value | adj$R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel A : Sample of firms reporting zero extraordinary items | | | | | | | | | | | |
| Entire group | 43 | .0075 (1.99) | .0638 (4.16) | 17.32 | .000 | 28.0% | .0070 (1.88) | .0184 (4.39) | 19.26 | .000 | 30.3% |
| Low $PM$ group | 21 | .0085 (1.26) | .0596 (2.84) | 8.06 | .010 | 26.1% | .0091 (1.37) | .0218 (2.88) | 8.30 | .010 | 26.7% |
| High $PM$ group | 22 | .006 (1.34) | .0864 (3.09) | 9.55 | .006 | 28.9% | .0056 (1.50) | .0157 (3.78) | 14.30 | .001 | 38.8% |
| Panel B : Sample of firms reporting negative extraordinary items | | | | | | | | | | | |
| | 15 | -.0073 (0.82) | .0116 (0.49) | 0.24 | .629 | 0.0% | -.0082 (0.94) | .0009 (.09) | 0.01 | .928 | 0.0% |
| Panel C : Sample of firms reporting positive extraordinary items | | | | | | | | | | | |
| | 17 | .0039 (0.46) | .0391 (1.99) | 3.94 | .066 | 15.5% | .0041 (0.46) | .0136 (1.62) | 2.64 | .125 | 9.3% |

$t$-ratios are in parentheses. The total number of companies in the sample is 75. $PM$ is the persistence measure. $CAR_{-1,+1}$ denotes cumulative abnormal returns over the period -1 to +1 days around the earnings announcement date. $ES$ is the earnings surprise for the earnings before extraordinary items ($EI$). N is the number of firms in each sub-sample. Superscript '[a]' indicates that the earnings surprises are adjusted for earnings persistence using the persistence measure computed from parameters estimated from the firm specific ARIMA model.

Table 7

Results of returns and persistence adjusted earning regressions for the whole sample

| | | $\alpha$ | + | $\beta_1 BES$ | + | $\beta_2(BES \times BPM)$ | | $F$ | p-value | adj $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $M6a$ | $CAR_{-1,+1} =$ | | | | | | | | | |
| | | .0043 | | .0341 | | .0054 | | 8.43 | .001 | 16.7% |
| | | (1.25) | | (2.11) | | (0.66) | | | | |

| | | $\alpha$ | + | $\beta_1 BES$ | + | $\beta_2(BES \times BPM \times D^0_{EI})$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $M6b$ | $CAR_{-1,+1} =$ | | | | | | | | | |
| | | .0039 | | .0311 | | .0150 | | 10.66 | .000 | 20.7% |
| | | (1.16) | | (2.70) | | (2.02) | | | | |

$t$-ratios in parentheses. $BPM$ is the persistence measure for $BEPS$.

$BES$ is the unexpected component of $BEPS$ (earnings before extraordinary items).

$D^0_{EI}$ is a $\{0,1\}$ dummy variable that takes the value of 1 for zero extraordinary items or 0 otherwise.