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Timeliness of Reporting and the Stock Price Reaction to Earnings Announcements

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1. Introduction

In this paper, we provide descriptive evidence on the relationship between timeliness of earnings reports and stock price behavior surrounding their release. Timeliness is defined in two ways. In the first phase of the paper, we define it as the reporting lag from the end of the fiscal period covered by the report to the date of the report, and compare the variability of stock returns (price changes) associated with the release of reports published relatively promptly after fiscal close with that associated with less timely reports. There is much evidence (e.g., in Beaver [1968] and May [1971]) which documents that the variability of stock returns at the time of announcements of firms' annual and interim earnings differs from that in nonannouncement periods, indicating that more information arrives at the market during periods when earnings reports are released than at other times, on average. However, there is also evidence (such as that in Ball and Brown [1968] and Brown and Kennelly [1972], for example) that much accounting information is reflected in security prices prior to the release of the report. Apparently, other sources of information allow the market to anticipate the earnings report so that the variability of returns (amount of information) associated with earnings reports may be related to reporting lag. More specifically, longer reporting lags provide the opportunity for more of the information in the report to be supplied by other sources, either through

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search activity by investors, through other voluntary disclosures by firms, or through predictions of the earnings report supplied by earnings releases of earlier reporting firms.[1] This suggests that later reports would be associated with relatively less price variability than earlier reports.[2] Our results indicate that, with some qualifications, there is no significant relationship between reporting lags and the variability of stock returns associated with interim and annual earnings releases. This is consistent with the notion that accounting reports contain some information about specific firms which is not provided by other sources, regardless of the time lag of the reports.

In our second analysis, we define timeliness of earnings reports relative to their expected dates. A report is classified as early if it is released before the date expected and late if released after that date. Our analysis produces some evidence of higher return variability associated with reports released earlier than expected relative to that associated with reports released on time or unexpectedly late. We also find that abnormal returns associated with the release of reports published earlier than expected are positive, on average, suggesting that firms publish reports early when they have good news. Abnormal returns associated with the release of reports published later than expected are negative, on average, indicating that delayed reports carry bad news. Additionally, we find that average abnormal returns at the expected date of release of reports that are unexpectedly late are negative, indicating that investors interpret the failure to report on time as a forecast of bad news.

In the final analysis of the paper, we investigate return variability in periods following reports in order to determine whether abnormal return variability observed at the time of the release of an earnings report continues for some time after, and whether, for cases where there is little or no price effect at the time of a report's release, an effect is observed subsequent to the report date. Further, we assess whether there is any differential postreport price variability associated with timely and less timely reports. We observe significant abnormal price variability in periods following reports which had a significant effect on prices at the time of their release, but none following those which had little announcement effect at the time of release. Postreport return variability seems to be directly related to reporting lag time. We observe unusually high stock return variability following unexpectedly early reports which carry good news and unexpectedly late reports which carry bad news, but not after early, bad news reports or late, good news reports.

In the next section, we describe the data and document the cross-sectional and time-series variability of firms' reporting lag times. We

[1] Foster [1981] discovered that earnings releases of firms affect the stock prices of other firms in the same industry.

[2] The analysis in Ohlson [1979] predicts that variability of returns associated with the release of information is negatively related to the amount of prior disclosure.

also assess the extent to which reporting lag times are predictable. The stock return behavior associated with announcement of earnings reports of varying degrees of timeliness, using the two alternative definitions of timeliness, is described in section 3, followed by an analysis of the postreport variability of security returns in section 4. The findings of the paper are summarized in detail in section 5.

2. *Earnings Reporting Lags Relative to End of Fiscal Period*

Our analyses were conducted on interim and annual earnings announcements of 100 randomly selected New York Stock Exchange firms over the seven years, 1970–76. The dates of the announcements were ascertained from the *Wall Street Journal Index*. The sample yielded a potential for 2,800 earnings announcements, which was reduced to 2,756 since 44 announcements were not discovered in the *Index*. The 2,756 announcements consist of 2,065 interim (quarterly) earnings announcements and 691 annual earnings announcements. The earnings announcement date was defined as the date of the first report of earnings by the firm after the end of the fiscal period.[3] The sample was retricted to NYSE firms which are relatively large in order to control for the possibility that stock price reaction to earnings announcements is related to firm size (as evidenced in Atiase [1980]) and to avoid possible "exchange effects" due to different reporting requirements for different exchanges. No one industry is unduly represented in the sample.

Figures 1 and 2 display the relative frequencies of reporting lag times over weekly (seven-calendar-day) intervals for all interim earnings announcements and annual earnings announcements, respectively, in the sample. The reporting lag is defined as the time from the end of the fiscal period to and including the announcement date. Absolute frequencies are given on the top of each bar of the histograms. Interim reports in the sample cluster around the third and fourth week after the quarter. Very few reports appear within one week and relatively few later than seven weeks after quarter's end. Annual earnings announcements tend to be less timely than the interims and more skewed to the right. They cluster in weeks 5 to 8 after the fiscal year, but are more evenly distributed over lag weeks than interims.[4] Whereas only .44 percent of interim reports appear later than 8 weeks after quarter's end, 3.04 percent of

[3] Thus, a preliminary report of annual earnings prior to the publication of the final audited figure was deemed to be the earnings announcement.

[4] The distribution of annual report lag times is similar to that observed for U.S. firms during the same period by Givoly and Palmon [1982], but lies significantly further to the left than that observed for Australian companies for the years 1965–71 by Dyer and McHugh [1975] and for 1972–77 by Whittred [1980].

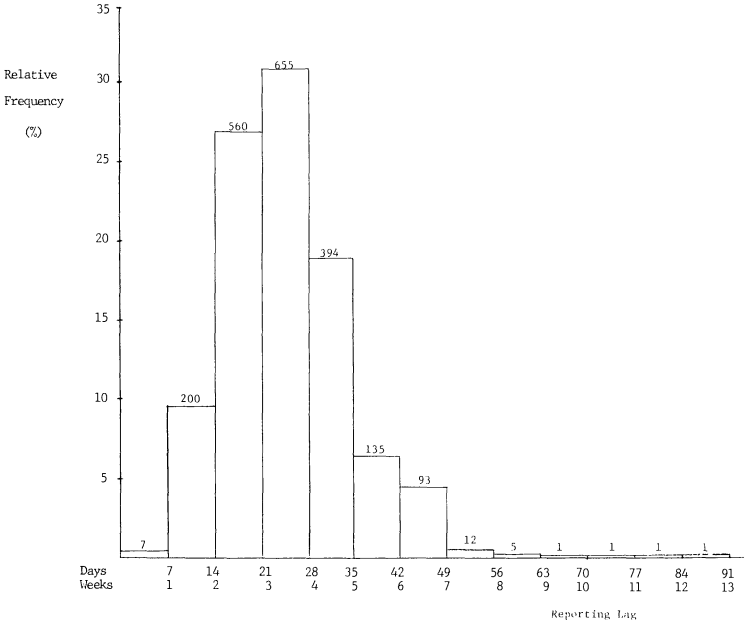

FIG. 1.—Relative frequency distribution of reporting lag times: quarters 1 to 3.

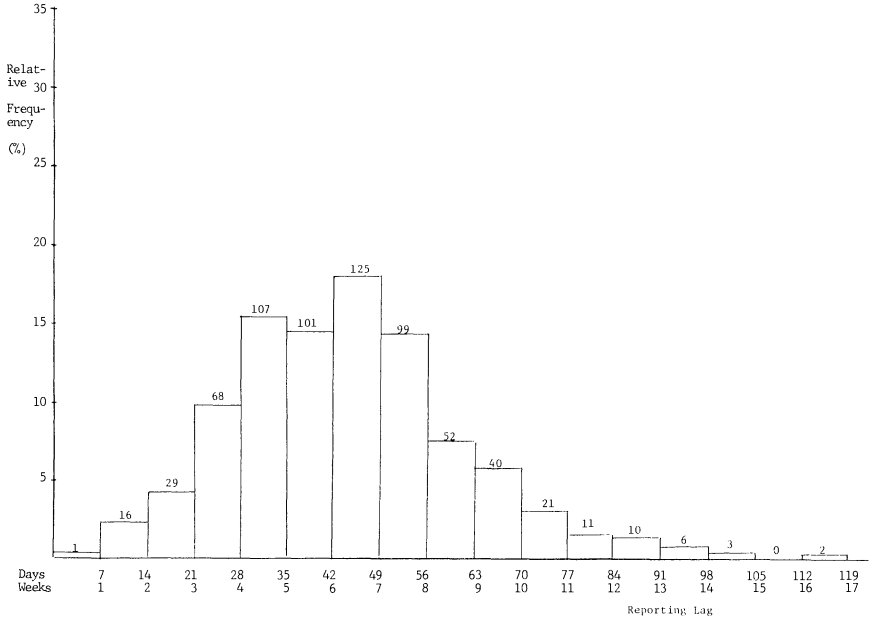

FIG. 2.—Relative frequency distribution of reporting lag times: annual reports.

TABLE 1

Measures Summarizing Within-Firm Time-Series Variability of Reporting Lag Times (in Days)

Fiscal Years Summarized	Summary Measure	Qtr. 1	Qtr. 2	Qtr. 3	Annual
70–76	Mean Std. Dev.	4.1	3.5	3.5	7.2
70–76	Std. Dev. (Std. Dev.)	3.4	2.1	2.2	5.6
70–76	Mean Range	13.2	10.5	10.6	22.4
70–76	Std. Dev. (Range)	12.5	6.8	6.7	16.6
71–76	Mean Dev. from Previous Year	−.065	−.10	−.32	−1.01
71–76	Mean Abs. Dev. from Previous Year	4.10	3.58	3.66	7.07

With the exception of the second measure, the summary measures are the cross-sectional means of the relevant within-firm measure. The second measure is the cross-sectional standard deviation of the within-firm standard deviation of reporting lag times.

annual announcements are made later than 12 weeks after the year.[5] A comparison of lag times for each fiscal period in each year revealed that the cross-sectional distribution of quarterly report lag times is quite stable over quarters and over years and, for annual reports, quite stable over years. The mean and median quarterly report lags are close to 25 days in each quarter and the standard deviation of quarterly report lags on the order of 9 to 10 days. Mean and median annual report lags are approximately 44 days in each year, with a standard deviation of 15 to 18 days. Hence, at the aggregate level, reporting lag times should be predictable with a high degree of accuracy.

Table 1 provides evidence on whether the stability in cross-sectional mean and median lag times represents stability of reporting patterns of individual firms over time. The mean within-firm standard deviation of lag times over the seven-year period for the first three fiscal quarters (given in the first line of the table) is 3 to 4 days, which is quite small considering that weekends and holidays will naturally introduce some variation. The mean within-firm standard deviation for annual reports is about one week. Since these values are much smaller than the cross-sectional standard deviations reported above, we can conclude that much of that variation can be explained by differences between firms rather than variation within firms. Note that the mean range is only about three times the mean standard deviation in all cases and only 1½ weeks for quarters 2 and 3. The figures in the last two lines of the table

[5] The SEC requires companies to file the annual 10-K report with the Commission within 90 days of the close of the fiscal year. The *NYSE Company Manual* requires each listed company to publish an annual report within three months of year-end. The quarterly 10-Q report must be filed with the SEC within 45 days of the close of the quarter. The NYSE requires announcement of quarterly results in the form of a press release "as soon as possible," under normal circumstances "between four and five weeks after the close of each period."

summarize (for six years only) the deviations in reporting times from that of the previous year for the same fiscal period. The mean deviations are negative but close to zero (except possibly the annual figure), indicating little trend in the mean over time. The mean absolute deviations from the previous year are the same size as the mean standard deviations from the mean over the seven years, indicating that the mean standard deviation is not obscuring larger swings (to the opposite side of the mean) in successive reports. Overall the impression is one of regular, predictable reporting behavior by individual firms. It appears that firms' reporting dates can be predicted in advance within a few days with some precision, on average. If, for example, the mean standard deviation and range are representative of the values for firms, the representative Studentized range (range/sample standard deviation) is consistent with the normal distribution, so we can make normal probability statements about reporting lags falling within one or two standard deviation days from the mean date. Of course, table 1 presents mean values and there may be some firms whose reporting behavior is highly erratic.

3. Stock Price Behavior and Reporting Timeliness

3.1 STOCK PRICE BEHAVIOR AND REPORTING LAG TIME

Tables 2 and 3 summarize, respectively, abnormal returns and abnormal variability of returns associated with reports with different reporting lag times. For each fiscal period, we divided firms into seven reporting lag groups as defined by the lag intervals in the second column of table 2 for interim reports and the sixth column for annual reports. The number of reports in each group over the seven years is given in the neighboring column. Reports were excluded from the analysis if there was other information on the firms reported in the *Wall Street Journal Index* within five days before or after the earnings report date, although results using the full sample were similar. Reports were also excluded if returns data at report dates were not available in the *CRSP Daily Returns File* from which returns data were taken. Lag group intervals were defined with the aim of getting maximum dispersion, subject to the constraint that the number of firms in each group should not be greatly different. The report (announcement) period was defined as a two-day period covering the *Wall Street Journal* date of the report and the (trading) day before. A two-day period was used because the returns data suggested that the information on earnings of many firms became available on the day prior to the day it appeared in the *Journal*.[6]

Table 2 gives the mean abnormal two-day announcement period return, $\bar{r}_l$, for each lag group, with associated t statistics. Because reports of different firms can come out at the same (calendar) time, the returns observed are not independent. To deal with this, the following procedure

[6] This is also evident in Foster [1977], Morse [1981], and Patell and Wolfson [1982].

TABLE 2

Summary of Abnormal Returns Over Two-Day Earnings Report Period for Reporting Lag Groups

Lag Group, l	Reports for Quarters 1–3				Annual Reports			
	Reporting Lag Interval (Days) from Fiscal Year-End	No. of Reports	Mean Portfolio Abnormal Return, $\bar{r}_l$	$t(\bar{r}_l)$	Reporting Lag Interval (Days) from Fiscal Year-End	No. of Reports	Mean Portfolio Abnormal Return, $\bar{r}_l$	$t(\bar{r}_l)$
1	≤14	163	.0047	1.34	≤28	78	.0021	.56
2	15–17	185	−.0040	−.77	29–35	60	.0124	1.98
3	18–21	278	.0043	1.44	36–42	72	−.0055	−1.01
4	22–25	287	−.0060	−1.22	43–49	94	.0072	1.23
5	26–28	177	−.0039	−.68	50–56	75	.0031	.87
6	29–35	281	.0056	1.84	57–63	45	.0017	.36
7	≥36	197	−.0045	−1.32	≥64	69	.0032	.51

TABLE 3

Summary of Absolute Values of Returns (Announcement Effects) Over Two-Day Earnings Report Period for Reporting Lag Groups

Lag Group l	Reports for Quarters 1–3					Annual Reports					Reports for Quarters 1–3 Announcement Date = −10		
	No. of Reports	Median Relative Absolute Return, A_{il}	Mean Portfolio Relative Absolute Return, $\bar{a}_l$	$t(\bar{a}_l)$	Mean Days Early	No. of Reports	Median Relative Absolute Return, A_{il}	Mean Portfolio Relative Absolute Return, $\bar{a}_l$	$t(\bar{a}_l)$	Mean Days Early	Median Relative Absolute Return, A_{il}	Mean Portfolio Relative Absolute Return, $\bar{a}_l$	$t(\bar{a}_l)$
1	163	1.156	1.338	3.38	2.30	77	.756	1.143	.63	5.68	.701	.870	−1.77
2	184	.913	1.311	2.52	1.33	59	.852	1.254	1.04	2.20	.702	.893	−1.09
3	277	1.171	1.328	3.31	1.20	72	.921	1.103	.44	4.23	.753	.999	−.01
4	285	1.065	1.401	2.86	.56	94	.913	1.167	.73	1.77	.677	.927	−.84
5	177	1.101	1.240	1.74	.22	74	.643	.914	−.50	−1.31	.651	1.029	.17
6	279	.904	1.180	2.02	−.98	45	1.531	1.672	2.17	−2.57	.759	.919	−1.035
7	193	1.026	1.300	2.58	−2.74	67	.918	1.294	1.14	−3.12	.799	1.072	.72
All groups	1558	.997	1.300	7.94	.24	488	.851	1.221	3.29	1.25	.731	.958	−1.15

Lag groups are defined in table 2.

In calculating $\bar{a}_l$, firms with values of A_{il} greater than 6.0 were excluded. The differences in the No. of Reports in this table and those in table 2 reflect these exclusions. Median values of A_{il} were estimated from the distribution including these outliers.

was followed in estimating abnormal returns in table 2. At a point in time 200 trading days prior to the end of each fiscal quarter, q, in each fiscal year, t, in the sample period, an equally weighted portfolio of firms was formed from firms with earnings reports in a given lag group, l, for $l = 1, 7$. A mean portfolio two-day return, $\bar{R}_{lqt}$, was estimated from the subsequent 100 two-day portfolio returns. The portfolio abnormal return over the report period for a given l, q, and t was defined as:

$$r_{lqt} = \left[\sum_{i=1}^{n} R_{ilqt}/n\right] - \bar{R}_{lqt},$$

where R_{ilqt} is the two-day return for the report period for firm i of the n firms reporting for that l, q, and t. The mean abnormal portfolio return for lag group l for quarters 1 to 3, given in the fourth column of table 2, is defined as:

$$\bar{r}_l = \sum_{q=1}^{3} \sum_{t=1}^{7} r_{lqt}/21.$$

The value of $t(\bar{r}_l)$ is equal to $[\bar{r}_l/\hat{s}(r_l)]\cdot\sqrt{21}$, where $\hat{s}(r_l)$ is the estimated standard deviation of r_{lqt}. Assuming underlying normality of portfolio returns and that portfolio returns are drawn from the same (stationary) distribution,[7] this statistic is distributed t with 20 degrees of freedom, conditional upon a hypothesis that $\bar{r}_l = 0$. The mean abnormal portfolio return for the annual reporting period ($q = 4$) for each lag group, l, is given by:

$$\bar{r}_l = \sum_{t=1}^{7} r_{l4t}/7,$$

and the t statistic is defined in a similar way to that above.

The measures of abnormal return variability given in table 3 compare the absolute values of returns over the two-day report period with the mean absolute values of returns during a prior period. For each firm's report period, the following measure, referred to as the relative absolute return, was calculated:

$$A_{iqt} = |R_{iqt}| / |\overline{R_{iqt}}|, \tag{1}$$

where $|R_{iqt}|$ is the absolute value of the two-day return for firm i over the report period for quarter, q, and fiscal year, t, and $|\overline{R_{iqt}}|$ is the mean absolute value of two-day returns over 200 trading days prior to the report period. Values of A_{iqt} for all reports in a given lag group were pooled from the relevant fiscal periods in all years and denoted by A_{il}. The median values of A_{il} are given in table 3 for all values of l for quarters 1 to 3 and annual reports. For purposes of making statistical inferences,

[7] Tests were repeated standardizing portfolio returns to unit variance, with similar results.

this measure also suffers from the lack of independence of observations. To deal with this we again formed portfolios 200 trading days before the end of each quarter in each fiscal year for each lag group and calculated:

$$|\overline{R_{lqt}}| = \sum_{s=1}^{100} \sum_{i=1}^{n} |R_{islqt}|/100n,$$

where n is the number of firms in lag group l for quarter q of fiscal year t, and $|R_{islqt}|$ is the absolute value of the two-day return for firm i for period s, $s = 1, 100$.[8] The abnormal variability of returns for the portfolio over the report period was defined as:

$$a_{lqt} = \left[\sum_{i=1}^{n} |R_{ilqt}|/n\right] / |\overline{R_{lqt}}|,$$

where $|R_{ilqt}|$ is the absolute value of the two-day return associated with the report for firm i in lag group l for fiscal quarter q in year t. a_{lqt} has an expected value of 1.0, conditional upon stationarity.[9] The value of $\bar{a}_l$ in table 3 for quarters 1 to 3 is given by:

$$\bar{a}_l = \sum_{q=1}^{3} \sum_{t=1}^{7} a_{lqt}/21,$$

and for annual announcements:

$$\bar{a}_l = \sum_{t=1}^{7} a_{l4t}/7.$$

The t statistics associated with these mean portfolio returns are defined in a way similar to those in table 2 except that the means are compared to unity.[10] These measures of variability of returns are similar to those in May [1971]. Tests were also performed using squared returns as an estimate of variance with similar results. Since squared returns magnify

[8] The number of summations and the divisor were adjusted for missing returns. If a two-day period covered the day of or day prior to an earnings announcement for an earlier fiscal period, this also was dropped from the calculation. The calculations were made over different lengths of time, with similar results.

[9] a_{lqt} is the same as:

$$\left[\left[\sum_{i=1}^{n} (|R_{ilqt}| - |\overline{R_{lqt}}|)/n\right] / |\overline{R_{lqt}}|\right] + 1.0.$$

That is, it is the mean deviation of each firm's absolute return value at the date of the report from the expected portfolio value, in units of the expected portfolio value, plus unity.

[10] The price paid for the aggregation is loss of degrees of freedom. The rewards are an unbiased estimator of cross-sectional standard deviations and a variable distributed closer to normal than one based on individual security returns which are well known to exhibit "fat tails." Fortunately, power does not appear to be a problem in the statistical comparisons which follow. Tests were repeated on means of A_{iqt} (in equation (1)), with a bias toward Type I errors, with little difference in results.

the outlier problem,[11] we choose here to report results based on absolute values. Tests in both table 2 and table 3 were also performed using returns from which the contemporaneous two-day market return had been subtracted and also using residual returns from the market model, with little difference in results.[12]

The t values in table 2 indicate that none of the mean abnormal returns for different lag groups is significantly different from zero. The t value for lag group 2 for annual reports can be attributed to chance, given the number of comparisons we made. We conclude that no lag group can be characterized by good news reports or bad news reports: firms do not, for example, fall into early-reporting groups because they have good news to report or into late-reporting groups because they have bad news to report.[13] This is what one would expect given the regularity of reporting lag times observed in the previous section. Given this regularity, the results are consistent with "market efficiency" with regard to reporting structure in that it appears that one cannot earn abnormal returns from knowledge of the pattern of firms' reporting behavior.

Turning to table 3, we observe that abnormal absolute values of returns are associated with accounting reports. (For the moment ignore columns headed "Mean Days Early.") On the bottom line of the table we show the median value of the relative absolute returns from a ranking of all values for all lag groups and the mean portfolio relative absolute return over all lag groups for the relevant fiscal periods. As a control, the same measures are presented (for interim reports) in the right-hand panel of the table with report dates set (arbitrarily) to ten days prior to the actual report date. The t values on the means and a comparison with the control results confirm the results of Beaver [1968] and May [1971]. Comparisons of mean and median values indicate the means are influenced by a relatively large effect for some firms, but little or no abnormal effect is observed for many others. The values of the test variables for each lag group for interim reports are also higher than the comparative figures in the control results, and the t values are consistently significantly different from zero. Further, interim reports appear to have a larger price effect, on average, than annual reports. The striking result, however, is that there appears to be little difference in the announcement effect over lag

[11] Oppong [1980] illustrates the outlier problem using squared returns.

[12] An investigation of these alternative return metrics using monthly returns is found in Brown and Warner [1980]. There is a problem with metrics which subtract the market return. Since earnings reports for a given fiscal period are bunched together, the usual assumption that the return on the market is independent of the announcement is not a safe one, for the market return may be significantly affected by the reports. Thus, subtracting the market return may take out some of the effect being investigated.

[13] Similar results were observed for each of the first three quarters separately, except that the mean abnormal return for lag group 1 for first-quarter reports was .0101, with a t value of 2.95. This may indicate that very early first-quarter reports are characterized by good news. We investigate this further later in the paper.

groups. The effects are as strong for reports coming out relatively late as for early reports, and for annual reports the effects are even slightly higher for later reports. A Kruskal-Wallis test of differences between the distributions of A_{il} for different lag groups and classical t tests on differences between $\bar{a}_l$ confirmed these appearances for interim reports. The result was the same for reports for quarters 2 and 3 by themselves. However, the value of $\bar{a}_l$ for lag group 1 for first-quarter reports was 1.502 and significantly different from those in other lag groups. Note (see n. 13) that this group of reports is also associated with positive abnormal returns, indicating that they convey good news, on average—a point we shall return to later. A Kruskal-Wallis test of differences between distributions of A_{il} for different annual report lag groups did produce a significant result. Mann-Whitney U tests of paired comparisons of lag group distributions of A_{il} and t tests on paired differences in $\bar{a}_l$ revealed that the result for lag group 6 was the only one which differed from other groups, but this does not suggest a lag pattern.[14]

We conclude that, with a possible qualification for first-quarter reports, the variability of stock returns associated with an earnings release is not related to the lag time to the report date. Apparently, accounting reports contain information which does not reach the market through other sources, despite the length of time for that to happen.[15]

This interpretation is conditional upon our having adequately controlled for firm size and the content of the earnings report. The results of Grant [1980] and Atiase [1980] indicate that the size of the price effect is inversely related to the size (market value) of the firm. Our sample of NYSE firms partly controls for size, but within the sample we discovered an inverse relationship between firms' equity market values and reporting

[14] Of the 163 reports in lag group 1 for quarters 1 to 3, 22 were published within nine days of the end of the quarter. The median relative absolute return for these reports was 1.86 and the mean portfolio relative absolute return 1.74. Nine of these were first-quarter reports. This indicates that when interim reports are particularly prompt they have a particularly strong effect on prices. However, since the number of these reports is small relative to the total sample, we do not generalize this result to a statement about the effect of timeliness of reporting. A similar effect was not evident for very prompt annual reports. The mean portfolio relative absolute return for the 14 annual reports in the sample which were published within 14 days of year-end was only 1.01.

[15] The result is consistent with evidence in Foster [1981]. Although he observes that earnings announcements by firms affect the stock prices of firms in the same industry, he also finds that there is no difference between the announcement effects of the first report and subsequent reports in an industry. With respect to annual reports, the results are seemingly in conflict with those of Givoly and Palmon [1982] who give evidence of significant differences in squared residual returns associated with timely and less timely annual reports. Their analysis was conducted on 109 reports, used weekly returns which capture the two-day announcement effect with noise, and covered the period 1960–74 (five years of which are in common with this study). Another major difference in their study is their investigation of the release of audited annual reports, whereas this study examines the first report of earnings after year-end which may be a preliminary earnings announcement or the release of unaudited results.

lag. The median market value at the end of the month prior to interim earnings reports for firms in lag groups 1 and 2 was $305.2 million and for those in groups 6 and 7, $152.2 million, or half as much. For annual reports the corresponding values were $433.9 million and $121.0 million, differing by a factor of over 3½. Computed Spearman rank-correlation coefficients (and t values) between market values and reporting lag times (estimated with ungrouped data) for quarters 1, 2, and 3 and annual reports were −.14 (−3.13), −.17 (−4.03), −.16 (−3.65), and −.29 (−6.81), respectively.[16] These observations, along with those of Grant [1980] and Atiase [1980], suggest that a relationship between price effects and lag time could be obscured in table 3 since large firms for which there are relatively small price effects report early, whereas small firms for which there are relatively large effects report late. Another factor which may affect the report reactions is the nature of the news in the report. More "good news" information could be available prior to reports than "bad news" information, since restrictions on short selling limit the ability of traders to exploit bad news they discover, and there is a good news voluntary disclosure bias on the part of firms.[17]

To control for these factors, we performed the above analyses separately for relatively small and relatively large firms in the sample and, within each of these size categories, for reports carrying good news and reports bearing bad news. "Small" firms were defined as those whose equity market values at the end of the month prior to the month of the report were less than the median for the whole sample at that date, and "large" firms those whose equity market values were greater than the median. "Good news" and "bad news" reports were classified on the basis of the observed return for the firm over the two-day report period minus the mean return calculated over the preceding 100 two-day trading periods. A positive value was interpreted as good news, a negative value as bad news. Detailed results of this analysis are not reported here, but can be summarized as follows. We observed no significant differences between the measures of return variability associated with good news and bad news reports, holding size constant, but we did observe an inverse relationship between these measures and size, holding the nature of the news constant. As in Atiase [1980] there appeared to be more information in the reports of small firms than in those of larger firms. More relevant to the question at hand, however, is that there did not appear to be any relationship between the variability measures and report lag time, holding both size and the nature of the news constant, except for the good news reports of relatively small firms. For this subset of

[16] To assure independence, market value was defined as a firm's equity market value minus the median equity market value of all firms in the sample in the month prior to the earnings report.

[17] Such a bias is evident in Penman [1980]. However, as argued there, if firms only voluntarily disclose good news, absence of a disclosure will be taken to imply bad news, and so bad news will also be anticipated by the market.

firms, the values of $\bar{a}_l$ for lag group 1 for quarters 1 to 3 and lag groups 1, 2, 6, and 7 for annual reports were significantly higher than those in other groups. Relatively prompt, good news interim and annual reports of small firms do appear to convey relatively more information than those of average timeliness, as do relatively late annual reports for those small firms.

The last column of the first two panels in table 3 gives mean values of the lag time (in days) of the report for the same period in the previous fiscal year minus the current report's lag time (calculated for years 1971–76 only), for each reporting lag group. If the date of the previous year's report is taken as the expected date of a report, this provides a measure of how early or late the report was published relative to its expected date, on average. Comparisons over lag groups are revealing. In absolute terms the means are larger for extreme groups and are positive for groups with relatively low reporting lags and negative for groups with relatively high reporting lags. This indicates that the low lag groups and high lag groups contain relatively more reports that are early or late, respectively, relative to their expected dates. The "mean days early" for lag group 1 for good news reports of small firms is 3.63 for interim reports and 10.38 for annual reports, quite a bit above the comparable figure for all reports in table 3. The "mean days early" for first-quarter reports in lag group 1 (which we have noted are associated with relatively high price reactions which indicate good news) was 2.98. These comparisons indicate that the results for good news reports of small firms and the first-quarter result for lag 1 for all firms may have to do with the punctuality of reports relative to their expected dates. We now discuss our investigation of this phenomenon.

3.2 STOCK PRICE BEHAVIOR ASSOCIATED WITH UNEXPECTEDLY EARLY AND LATE REPORTS

Table 4 summarizes the price reaction to unexpectedly early and late reports. For each fiscal period in each fiscal year, firms were assigned to one of nine groups according to the length of their expected reporting lag times minus their actual lag times. The expected lag time was estimated as the lag time for the same fiscal period in the previous year. This meant that only reports for the years 1971–76 were used in the analysis. Tests based on reports for the full period, 1970–76, with the expected lag defined as the mean lag time for the relevant fiscal period over the seven years, produced similar results, as did tests based on reports for the period 1972–76 with the expected lag defined as the mean lag time for the relevant fiscal period in the two previous years.

The nine groups for interim and annual reports are defined in the first column of the two panels in table 4. The number of reports falling into each group is given in the next column. Consistent with results in table 1, these numbers indicate that a large proportion of interim reports

TABLE 4

Summary of Abnormal Returns and Absolute Values of Returns Over Two-Day Earnings Report Period for Groups Defined on Reporting Lag Relative to Expected Reporting Lag for Period, 1971–76

Group, l	Reports for Quarters 1–3						Annual Reports					
	Days Early	No. of Reports	Mean Portfolio Abnormal Return, $\bar{r}_l$	$t(\bar{r}_l)$	Mean Portfolio Relative Absolute Return, $\bar{a}_l$	$t(\bar{a}_l)$	Days Early	No. of Reports	Mean Portfolio Abnormal Return, $\bar{r}_l$	$t(\bar{r}_l)$	Mean Portfolio Relative Absolute Return, $\bar{a}_l$	$t(\bar{a}_l)$
1	≥9	65	.0129	2.48	1.150	1.12	≥23	23	.0153	1.95	.952	−.15
2	6 to 8	91	.0100	1.16	1.646	2.89	16 to 22	10	.0421	2.77	1.769	1.34
3	4 to 5	81	.0035	.62	1.244	1.42	10 to 15	14	.0001	.00	1.212	.82
4	2 to 3	208	−.0018	−.45	1.223	1.68	7 to 9	32	.0016	.33	1.269	.99
5	0 to 1	421	.0016	.64	1.283	2.79	3 to 6	46	.0076	1.04	1.016	.07
6	−1 to −2	132	−.0026	−.74	1.241	1.95	0 to 2	140	.0035	.86	1.138	.63
7	−3 to −4	120	−.0008	−.29	1.265	1.73	−1 to −3	43	−.0061	−.89	1.463	1.41
8	−5 to −6	126	−.0077	−1.51	1.328	2.03	−4 to −7	57	.0101	1.83	1.274	.93
9	≤−7	90	−.0072	−1.26	1.117	.66	≤−8	46	−.0110	−1.44	1.183	.67

The expected reporting lag is estimated as the reporting lag for the same fiscal period in the previous fiscal year. Days Early are equal to the expected reporting lag minus the actual reporting lag. In calculating $\bar{a}_l$, 13 outliers were rejected over all groups.

appeared within a few days of the report date of the previous year, and most annual reports within a week. Table 4 gives group values and t statistics for the abnormal return measure, $\bar{r}_l$, and the measure of price effect, $\bar{a}_l$. The mean abnormal returns for groups 1 to 3 for interim reports are all positive, but they are negative for all the late-reporting groups. The mean abnormal return for $l = 1$ is quite high, and for $l = 2$ it is .0135, with a t value of 2.03 when one outlier with a two-day return over the report period of −.10027 is excluded from the calculation. For annual reports, the mean abnormal returns for groups 1 and 2 are large and positive, although those for the lower groups in the table are not consistently in any direction. We conclude that unexpectedly early reports bring good news and late reports are associated with bad news, on average. To put it differently, firms with good news tend to publish their reports earlier than expected, while those with bad news tend to be late with their reports, although the late effect is not strong. With respect to annual reports, this result is consistent with that of Givoly and Palmon [1982]. The mean relative absolute returns suggest relatively large price changes are associated with early (on average, good news) reports. While the values of $\bar{a}_l$ for group 1 are not significantly different from those in lower groups, the value for $l = 2$ for interim reports is, and that for $l = 2$ for annual reports is also high relative to other groups (although the number of observations is small in the latter case). The relatively small value of $\bar{a}_l$ for $l = 9$ for interim reports suggests a smaller effect for late reports, but the differences between these and those of other groups (except the second) are not statistically significant. These results confirm our suspicions that the significant results for lag group 1 in table 3 in special cases are due to the punctuality of reports relative to their expected dates.[18]

The abnormal returns associated with reports that were published later than expected, while negative (for interim reports), are not significantly different from zero. If late reports consistently contain bad news, one would expect the bad news to be anticipated when firms miss their expected reporting dates. Hence a bad news effect should be observed at the expected date (and progressively after the expected date if the report gets later and later), not at the actual report date. The evidence in table 5 supports this. There the abnormal returns for late-reporting firms from the day prior to the expected date to three days prior to the actual date are summarized.[19] The measure $\bar{r}_\tau$ is similar to $\bar{r}_l$ in table 2. Let τ be the

[18] If a report falls into an extreme group in table 4 in a particular fiscal year, it is likely to fall into a group in the opposite extreme in the next fiscal year, given the way the expected lag time is defined. The analysis was repeated dropping firms if their reports for the same fiscal period in the previous year were in group 1 or 9, with similar results.

[19] The beginning date in the test period was set at the day prior to the expected date because the effective report date is probably the day prior to the *Wall Street Journal* date. The end date assures that the announcement effect when the report is actually published is excluded.

TABLE 5

Abnormal Returns of Late-Reporting Firms from Day Prior to Expected Reporting Date to Three Days Prior to Actual Reporting Date

Day, τ Relative to Exp. Date	Reports for Quarters 1–3					Annual Reports				
	No. of Reports	$\bar{r}_\tau$	$t(\bar{r}_\tau)$	$\bar{r}_\tau^c$	$t(\bar{r}_\tau^c)$	No. of Reports	$\bar{r}_\tau$	$t(\bar{r}_\tau)$	$\bar{r}_\tau^c$	$t(\bar{r}_\tau^c)$
−1	212	−.0031	−1.86	−.0031	−1.86	98	.0024	1.04	.0024	1.04
0	212	−.0007	−.27	−.0038	−1.41	98	−.0033	−.99	−.0008	−.19
1	212	.0006	.26	−.0031	−.76	98	.0005	.37	−.0003	−.07
2	119	−.0038	−1.41	−.0069	−1.58	69	.0002	.05	−.0000	−.00
3	75	.0058	.99	−.0011	−.13	61	.0064	1.75	.0065	.60
4	58	−.0071	−1.39	−.0081	−.80	52	.0003	.09	.0067	.66
5	45	.0088	2.29	.0006	.04	42	.0012	.30	.0078	.88
6	35	−.0107	−2.31	−.0099	−.66	36	−.0045	−1.51	.0033	.36
7	24	−.0039	−1.05	−.0147	−.97	29	−.0018	−.65	.0015	.15
8	20	.0116	1.98	−.0057	−.34	28	−.0089	−2.09	−.0073	−.58
9	19	.0070	1.02	.0012	.07	26	−.0180	−2.51	−.0254	−2.13
10	17	.0002	.03	.0016	.08	22	−.0049	−1.12	−.0300	−1.97

The expected reporting date is estimated as the reporting date for the same period of the previous fiscal year.
$\bar{r}_\tau$ is the mean portfolio abnormal return on day τ.
$\bar{r}_\tau^c$ is the mean cumulative portfolio abnormal return at day τ.

trading day relative to the expected reporting date. For each τ, for each fiscal period, q, in each fiscal year, t, of the period 1971–76, we calculated a portfolio abnormal return from the n late-reporting firms for which τ was at least three days prior to the actual reporting date for that fiscal period, as follows:

$$r_{\tau qt} = \left[\sum_{i=1}^{n} R^m_{i\tau qt}/n \right] - \bar{R}^m_{\tau qt} ,$$

where $R^m_{i\tau qt}$ is the market-adjusted return ($R_{i\tau qt} - R_{m\tau}$, where $R_{m\tau}$ is the return on the *CRSP* value-weighted index on day τ) for firm i, $i = 1, n$. $\bar{R}^m_{\tau qt}$ is the mean market-adjusted return for firms in the portfolio for day τ, calculated over 100 trading days prior to the end of the fiscal period. We use market-adjusted returns here to control for ex post bull and bear markets which might affect cumulative abnormal returns over the period. Since firms were dropped from the calculation if day τ was less than three days before the actual reporting date, n is variable over τ (and declines as τ increases, as evident in table 5), so $\bar{R}^m_{\tau qt}$ was reestimated for each τ. The mean portfolio abnormal return for day τ was calculated over all years for fiscal quarters 1 to 3 as:

$$\bar{r}_\tau = \sum_{q=1}^{3} \sum_{t=1}^{6} r_{\tau qt}/18 ,$$

and similarly for annual reports. Finally, for each fiscal period in each year, we also calculated a cumulative portfolio abnormal return for day τ:

$$r^c_{\tau qt} = \sum_{d=-1}^{\tau} r_{dqt} ,$$

and then a mean cumulative portfolio abnormal return over all interim periods for all years:

$$\bar{r}^{\,c}_\tau = \sum_{q=1}^{3} \sum_{t=1}^{6} r^c_{\tau qt}/18 ,$$

and similarly for annual reports.[20] t values for a test of mean values relative to zero were calculated in a similar way to those in previous tables.

For the results reported in table 5, we did not exclude firms with other announcements during the period, for we were attempting to replicate an investment strategy and information on these announcements was not available at the time of the investment on day −1. Results were similar when firms with other announcements during the period were

[20] The procedure guarantees that the $r^c_{\tau qt}$ are independent, given serial independence of returns, and so the estimated standard deviations of $r^c_{\tau qt}$ are unbiased by construction.

excluded, however. The results in table 5 should be interpreted as lower bounds on the abnormal returns around the expected date due to the (experimental) uncertainty about the expected date. Nevertheless, the abnormal returns for interim reports are negative and significantly so for a one-tail test at day $\tau = -1$, although the result is not a strong one.[21] Given that most accounting reports reach the market on the day prior to the *Wall Street Journal* date of the report, day -1 is the most likely expected date. For annual reports, negative abnormal returns do not appear until day $\tau = 6$, which is what one would expect given the greater variance of reporting times from expected dates for these reports. We conclude that missing an expected report date is a signal of bad news which is reflected in security prices.[22]

4. *Postannouncement Behavior of Stock Prices*

In this section, we discuss our results regarding whether abnormal price variability associated with earnings reports persists beyond the date of the reports.[23] The measure which captures postannouncement variability, $\bar{a}_\tau{}^c$, is similar to $\bar{r}_\tau{}^c$ in table 5 except that it is a mean of cumulative abnormal absolute values of returns, rather than mean cumulative abnormal returns. Let τ be the trading day relative to the report date (the *Wall Street Journal* date of the report). For each τ, for each fiscal period, q, in each fiscal year, t, we calculated the mean abnormal absolute value of returns over all n firms reporting for that q and t, as follows:

$$a_{\tau qt} = \left[\left[\sum_{i=1}^{n} |R^m_{i\tau qt}|/n\right]/\overline{|R^m_{qt}|}\right] - 1.0\,,$$

where $|R^m_{i\tau qt}|$ is the absolute value of the market-adjusted return for firm i, $i = 1, n$. $|R^m_{qt}|$ is defined as:

$$\overline{|R^m_{qt}|} = \sum_{s=1}^{100}\sum_{i=1}^{n} |R^m_{isqt}|/100n\,,$$

where $|R^m_{isqt}|$ is the absolute value of the market-adjusted return of firm i on day s, where $s = 1$ is 100 trading days prior to the end of the relevant

[21] The results were stronger for first-quarter reports alone. There the mean cumulative abnormal return on day 10 was $-.0504$, with an associated t statistic of -3.09.

[22] This is in accordance with a popular view: "When the news is bad,. . . some concerns dilly-dally [publishing their reports] as long as they can," says a *Wall Street Journal* reporter (see "On-Time Performance of Chessie System Is Second to None—For Reporting Results," *Wall Street Journal* [July 1, 1980]: 23).

[23] Note that Castanias [1979] reports abnormal price variability in a market index following publication of macroinformation.

fiscal period.[24] For each fiscal period in each year we then calculated a cumulative abnormal absolute value of returns for each day, τ:

$$a^{c}_{\tau qt} = \sum_{d=1}^{\tau} a_{dqt} ,$$

and then a mean of these cumulative abnormal absolute returns over all interim periods in all years:

$$\bar{a}_{\tau}{}^{c} = \sum_{q=1}^{3} \sum_{t=1}^{6} a^{c}_{\tau qt}/21 ,$$

and similarly for annual reports. Since unity is subtracted in the definition of $a^{c}_{\tau qt}$, $\bar{a}_{\tau}{}^{c}$ has an expected value of zero.

Values of $\bar{a}_{\tau}{}^{c}$ revealed that there is abnormal price variability following earnings reports. Table 6 summarizes this variability for interim reports by size and direction of the price effect over the two-day report period. The results for annual reports are not reported in this and the following tables. They were similar to those for interim reports, except where indicated. A "high" announcement effect is one for which the value of the relative absolute return at the report date, A_{iqt} (in equation (1)) was greater than 1.0, and a "low" announcement effect one for which this was less than or equal to 1.0. That is, a "high" price effect of a report release is one where the absolute value of return over the two-day report period was greater than the average absolute value of returns over the 100 two-day periods prior to the report date, and a "low" price effect one where it was less. A low announcement effect can be interpreted as "no effect" to the report's release. A "positive" announcement effect (good news) is one where the two-day report period return minus the mean return estimated over 100 two-day periods prior the report was positive, and a "negative" effect (bad news) one where it was negative. The distinction by size of effect is made because we speculated that a low announcement effect might be observed at the report date because the effect does not appear until after that date, whereas high effects might not exhibit postreport abnormal price variability.

The results in table 6 do not support this. There appears to be abnormal price variability following reports with high announcement effects for both good news and bad news reports, but little after those with relatively low effects on prices. The negative values of $\bar{a}_{\tau}{}^{c}$ for low announcement effects even suggest there is lower price activity following the report relative to the period before. If the low announcement effects indicate that the information in the report reaches the market prior to the report date, then the mean prereport price changes would be higher than usual. Since $\bar{a}_{\tau}{}^{c}$ compares postreport and prereport price changes, one would expect it to exhibit negative values under these conditions. For high

[24] The qualifications in n. 8 apply here also.

TABLE 6

Summary of Postreport Absolute Values of Returns, Quarters 1–3

Day, τ Following Report Date	Reports with High Announcement Effects				Reports with Low Announcement Effects			
	Positive Effects $N = 533$		Negative Effects $N = 476$		Positive Effects $N = 520$		Negative Effects $N = 534$	
	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$
1	105	2.24	.204	3.37	−.008	−.23	.034	.80
2	172	2.48	.341	3.75	−.062	−.95	.050	.78
3	125	1.33	.378	2.96	−.055	−.70	.058	.67
4	.091	.73	.511	2.96	−.084	−.81	.056	.42
5	.082	.55	.587	3.16	−.162	−1.23	.026	.17
6	.073	.40	.652	3.15	−.162	−1.02	−.073	−.44
7	.047	.23	.716	2.94	−.239	−1.34	−.115	−.59
8	.004	.02	.708	2.64	−.262	−1.34	−.136	−.64
9	.015	.06	.704	2.57	−.259	−1.26	−.179	−.77
10	.072	.24	.688	2.34	−.281	−1.23	−.212	−.84
20	−.154	−.29	.796	1.48	−.362	−.73	−.414	−.83
30	−.053	−.06	1.097	1.25	−.293	−.33	−.513	−.62
40	−.370	−.34	1.325	1.12	−.391	−.32	−.688	−.61
50	−.385	−.27	2.029	1.31	−.100	−.06	−.949	−.69

N is the number of reports analyzed.

A high announcement effect is one where the relative absolute return over the report period is greater than 1.0, and a low announcement effect one where it is less than or equal to 1.0.

$\bar{a}_\tau{}^c$ is the mean cumulative portfolio abnormal absolute return on day τ, defined in the text.

announcement effects the postreport abnormal price changes are higher and more sustained for bad news reports; for good news reports the abnormal variability is evident only in the couple of days after the report date.[25] A further refinement, distinguishing reports for which A_{iqt} was greater than 1.70 and those where it was less than 1.70 but greater than 1.0, revealed that the larger the size of the reaction to the report, the larger the postreport abnormal price changes. The difference was more marked with bad news reports.

Table 7 describes postreport return variability of reports in various reporting lag groups. If there are informational transfers from earlier reporting firms to later ones (of the type examined by Foster [1981]), one may expect to observe postreport adjustments to prices of firms that report relatively promptly since their prices reflect the information conveyed by reports subsequently released by other firms (in the same industry, for example). Such postreport behavior may not be evident for firms reporting with relatively long lag times because of the prior availability of the reports of other firms. Table 7 gives values of $\bar{a}_\tau{}^c$ for lag groups 1 and 2, 3 to 5, and 6 and 7 (as defined in table 2) for good news and bad news reports with high announcement effects. For reports around the median lag time (groups 3 to 5), the results are very similar to those for high announcement effects in table 6. A stronger effect is evident for reports with relatively long lag times (groups 6 and 7) for both good news and bad news reports. However, for relatively prompt reporting firms (groups 1 and 2), there does not appear to be much abnormal postreport price variability. It appears, then, that the size of postreport abnormal price changes is directly, not inversely, related to lag time.[26]

Further tests were performed to see whether postreport price variability is related to the size of the firm. Generally, the results were negative, although we did observe differences in postreport price variability between reports which were earlier or later than their expected dates. Table 8 summarizes the analysis for "early," "on-time," and "late" interim reports with high announcement effects for the years 1971–76. "Early" reports were defined as those which were more than four days earlier than the date of the report for the same fiscal period in the previous year, "late" reports those more than four days later than that date, and "on-time" reports all others. The four-day period is approximately equal to the mean standard deviation of lag times and the mean absolute deviation of lag time from that in the previous year reported in table 1. The results for on-time reports are similar to those in table 6, with bad news reports exhibiting relatively more postreport abnormal price vari-

[25] For annual reports, the results for high, positive report effects are stronger and more sustained. The values of $\bar{a}_\tau{}^c$ (and t statistic) for day 1 and day 5 are, respectively, .522 (4.15) and .611 (2.10).

[26] A similar analysis for reports with low announcement effects did not indicate any differences from the results for these reports in table 6.

TABLE 7

Summary of Postreport Absolute Values of Returns by Reporting Lag Group for Reports with High Announcement Effects, Quarters 1–3

Day, τ Following Report Date	Lag Groups 1–2				Lag Groups 3–5				Lag Groups 6–7			
	Positive Effects $N = 123$		Negative Effects $N = 100$		Positive Effects $N = 253$		Negative Effects $N = 236$		Positive Effects $N = 157$		Negative Effects $N = 140$	
	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$	$\bar{a}_\tau{}^c$	$t(\bar{a}_\tau{}^c)$
1	.064	.64	.057	.45	.096	1.69	.231	2.98	.165	1.96	.200	1.58
2	.001	.00	.194	.81	.174	1.81	.409	3.34	.325	2.25	.332	1.89
3	−.040	−.29	.126	.49	.094	.80	.428	2.62	.370	1.89	.441	2.15
4	−.116	−.78	.248	.92	.043	.27	.530	2.41	.384	1.38	.695	2.56
5	−.202	−.97	.269	.94	.088	.47	.556	2.33	.299	1.11	.937	3.24
10	−.394	−1.03	.119	.25	.030	.08	.487	1.42	.511	1.19	1.412	2.82
30	−.979	−.91	.146	.20	−.356	−.36	.354	.37	1.263	1.22	2.908	2.13
50	−.442	−.24	1.981	1.11	−1.373	−.88	.524	.32	1.372	.89	5.407	2.54

See notes to table 6.

TABLE 8

Summary of Postreport Absolute Values of Returns for Firms Reporting Earlier and Later Than Expected with High Announcement Effects, Quarters 1–3

Day, τ Following Report Date	Early Reports				On-Time Reports				Late Reports			
	Positive Effects $N = 93$		Negative Effects $N = 46$		Positive Effects $N = 315$		Negative Effects $N = 272$		Positive Effects $N = 71$		Negative Effects $N = 65$	
	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$	$\bar{a}_\tau^c$	$t(\bar{a}_\tau^c)$
1	.181	1.32	.076	.32	.082	1.47	.188	2.43	−.082	−.80	.248	1.80
2	.538	2.38	.020	.08	.090	.96	.353	2.53	−.011	−.09	.547	2.72
3	.599	2.25	.007	.02	.024	.18	.355	1.88	.029	.17	.715	3.24
4	.447	1.50	−.083	−.21	−.007	−.04	.448	1.80	.123	.53	.932	3.03
5	.373	1.24	−.036	−.08	.056	.29	.488	1.77	.201	.65	1.101	2.59
10	.448	.74	.477	.75	−.013	−.04	.408	1.10	.761	1.32	1.447	2.31
30	−.190	−.16	−.211	−.15	−.363	−.45	−.019	−.02	1.458	1.07	5.195	2.79
50	−1.207	−.63	−1.591	−.86	−.861	−.60	.411	.25	1.988	.86	7.862	2.41

Early (late) reports are those which were released more than four days before (after) their expected date. The expected date is estimated as that for the same fiscal period in the previous fiscal year. See notes to table 6.

ability. However, for unexpectedly early reports, there appears to be little abnormal price activity following bad news and significantly large price movements following good news reports. We have already observed that unexpectedly early reports are dominated by good news and the relative number of reports (N) in table 8 reflects this. In contrast, there appears to be no abnormal price variability following late good news reports but substantial abnormal price changes following late bad news reports, which give a symmetry to the results.

A caveat should be given in interpreting these results. We have examined postreport price variability relative to that prior to the report. What we have interpreted as "abnormal" price variability is not (necessarily) evidence of the market being slow to adjust to or "reflect" the information in the report. The results are certainly consistent with this, but may also reflect the fact that more information about the firm arrives at the market following the report. For example, an early good news report or a late bad news report may spur further investigations of the firm by analysts. Finally, as always, the results are conditional upon our estimation procedures and stationarity over the observation period.

5. *Summary of Findings*

In this paper, we provide results on the relationship between reporting behavior and stock price behavior. We have not offered theories or hypotheses to explain what was observed, although we have taken the liberty to speculate on some points. Our findings from an analysis of the pooled cross-sectional and time-series data can be summarized as follows.

(1) The reporting lag times of firms in the sample are quite regular and predictable. For the representative firm, the standard deviation of reporting lag times for interim reports is three to four calendar days, and one week for annual reports.

(2) The security return variability associated with the release of earnings reports is not related to the time firms take to report after the end of the fiscal period, except as qualified in (4) below.

(3) There is an inverse relationship between firm size (measured by market value) and reporting lag. Further, there appear to be larger price reactions to the earnings reports of small firms than to those of large firms, as observed also by Atiase [1980].

(4) There appears to be some relationship between reporting lag time and return variability at report date for reports of relatively small firms bearing good news. Timely interim reports of small firms which bring good news are associated with higher price reactions than are those with longer lag times. This is not observed for reports revealing bad news or reports for relatively large firms.

(5) When reports are published earlier than expected, they tend to have larger price effects than when they are published on time or later

than expected. Further, unexpectedly early reports are characterized by good news, whereas unexpectedly late reports tend to bear bad news.

(6) When firms miss their expected reporting dates, the market interprets this as bad news.

(7) Abnormal price variability is not restricted to the day of the report, given that the report has a significant effect on prices on its release date. The size of the abnormal postreport price variability is positively related to the size of the price reaction to the report, and positively related to reporting lag time. It is also higher following a bad news report than a good news report. When a report has little effect on prices upon its announcement, there is little abnormal postreport price variability.

(8) Abnormal postreport price variability is associated with unexpectedly early reports which convey good news, but not with those which convey bad news. Symmetrically, there is abnormal postreport price variability following late bad news reports, but none following late good news reports.

REFERENCES

ATIASE, R. K. "Predisclosure Informational Asymmetries, Firm Capitalization, Financial Reports, and Security Price Behavior." Ph.D. dissertation, University of California, Berkeley, 1980.

BALL, R., AND P. BROWN. "An Empirical Evaluation of Accounting Income Numbers." *Journal of Accounting Research* 6 (Autumn 1968): 159–78.

BEAVER, W. H. "The Information Content of Annual Earnings Announcements." *Journal of Accounting Research* 6 (Supplement 1968): 67–92.

BROWN, P., AND J. KENNELLY. "The Information Content of Quarterly Earnings: An Extension and Some Further Evidence." *Journal of Business* 45 (July 1972): 403–15.

BROWN, S. J., AND J. B. WARNER. "Measuring Security Price Performance." *Journal of Financial Economics* 8 (September 1980): 205–58.

CASTANIAS, R. P., II. "Macroinformation and the Variability of Stock Market Prices." *Journal of Finance* 34 (May 1979): 439–50.

DYER, J. C., AND A. J. MCHUGH. "The Timeliness of the Australian Annual Report." *Journal of Accounting Research* 13 (Autumn 1975): 204–19.

FOSTER, G. "Quarterly Accounting Data: Time-Series Properties and Predictive-Ability Results." *The Accounting Review* 52 (January 1977): 1–21.

———. "Intra-Industry Information Transfers Associated with Earnings Releases." *Journal of Accounting and Economics* 3 (December 1981): 201–32.

GIVOLY, D., AND D. PALMON. "Timeliness of Annual Earnings Announcements: Some Empirical Evidence." *The Accounting Review* 57 (July 1982): 486–508.

GRANT, E. B. "Market Implications of Differential Amounts of Interim Information." *Journal of Accounting Research* 18 (Spring 1980): 255–68.

MAY, R. G. "The Influence of Quarterly Earnings Announcements on Investor Decisions as Reflected in Common Stock Price Changes." *Journal of Accounting Research* 9 (Supplement 1971): 119–63.

MORSE, D. "Price and Trading Volume Reaction Surrounding Earnings Announcements: A Closer Examination." *Journal of Accounting Research* 19 (Autumn 1981): 374–83.

OHLSON, J. A. "On Financial Disclosure and the Behavior of Security Prices." *Journal of Accounting and Economics* 1 (December 1979): 211–32.

OPPONG, A. "Information Content of Annual Earnings Announcements Revisited." *Journal of Accounting Research* 18 (Autumn 1980): 574–84.

PATELL, J. M., AND M. A. WOLFSON. "Good News, Bad News, and the Intraday Timing of Corporate Disclosures." *The Accounting Review* 57 (July 1982): 509–27.

PENMAN, S. H. "An Empirical Investigation of the Voluntary Disclosure of Corporate Earnings Forecasts." *Journal of Accounting Research* 18 (Spring 1980): 132–60.

WHITTRED, G. P. "The Timeliness of the Australian Annual Report: 1972–77." *Journal of Accounting Research* 18 (Autumn 1980): 623–28.