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# The Interaction of Firm Size and Price-Earnings Ratio on Portfolio Performance

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ing period return on the DJIA in May-June and July-August of each year and subtracted the May-June return from the July-August return. Figure A plots the results.

Of the 58 observations, 31 were positive, implying advances, and 27 were negative. Advances were observed in every year from 1967 to 1973. Declines occurred in no more than four consecutive years. The celebrated rally of 1982—on the order of a 7.3 per cent return difference—has been exceeded only six times since 1926 and was the largest rally since the 9.3 per cent of 1970. The largest rallies occurred in 1932 (40.7 per cent), 1940 (14.1 per cent), 1930 (14 per cent) and 1962 (12.6 per cent). The worst declines occurred back-to-back in 1974 (−6.3 per cent) and 1975 (−6.0 per cent).

From Figure A it is apparent that the 1932 rally was exceptional. The May and June returns of −22.6 and −4.3 per cent were followed by July and August returns of 23.6 and 29.9 per cent. The magnitude of this rally was large enough to affect our t-test significantly. Removing the 1932 results would have produced a t-statistic for the DJIA of −0.39, which is not statistically significant. For the broader indexes, the t-statistics would have been significant at only the 15 and 20 per cent levels for the value and equally weighted indexes, which had return advances of 46 and 62 per cent, respectively, from May-June to July-August of 1932. Although the rally was evident in these indexes, it was not great enough to affect our conclusions.

The broader indexes had greater average returns than the DJIA, but also greater volatility, reflecting their inclusion of smaller firms' stocks. The larger standard deviation made it more difficult to find evidence of a rally. This, however, is not just a statistical phenomenon: It implies that there is considerable instability in the occurrence of summer rallies.

Thus, despite modest evidence of summer rallies, with advances occurring more often and being of a greater magnitude than declines, we have not determined whether abnormal profits can be made. For that we turn to the CRSP excess returns file.

This file contains daily risk-adjusted returns. Non-zero excess returns indicate either abnormal profits or losses. We looked for evidence of abnormal profits in the excess returns of an equally weighted portfolio of the 29 DJIA stocks previously examined.

The average daily excess return on this portfolio was −0.000486 in May-June and a slightly higher −0.00175 in July-August. The standard deviation was 0.0128 in May-June and 0.0132 in July-August. Neither is statistically significant by itself and, accordingly, the difference between the two is not significant at any reasonable level. If summer rallies take place, either they cannot be used to generate abnormal return or we have not found the proper mechanism for exploiting them.

## Footnotes

1. See R. Banz, "The Relationship Between Return and Market Value of Common Stocks," *Journal of Financial Economics*, March 1981, pp. 3–18 and M. Reinganum, "Misspecification of Capital Asset Pricing: Empirical Anomalies Based on Earnings Yields and Market Values," *Journal of Financial Economics*, 1981, pp. 19–46.
2. See M. S. Rozeff and W. R. Kinney, Jr., "Capital Market Returns: The Case of Stock Returns," *Journal of Financial Economics*, 1976, pp. 379–402 and D. B. Keim, "Size-Related Anomalies and Stock Return Seasonality," *Journal of Financial Economics*, 1983, pp. 13–32.
3. See for example the following articles: "Legendary Summer Rally of Stocks is Sighted but it Could Be a Mirage," *Wall Street Journal*, June 25, 1984, p. 31; "The Imponderables of a Summer Rally," *New York Times*, July 1, 1984, Section III, p. 10; "Likelihood of a Summer Rally," *New York Times*, June 19, 1984, p. D10; "Summer Rally: The Prospects," *New York Times*, July 13, 1982, p. D10; "The Summer Rally," *Forbes*, October 22, 1984, p. 154.
4. See "Legendary Summer Rally," *op. cit.*
5. If this is not found to be true, either our random number generator is not random or we simply have drawn too small of a sample.
6. The value-weighted market portfolio of the Center for Research in Security Prices (CRSP) of the University of Chicago is a market-value weighted combination of NYSE and AMEX stocks; the equally-weighted portfolio is a combination of all NYSE and AMEX stocks with equal weights. The equally weighted portfolio assigns more weight to smaller capitalized firms than the value-weighted portfolio does, so the latter reflects more heavily the performance of large firms. The CRSP files contain market indexes computed with and without dividends. We used the indexes without dividends because we wished to reflect only market prices.
7. The test of equality of means is based on the assumption of equality of variances. We also performed all the tests based on the assumption of unequal variances and obtained virtually identical results. We report only the results based on equal variances.

## The Interaction of Firm Size and Price-Earnings Ratio on Portfolio Performance

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This note examines the effects of price-earnings

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