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Firm Size, P/E, Timeliness Rankings, and Neglect Among Firms Analyzed by Value Line

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Introduction

In a recent article, Edelman and Baker (1987) present results indicating that the investor should "watch out when the number of institutional owners exceeds eight." In a dynamic study of the neglected firm effect, these authors found that excess returns are significantly reduced once the number of institutional owners is greater than eight. In their conclusion, the authors note that they made no examination of the impact of different types of institutional holders on returns. The present study attempts to shed some light on the significance of this limitation by testing for anomaly explanatory power across firms which are not neglected by the largest investment advisory service — Value Line, Inc.

Since the late 1970s, numerous studies have been published reporting evidence in conflict with the efficient market hypothesis. Variables which have persistently been related to abnormal returns are commonly referred to as anomalies, with three of the most commonly analyzed anomalies being the size effect, price/earnings ratio effect, and Value Line "enigma." These variables have consistently been related to returns in excess of that predicted by a variety of equilibrium models.

Researchers have attempted to explain these market anomalies in terms of tax effects, transactions costs, misspecification of systematic risk, and liquidity premiums with only partial success. Another proposed explanation for anomaly behavior has been firm neglect, and the related consequence of information deficiency. Arbel, Carvell, and Strebel (1982, 1983, 1985, 1987) argue that higher returns are required on investments for which there is little available information or thin institutional interest. This explanation is consistent with Merton's (1987) discussion of "shadow costs."

This study examines the importance of the three popular anomalies employing a sample of firms designed to minimize the potential confounding influence of firm neglect. Previous research controlling for firm neglect generally employed statistical control and included a proxy variable such as the period of time elapsed since listing, citations in the financial press, and the number of analysts following a given security. The control provided in this research is through experimental design. Specifically, the sample of firms consists only of those followed by Value Line. Such firms cannot be considered truly neglected in that Value Line publishes a comprehensive base of information from which investment decisions can be made as well as forecasts and evaluations.[2] Also, Value Line follows only those firms for which they believe there exists sufficient investor interest.

In order to give the reader an impression of how this screen compares to several alternative measures of firm neglect, institutional ownership, analyst interest, and investor activity were examined.[3] Information obtained and respective sources were:

a. Percentage of stock held by institutions — Standard & Poor's
b. Number of analysts making recommendations on a specified security — Zacks Croporate Earnings Estimator
c. Percentage of stock trading each week — Media General Financial Service

This information was obtained for the forty largest and forty smallest firms in the sample for which all information was available. These subsets were chosen to identify the potential variation in the level of neglect between the largest and smallest firms. As one can see by reviewing the first column of Table 1, the largest firms dwarfed the smallest firms by a ratio of 60 to 1.

Table 1

Measures of Firm Neglect for the
Smallest and Largest Forty Firms in the Sample
December 1989
(Ranges given in Parentheses)

Size Subset	Average Size in Billions	Percentage Institutional Ownership	Number of Analysts	Percentage of Stock Trading Weekly
Large	$8.66	51.3	23.5	1.17
		(74-22)	(33-8)	(4.6-0.6)
Small	$0.15	44.6	9.3	0.88
		(72-12)	(16-6)	(4.4-0.2)

SOURCES: Media General Financial Services, Zacks Corporate Earnings Estimator, and Standard & Poor's Online.

Institutional ownership was greater within the sample of large firms, holding 6.7 percent more of the outstanding equity. However, there was a wide range of institutional ownership within both the small and large size subsets. Eleven of the smaller firms had a higher institutional ownership level than the average large firm.

The number of analysts measured suggests that analysts were about two and one-half times more likely to include recommendations about larger firms in their reports. However, the amount of original information probably decreases as their number increases. This study focuses on anomaly explanatory power when information on the firm is widely disseminated by Value Line. Six analysts were offering insights for the most neglected firm in the

sample, suggesting that even this firm had an analyst clientele. Twenty-two of the forty small firms had more than eight analysts, or exceeded the limit specified by Edelman and Baker (1987) for benefitting from the neglected firm effect. Hence, even for this extreme sample, the confounding effects firm neglect has been reduced.

The higher level of institutional ownership and analyst interest may have resulted in the larger turnover ratio for large stocks. Nevertheless, eighteen of the forty large firms had a lower turnover percentage than the average small firm.

It is unlikely that any analysis of firm size influences will have an identical level of non-neglect in the small and large firm subsets. This comparison of firm neglect at the extremes of firm size within the Value Line set suggests that there is considerable overlap between the large and small firms in terms of institutional ownership and trading activity. The empirical results given below must be viewed with caution though, since larger firms have a greater following among analysts, and a higher institutional ownership and trading percentage.

Size, P/E, and Value Line's Rankings as Anomalies

Firm Size Effect

The notion that small firms, on average, earn higher risk-adjusted returns than large firms was established by Banz (1981) and Reinganum (1981). Although Roll (1981, 1983) put forth several explanations of the small firm effect, Reinganum's (1982, 1983) research demonstrated that none of the alternative explanations were able to eliminate the negative relationship between equity capitalization and stock returns. Biased betas caused by infrequent trading, abnormal January performance, inappropriate equilibrium models, illiquidity, and transactions costs differences were unable to explain the small firm effect.

Additional investigation has been conducted examining the relationship between the size effect and industrial groupings (Carleton and Lakonishok, 1986), security prices (Kross, 1985), relative prices (Zinvey and Thompson, 1987), positive skewness (Booth and Smith, 1987), and the day of the week (Keim, 1987). While these extensions provide more insight into the small firm effect, the explanatory power of the firm size variable survives.

Price/Earnings Ratio Effect

Another anomaly which has frequently been cited in the literature is the tendency of firms with low price/earnings ratios (P/E) to produce excess returns. Testing the proposition that low P/E securities outperform high P/E securities dates back at least to Nicholson (1960). More recently, Basu (1975, 1983) documented an eight percent difference in cumulative abnormal 18-month returns between the quintile of highest P/E securities and the quintile of lowest P/E ratio securities.

As with the firm size effect, much research has followed this original documentation of the P/E effect. Peavy and Goodman's (1983, 1985) findings suggest that the P/E effect is robust with respect to potential risk adjustment problems caused by differences in firm size, illiquidity, intervalling, and specifying risk in terms of systematic versus total return variability. Testing the P/E effect using stochastic dominance led Levy and Lerman (1985) to conclude that the P/E effect was robust to alternative specifications of risk aversion and that the market was inefficient. Transaction costs of approximately fifteen percent are necessary to eliminate the P/E effect, according to Dowen and Bauman (1984). Persistent earnings led Rendleman, Jones, and Latane (1987) to research demonstrating that more than half of the post-announcement response to current quarterly earnings may be a pre-announcement adjustment to the market's expectation of the next quarterly earnings announcement. Davis' (1989) results indicate that the level of unexpected earnings and the market reaction to unexpected earnings differs across size classes.

Value Line Timeliness Rankings

The **Value Line Investment Survey** provides a wide range of descriptive and analytical information on common stocks, including a weekly ranking of approximately 1600 common stocks on their projected relative price performance over the next 12 months. Rank I securities are expected to have the best relative price performance over the next 12 months, while Rank V securities are expected to perform the worst. Issues of the **Investment Survey** are published weekly and are available in most libraries. It, therefore, serves as a base of knowledge available to many investors.

Value Line's Timeliness Rankings have attracted a great deal of attention. Performance evaluation studies by Black (1973), Holloway (1981), and Copeland and Mayers (1982) conclude Value Line has predictive ability. The latter researchers, using a future benchmarks technique, found that Rank I firms outperformed Rank V firms by 6.8 percent annually on a risk-adjusted basis over the 1965-1978 period. Stickel's (1985) results suggest that rank changes affect common stock prices and that abnormal returns were obtainable even with the inclusion of transaction costs. Peterson (1987) has reported that initial reviews of securities by Value Line provides significant information. Huberman and Kandel (1987) noted little relationship between the Value Line and firm size phenomena over a similar 1976-1985 period.

Research Procedure

Sample Description

The empirical sample consists of the common stock of corporations followed by the Value Line Investment Survey over the 1975-1984 period. This period lies subsequent to the last major revision of the formats and content of the **Investment Survey**.[4] In order to be in our sample set, the following set of information had to be available:

- Complete monthly closing price data for the December 1969 through December 1984 period.
- Complete quarterly dividend information for the January 1975 through December 1984 period.
- Value Line Timeliness Rankings for December 1974 through September 1984.
- Complete information on the number of shares outstanding for the 1975 through 1984 period.
- Complete quarterly earnings information from the last quarter of 1973 through the second quarter of 1984.

There were no fiscal year-end constraints. Only stocks traded on an exchange located in the United States were included in the sample set, in order to remove the confounding effects on price appreciation measurement caused by exchange rate fluctuations.

Of a potential 1600 firms which were, on average, followed by Value Line, 913 met these information requirements and were included in the sample set. Monthly returns for these firms were calculated on the basis of monthly closing prices and dividends reported by COMPUSTAT. Portfolio formation was conducted on a quarterly basis, in accordance with the frequency with which Value Line up-dates all corporate analyses. Using a three-month holding period may also minimize the confounding influence of a "January effect," which would only account for one third of the first quarter's time period.

Size was measured as the market value of the firm's outstanding common equity. P/E ratios were obtained by dividing the quarterly closing share price by the latest 12-month earnings, requiring a reporting lag of at least two months from the end of the fiscal period in order to minimize the "look-ahead bias" found by Banz and Breen (1986). The last available Timeliness ranking was used for stock classification purposes.

One problem frequently encountered in corporate earning research concerns proper portfolio assignment of firms with negative earnings. Negative earnings may be the result of several factors in addition to unprofitable operations. A survey of 1980 financial statements, near the midpoint of this sample, by the American Institute of Certified Public Accountants found that over twenty percent include nonoperating items.[5] Automatic inclusion of firms with negative earnings over the preceding year in the high price/earnings ratio class may not accurately capture their true price/earnings identity. Consequently, the empirical tests were based on firms with positive earnings.

Independent variable influences cannot be investigated sensibly if multicolinearity exists within the independent variable set. Consequently, independent variable multicolinearity was examined prior to investigating the independent variables' ability to explain portfolio returns. Spearman rank correlations for the entire ten-year period were well below the 0.10 level, as shown below. A positive relationship between size and P/E was not unexpected, since share price is in the numerator of both variables. Value Line had a tendency to give positive rankings to large firms during the sample period. The negative relationship between Timeliness rank and P/E was prob-

35

ably a consequence of Value Line's view of stocks with low price/earnings ratios as being more timely investments.

Spearman Rank Correlation Coefficients

Size & P/E	.072
Size & Rank	.048
Rank & P/E	− .046

Across the individual years, each anomaly pair had both positive and negative relationships. Fluctuating anomaly correlation signs and significance implies a lack of persistent multicolinearity. Similar results were found by Dowen and Bauman (1986), leading them to conclude that size and price/earnings ratios are separate effects.

Portfolio Formation

Stocks were assigned to three equal classes of firm size and price/earnings ratios without consideration of the other anomaly characteristics.[6] In this independent grouping process, the order of variable classification does not affect the significance of observed main and interaction effects. Comparison of "independent" versus "within" grouping techniques by Cook and Rozeïf (1984) led to the observation that Banz' (1981) results favoring the small firm effect and Basu's (1983) results favoring the P/E effect were a consequence of the order of anomaly classification.

All stocks in the first third of size and P/E and ranked 1 for Timeliness were collected into portfolio one. Next, all stocks common to the first third of size and P/E which were ranked 2 for Timeliness form portfolio two. Repetition results in 45 portfolios, with the last portfolio consisting of those stocks ranked 5 for Timeliness, which are in the largest size third and highest P/E third.

In order to preclude the possibility that findings would be biased by uncommon anomaly combinations consisting of just one stock with unique returns unrelated to market factors and uncharacteristic of that classification's general performance, analysis of variance was computed requiring a minimum of three stocks per cell. Requiring this minimal level of diversification and eliminating any confounding effects of negative earnings reduces the number of portfolio-quarters by ten percent to 1593. For the entire 1975-1984 period, the average number of quarterly observations per portfolio was 35.4, with a range from 26 to 40. Average quarterly rates of return for both the full and adjusted samples are exhibited on the left and right side of the diagonal, respectively, in Table 2. The similar holding period returns suggest that the reduced sample size resulted in little variation in the basic relationship between the independent and dependent variables.

Dependent Variables

Nominal returns, market-adjusted excess returns, and beta-adjusted residual returns served as the dependent variables. Average quarterly nominal rates

Table 2
Average Quarterly Rates of Return[a]
All Portfolios & Portfolios Having a Minimum of Three Positive P/E Ratios
1975-1984

Classification Category (I)	Percentage Returns		
	Nominal Returns (II)	Market-excess Returns (III)	Beta-adjusted Returns (IV)
Firm Size			
Small	7.40/7.02	0.74/ 0.31	0.32/ −0.45
Medium	5.63/5.64	−1.04/ −1.09	−0.64/ −0.91
Large	4.35/4.65	−2.28/ −1.85	−0.99/ −0.75
P/E Ratio			
Low	6.81/6.94	0.07/ −0.03	0.42/ 0.19
Medium	5.76/6.91	−0.89/ −0.91	−0.23/ −0.58
High	4.80/4.66	−1.75/ −1.69	−1.51/ −1.71
Timeliness Rankings			
I	6.59/6.47	0.33/ 0.15	−1.28/ −1.31
II	6.92/6.91	0.31/ 0.33	−0.25/ −0.26
III	5.86/5.85	−0.84/ −0.81	−0.25/ −0.24
IV	4.78/4.77	−1.92/ −1.89	−0.73/ −0.73
V	4.79/4.73	−2.18/ −2.16	−0.98/ −0.99
Average	5.79/5.77	−0.86/ −0.88	−0.44/ −0.70

[a]Numbers represent an arithmetic average of the specified, dependent, quarterly returns of each anomaly class during the 1975-1984 period. Each firm size and price/earnings average is based on a maximum of 600 portfolio quarters (3 P/E categories * 5 ranks * 40 quarters), while each Value Line Average is based on a maximum of 360 portfolio-quarters (3 size classes * 3 P/E classes * 40 quarters). Values before the diagonal represent returns from all available portfolio quarters ($N = 1776$), while values after the diagonal represent returns on portfolios with at least three positive price/earnings ratios ($N = 1593$).

of return, including dividends, within each anomaly class are presented in Table 2. Market-adjusted excess returns were obtained by reducing portfolio returns by the return on the equally-weighted Center for Research in Security Prices (CRSP) Index, including dividends.

Simply reducing portfolio returns by the return on the market portfolio implicitly incorporates the assumption of equal risk across portfolios. Analysis of variance and multiple regression tests demonstrated that there is a significant negative relationship between beta and both firm size and Time-

liness rankings, whereas the relationship between beta and the price/earnings variable was positive.[7] The sign and significance of findings are consistent with previous research which indicates that small firms, firms with high earnings capitalizations, and those which are ranked 1 for Timeliness by Value Line are more risky. Therefore, market model residuals are also presented.

Average residual returns across anomaly classes are presented in column IV of Table 2. The firm size effect, as measured by the difference between the average small firm and average large firm return $(R_s - R_l)$, is reduced by over fifty percent when returns are adjusted for systematic risk. A slight increase in the range of returns earned by portfolios based on P/E may be observed when comparing market-excess and beta-adjusted residuals. The relationship between Timeliness rankings and beta-adjusted residuals have a distinctive inverted U-shape. The lowest returns were earned on stocks with extreme rankings within both sample sets.

While small firms on average earned positive nominal returns in all quarters, the size of the average quarterly returns varied across the quarters. Much of the first quarter's return dominance, as exhibited in Table 3, arises from the first quarter of 1975, when the stock market rose by fifty percent. Excluding this observation reduces the average nominal return during the first quarter to approximately 9.5 percent. Comparing this value to the small firm returns for the remainder of the year suggests that the concentration of the firm size effect in the first quarter is about half as great for this sample set as that observed within Keim's (1983) sample. The usage of non-neglected firms and quarterly holding period returns may have reduced the seasonal nature of the firm size available.

Table 3

Nominal Quarterly Returns on Diversified Portfolios of Small Firms with Positive Earnings
1975-1984
In Percentages

Calendar Quarter:	First	Second	Third	Fourth
Nominal Return:	15.16	3.88	4.94	4.26
Standard Deviation:	22.22	11.29	12.20	10.84

Empirical Results

Size, P/E, and Rank Significance

The General Linear Model (GLM) procedure within the SAS Statistical Package was employed in the investigation of main and interaction effect significance. Results of the analysis of anomaly-based portfolio returns, shown in Table 4, indicate that the firm size effect declined in significance

38

Table 4

Analysis of Variance Results

1975-1984[a]

	F-ratios[b]		
	Nominal Returns (I)	Market-excess Returns (II)	Beta-adjusted Residuals (III)
Main Effects			
Firm Size	4.71***	15.30***	1.83*
P/E Ratio	4.20***	8.37***	13.91***
Timeliness Rankings	2.03*	9.72***	2.66**
Interaction Effects			
Size * P/E	0.08	0.77	1.07
Size * Rank	0.46	1.80*	1.99*
P/E * Rank	0.20	0.62	0.21
Size * P/E * Rank	0.17	0.35	0.47

[a]The maximum possible number of portfolio-quarters is 1800 (45 cells * 40 quarters). There were 1593 portfolios with at least three positive price/earnings ratios.

[b]Asterisk(s) indicate the level of F-ratio significance based on the following scale: * = .10   ** = .05   *** = .01

when beta-adjusted residuals were employed. However, all anomalies provide significant main effects at least at the ten percent level, regardless of the return measure used.[8] Extended investigation of the size-rank interaction discovered that the significance of this interaction was concentrated in the fourth calendar quarter of the year.[9] The size-rank interaction in other quarters, as well as the other interactions, were insignificant. This interaction insignificance is consistent with the findings of Cook and Rozeff (1984) and Arbel (1985), which led these authors to conclude that size and P/E are independent variables.

Multiple Regression Coefficients

Important implications for anomaly-based investment strategies arise from the general lack of an interaction. Without an interaction, the impact of the significant main effects on portfolio returns is additive. Portfolios may be formed by selecting securities on the basis of anomalous variables independently, instead of having to be cognizant of the interaction of firm size, P/E, and Timeliness ranking characteristics. The marginal effects of the variables can be gleaned through multiple regression.

In order to determine whether the negative relationship found by prior researchers existed for this database, the following additive return function was utilized.

$$R_{jt} = a_{jt} + B_1(Size_{jt}) + B_2(P/E_{jt}) + B_3(Rank_{jt}) + E_{jt}$$

where:
R_{jt} = the return on common stock portfolio j during quarter t

a_{jt} = the return on common stock portfolio j during quarter t, which is unrelated to the anomaly variables

$SIZE_{jt}$ = the equity value classification of corporations in portfolio j at the beginning of quarter t

P/E_{jt} = the price/earnings ratio classification of corporations in portfolio j as of the beginning of quarter t

$RANK_{jt}$ = the Value Line Timeliness ranking of stock in portfolio j as of the beginning of quarter t

B_1, B_2, B_3 = regression coefficients on the related explanatory variables

A negative relationship was found between return and each of the explanatory variables, in accordance with prior research. By analyzing the coefficients presented in Table 5, one may note that this was true regardless of whether nominal, market-excess, or beta-adjusted returns were observed. In all instances, the explanatory power of the model was highly significant.

Quarterly, incremental returns from selecting firms in the next smaller size class averaged 140 basis points, 29 after adjusting for systematic risk. The absolute value of P/E coefficients were the most consistent across return vari-

Table 5

Anomaly Coefficient Values and Significance[a]
1975-1984

Dependent Variable	Estimated Regression Coefficients[b]			Model F-ratio	R^2
	Firm Size	P/E Ratio	Timeliness Rankings		
Nominal Returns	−0.0140*** (−3.60)	−0.0073* (−1.89)	−0.0061*** (−2.59)	7.81***	.02
Market-excess Returns	−0.0124*** (−6.48)	−0.0079*** (−4.10)	−0.0078*** (−6.61)	34.48***	.07
Beta-adjusted Residuals	−0.0029* (−1.65)	−0.0094*** (−5.38)	−0.0003 (−0.30)	10.81***	.05

[a] There were 1593 portfolios with at least three positive price/earnings ratios.

[b] Numbers in parentheses are t-ratios. Asterisk(s) indicate the level of coefficient significance based on the following scale: * = .10   ** = .05   *** = .01

40

ables. One could have increased nominal returns 146 (2*73) basis points by selecting low P/E firms, instead of high P/E firms. Since firms with lower P/Es also tend to have less risk, the risk-adjusted gain from selecting low P/E firms, instead of high P/E firms, was 188 (2*94) basis points.

Timeliness rankings were significantly related to market-excess returns. Choosing from stocks ranked I for Timeliness, instead of V, would have increased average, quarterly, market-excess returns 312 (4*78) basis points. The linear explanatory power of the Timeliness variable was insignificant when returns were adjusted for systematic risk, perhaps as a result of the frequency of high betas among rank I firms.

Transactions Costs and Portfolio Turnover Adjusted Returns

The research presented above suggests that firm size, P/E, and Timeliness rankings were significantly related to portfolio returns during the 1975-1984 period. The stock market appears to be allocationally imperfect, because abnormal returns could have been earned on a set of stocks with certain well-defined anomaly characteristics. Nevertheless, the stock market may be found to be operationally efficient once transactions costs are taken into account.

Transactions costs are an increasing function of portfolio turnover, brokerage charges, and illiquidity. Portfolio turnover, defined as the percentage of stock leaving an anomaly-based portfolio during a quarter, was calculated for each of the forty-five portfolios. Fifty-eight percent of the stocks moved to another anomaly portfolio combination each quarter. Less than five percent of all firms moved to another size category during a quarter. Price/earnings ratios were more volatile, with about twenty percent of all firms being classified in another P/E subset during the subsequent quarter. Forty percent of sample firms had a different Timeliness ranking three months later. The simultaneous change of all three anomaly characteristics occurred only 0.5 percent of the time.

A fixed, round-trip two percent and variable, size-based transactions cost rate was applied to portfolio returns. Two percent was chosen because this figure is approximately equal to the average total transactions costs in 1979, as determined by Stoll and Whaley (1983). Two percent also corresponds to the average full-service commission rate in 1979 obtained from a Fidelity Brokerage Service survey.[10]

As one would expect, reducing all returns by two percent, the same metric, had no impact upon anomaly explanatory power. Reducing returns by the multiple of a two percent transactions cost and a portfolio turnover factor had a small impact on anomaly significance, as illustrated in the second row of each dependent return variable set in Table 6. There was a decline in the absolute value of the main effect's F-ratios, but few changes in the level of significance.

A size-based variable transactions costs rate was also incorporated into the investigation. Stoll and Whaley's findings concerning the distribution of transactions costs across deciles of firm size, on the basis of differing bid-

ask spreads and commission costs, were combined into three equal size-based groups. Based on Stoll and Whaley's observations, the mean return on the portfolios of small firms was reduced by 3.76 percent, medium-sized firms returns were reduced by 2.60 percent, while large firm returns were reduced by 2.02 percent. In the current study, these percentages were multiplied by the respective turnover ratios.

The effect of adjusting returns for bid-ask spread and commission cost variance due to firm size is given in the "Turnover and Size" rows of Table 6. As one would expect, the F-ratios on firm size declined. Nevertheless, in the market-excess case, the explanatory power of firm size retained a 0.05 level of significance. Using the size-based transactions costs adjustment had little impact on the other main effects' explanatory power, or that of their interaction.

In order to quantify the effect of transactions costs upon anomaly portfolio returns, returns net of size-based transactions costs were calculated for

Table 6

Analysis of Anomaly Significance Net of Transactions Costs
F-ratios Based on Analysis of Variance

Adjustment[b]	Main Effects			Interaction Effects			
	Firm Size	P/E Ratio	Timeliness Rank	Size* P/E	Size* Rank	P/E* Rank	Size* P/E*Rank
Dependent Variable: Nominal Returns							
No Adjustment	4.71***	4.20***	2.44***	0.08	0.46	0.20	0.17
Portfolio Turnover	4.32***	3.74***	2.36***	0.14	0.44	0.20	0.17
Turnover & Size	1.04	3.60***	2.49***	0.17	0.48	0.20	0.17
Dependent Variable: Market-excess Returns							
No Adjustment:	15.30***	8.37***	9.72***	0.77	1.80*	0.62	0.35
Portfolio Turnover	6.14***	3.81***	6.95***	0.75	2.68**	0.64	0.36
Turnover & Size	2.76**	6.75***	11.62***	0.88	2.86**	0.61	0.37
Dependent Variable: Beta-adjusted Residuals							
No Adjustment	1.83*	13.91***	2.66**	1.07	1.99*	0.21	0.46
Portfolio Turnover	1.67	11.94***	4.33***	1.06	3.29***	0.22	0.48
Turnover & Size	1.36	11.23***	3.94***	1.22	3.54***	0.21	0.48

[a]Asterisk(s) indicate the level of F-ratio significance based on the following scale:
* = 0.10   ** = 0.05   *** = 0.01

[b]Portfolio turnover row transactions costs were obtained by multiplying each anomaly portfolio's turnover ratio, the percentage of stock not in the portfolio in sequential quarters, by 2.0 percent. Analysis of variance was applied to portfolio returns reduced by this sum.

Size adjustments were generated in accordance with the findings of Hans R. Stoll and Robert E. Whaley, "Transaction Costs and the Small Firm Effect," **Journal of Financial Economics** 12 (June 1983): 72-73. Portfolio turnover ratios were multiplied by 3.76/2.60/2.02 percent mean transactions cost rates for small/medium/large NYSE firms, as observed by Stoll and Whaley, in order to adjust portfolio returns for size and turnover."

the extreme portfolios. On average, net quarterly market-excess returns on the portfolio of small, low P/E, Rank I stocks exceeded net return on large, high P/E, Rank V stocks by 4.03 percent. Net quarterly beta-adjusted residual returns on the small, low P/E, Rank I portfolio exceeded the net return on the large, high P/E, Rank V portfolio by a lesser 0.17 percent, or 0.68 percent on an annualized basis. Since these values are net of all transaction costs, investors would still benefit from portfolio strategies on the basis of a combination of all three anomalies.

Conclusions

Since the late 1970s, the flow of published research reporting evidence contrary to the Efficient Market Hypothesis has intensified. Three of the most popularly analyzed anomalies have been the size effect, P/E effect, and Value Line Enigma. In order to minimize the confounding influence of informational deficiency and firm neglect, a special sample consisting of the firms followed by Value Line was chosen. Nominal, market-excess, and beta-adjusted residual returns were gathered for portfolios formed from common stocks followed by Value Line throughout the 1975-1984 period.

The empirical findings suggest that firm size, P/E, and Timeliness rankings may be used to differentiate between portfolios and thereby earn an abnormal rate of return. The results imply that firm neglect and/or informational deficiency is an insufficient explanation of anomaly explanatory power. Excess returns are sufficiently large to cover transactions costs, though the importance of firm size is greatly reduced. Even for those firms which are widely followed and for which a great deal of information is widely disseminated, investors would have profited by purchasing only small firms, with low P/Es, that were considered timely investments by Value Line.

Footnotes

[1]This article contains a portion of the first author's dissertation, which was successfully defended at the University of Kentucky in 1987. The first author is indebted to his committee: Drs. Keith H. Johnson (Chair), Michael Carpenter, Jeffery Born, Richard Furst, and Charles Hultman.

[2]Aswath Damodaran (1987) has recently provided insight into information structures. He explains why the kurtosis of the return distribution for information-poor firms is greater than that for information-rich firms. The kurtosis values for our data are: 4.21, 3.15, and 4.72 for small, medium, and large firms, respectively, suggesting that small firms in the Value Line universe are not necessarily information-poor firms.

[3]The authors wish to thank an anonymous referee for suggesting the use of institutional ownership as a means of measuring firm neglect. Although the values given in Table 1 are from a recent period, they indicate that in-

stitutional interest continues to be heavy across firm size extremes within the Value Line sample.

[4]Features added to the **Investment Survey** during the early 1970s include providing a beta measure and safety index, an enlarged summary-index, and an improved statistical format.

[5]According to **Accounting Trends & Techniques**, 35th edition (New York: Institute of Certified Public Accountants, 1981), 9.5 percent of income statements report losses from discontinued operations, 6.8 percent report extraordinary items (e.g., losses from floods and fires), and 5.7 percent report losses from inventory adjustment.

[6]Preliminary tests that were run using four equal classes of firm size and P/E resulted in an abundance of empty cells. Consequently, a 45 portfolio matrix was used for testing purposes. Firms with negative earnings were eliminated from the sample.

[7]Betas were calculated via the market model employing the latest five years of monthly security returns and the CRSP equally-weighted index (including dividends). Data not presented may be obtained from the authors upon request.

[8]Significant main effects were also found when the analyses were conducted employing betas adjusted for their tendency to regress towards unity.

[9]During the October-December quarter, returns on medium-sized firms with Timeliness rankings of I are uncharacteristically low. The low return does not appear to be related to abnormally good returns early in the year, because this portfolio's market-excess return is a negative 1.4 percent during the January to March period. A "January effect" type of reversal may be occurring for Rank V small stocks which posted a 2.7 percent market-excess return on average in the first calendar quarter. However, this is 1.9 percent less than the loss during the October to December period.

[10]The average of four exemplary rates quoted by Fidelity Brokerage Services, based upon its survey of leading brokerage firms, was 1.83 percent; in "This Chart Could Change the Way You Invest," **Wall Street Journal**, January 4, 1980, p. 20.

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