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Value Line Investment Survey Rank Changes and Beta Coefficients

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Abstract

We use a Value Line rank varying market model to test the existence of a possible systematic association of Value Line ranks with the beta coefficients of securities. The results indicate that about 57 percent of the companies' betas in the sample are associated with Value Line ranks and that these firms are in general small. It is also found that the mean and the volatility of Value Line ranks per se are negatively and positively related to the beta coefficient, respectively.

Value Line Investment Survey Rank Changes and Beta Coefficients

The information content of Value Line Investment Survey rank changes has attracted considerable attention of financial academicians as well as security traders. A number of studies have analyzed the performance of Value Line ranking system.[1] The main conclusion of previous studies, with few exceptions, is that Value Line rank changes have better ability to predict stock price movements than asset pricing models, i.e., several versions of the CAPM. In other words, an investor can generate excess returns even net of transaction costs by following the Value Line rank changes. This, being called the "Value Line enigma," has been used as a typical example against the semi-strong form of the market efficiency hypothesis. If the market is efficient, stock prices instantaneously adjust to reflect all publicly available information including Value Line rank changes and that knowledge of such information cannot lead to excess returns.

The purpose of this paper is to investigate the association of Value Line rank changes with security beta changes, in an attempt to explain how and why the Value Line enigma has been observed. To test the systematic relation between security beta changes and Value Line rank changes, a specification analysis technique is used. The next section describes the model for testing the association of Value Line ranks and the security beta. In the third section, we describe the data and present empirical results. The last section contains a brief conclusion.

Methodology

The empirical version of the market model to estimate the beta coefficients of securities can be written as[2]

$$\tilde{R}_{jt} = \alpha_j + \tilde{\beta}_{jt}\tilde{R}_{mt} + \tilde{\varepsilon}_{jt}, \tag{1}$$

where R_{jt} = the rate of return on security j in period t,

R_{mt} = the rate of return on market portfolio m in period t,

β_{jt} = the beta of security j in period t, and

ε_{jt} = the disturbance term for security j, which is assumed to have mean zero and constant variance.

If the beta of security j is related to Value Line rank changes, we may specify the beta as a functional form of Value Line rank as:

$$\tilde{\beta}_{jt} = \beta_j + \gamma_j \tilde{V}_{jt}, \tag{2}$$

where V_{jt} represents Value Line rank of security j in period t.

Then, substituting equation (2) into equation (1), we have a Value Line rank varying market model as

$$\tilde{R}_{jt} = \alpha_j + \beta_j \tilde{R}_{mt} + \gamma_j(\tilde{V}_{jt}\cdot\tilde{R}_{mt}) + \tilde{\varepsilon}_{jt} \tag{3}$$

The variable, $\tilde{V}_{jt}\tilde{R}_{mt}$, in equation (3) can be interpreted as an interaction variable reflecting the association of Value Line rank with the time varying beta. If the coefficient, γ_j, is not equal to zero, we may interpret that the market reacts to Value Line ranks and thus the Value Line rank has extra explanatory power for forecasting the beta coefficient and the rate of return of the security. In addition, to obtain the average relation between the Value Line rank and the beta, the following two cross-sectional regressions will be run as:

$$M_{vj} = a + b\beta_i \tag{4}$$

$$\sigma_{vj} = a' + b'\beta_i, \tag{4}'$$

where M_{vj} and σ_{vj} represent the mean value and the standard derivation of Value Line ranks of security j, respectively.

Data and Empirical Results

Weekly ranks of all securities of Value Line were secured for the period July 1978-February 1983. Five ranks are provided by Value Line depending on the expected price performance over the next 12 months. Ranks 1 and 5 represent the best and the worst securities, respectively. Excluding the firms not included in the CRSP monthly files, we obtained 1331 companies. Monthly rate of returns on the individual securities and the value weighted NYSE index are used to estimate the coefficients of equation (3). For V_{jt} in equation (3), monthly average of weekly Value Line ranks are used.

Through examination of t-statistics of the coefficients in eq. (3), we find that 189 firms have γ_j significantly different from zero at the 5 percent level. The names of these companies are listed in Appendix A. To save space, the empirical results of only the first 32 companies in alphabetical order are listed in Table 1 for an exhibition purpose.[3]

For example, the American International Company's beta can be decomposed into two components--the constant component, 3.477, and the Value Line rank related component, -.583. In other words, the responsive coefficient of beta to Value Line rank is -.583 for American

International Company, and thus one percent increase in Value Line rank causes .583 percent decrease in the company's beta.

Insert Table 1 about here

In addition, we also find that 567 firms have t-statistics for γ_j coefficients larger than one. In statistical sense, this number of companies, 756 (567 plus 189), certainly implies that the market perceives Value Line ranks as an important source of information in pricing securities. It is interesting also to note that most of these 756 companies are small in terms of size. Therefore, it appears that the smaller the size of the firm, the greater the impact of Value Line ranks on the determination of the beta. More importantly, most of γ_j coefficients are negative (even in other companies not reported here), suggesting that the Value Line rank is negatively related to the rate of return. The lower the rank, the better the projected performance of the security and thus the higher return (note that rank 1 represents the security which is projected to perform best). This result is consistent with the findings in previous studies on the performance of Value Line. However, this paper shows that the result may be through the association of Value Line ranks with the beta. This is confirmed by examining the coefficients of equation (4).

The results on the cross-sectional regressions in (4) are shown in Table 2. The beta in Table 2 was estimated using monthly rate of returns on individual securities and the NYSE index, based on equation (1). M_{vj} and σ_{vj} were calculated using weekly Value Line ranks. As expected from negative coefficients of γ_j, in general, in Table 1, the b

coefficient in Table 2 is significantly negative. More interestingly, the results in Table 2 also suggest that the volatility of Value Line ranks per se is positively related to the beta. The b' coefficient in equation (4)' is .1490, which is significant at the 1 percent level. Since the beta is a measure of the volatility of a security relative to the market and the Value Line rank is a relative measure of projected performance of individual security, it is not surprising that the beta is positively associated with the volatility of the Value Line rank.

Conclusion

A number of previous studies have shown outstanding performance of Value Line ranking system. We use a Value Line rank varying market model to test the existence of a possible systematic association of Value Line ranks with the beta coefficients of securities. Using weekly ranks of 1331 companies for July 1978-February 1983, we find that about 57 percent of the companies' betas are associated with Value Line ranks and that these firms are in general small. This finding provides an insight into how Value Line rank changes affect the individual firm's stock price. It is also found that the mean and the volatility of Value Line ranks per se are negatively and positively related to the beta coefficient, respectively.

Footnotes

[1]See, for references, F. Black, "Yes, Here is Hope: Tests of Value Line Ranking System," Financial Analyst Journal 29 (1973), pp. 10-14; T. E. Copeland and D. Mayers, "The Value Line Enigma (1965-1978): A case Study of Performance Evaluation Issues," Journal of Financial Economics 10 (1982), pp. 289-321; C. Holloway, "A Note on Testing an Aggressive Investment Strategy Using Value Line Ranks," Journal of Finance 36 (1981), pp. 711-719; S. Stickel, "The Effect of Value Line Investment Survey Rank Changes on Common Stock Prices," Journal of Financial Economics 14 (1985), pp. 121-143.

[2]See E. Fama, "Foundations of Finance," Basic Books, New York (1976).

[3]The results of all other firms are available from the authors upon request.

Table 1
Value Line Rank Varying Market Model[a]

$$R_{jt} = \alpha_j + \beta_j R_{m,t} + \gamma_j (V_{jt} R_{mt}) + \varepsilon_{jt}$$

	Corporation	$\hat{\beta}_j$	$\hat{\gamma}_j$
1.	Am Int'l	3.477	-.583
		(5.320)	(-3.144)
2.	Amr Corp	2.668	-.385
		(5.526)	(-2.176)
3.	Aetna Life & Casualty	1.846	-.250
		(7.124)	(-2.907)
4.	Albertson's, Inc.	1.501	-.319
		(5.610)	(-3.000)
5.	Alcan Aluminum	1.964	-.290
		(5.563)	(-2.398)
6.	Allegheny Int'l	2.832	-.457
		(6.106)	(-3.257)
7.	Amerace Corp.	2.562	-.563
		(3.722)	(-2.779)
8.	Amer. Broadcasting	2.025	-.396
		(5.256)	(-3.164)
9.	Amer. Hoist Derrick	2.438	-.364
		(3.611)	(-1.935)
10.	Amfac Inc.	-.418	.502
		(-.757)	(2.895)
11.	Amrep Corp.	-1.735	1.100
		(-1.092)	(2.188)
12.	Anchor Hocking Corp.	-.745	.371
		(-1.386)	(2.426)
13.	Avon Products	1.535	-.235
		(5.743)	(-2.551)
14.	Ball Corp.	1.632	-.347
		(3.506)	(-2.163)

Table 1 (cont'd.)

	Corporation	$\hat{\beta}_j$	$\hat{\gamma}_j$
15.	Bandag, Inc.	-.339 (-.594)	.546 (2.547)
16.	Bk America	1.563 (5.225)	-.243 (-2.190)
17.	Baxter Travenol Labs	.390 (1.441)	.334 (2.296)
18.	Best Products	2.293 (6.199)	-.338 (-2.569)
19.	Boeing Company	2.216 (6.652)	-.305 (-2.406)
20.	Braniff Int'l Corp.	2.508 (5.805)	-.369 (-3.227)
21.	British Petroleum	-.163 (-.436)	.293 (2.512)
22.	Brooklyn Union Gas	1.513 (2.653)	-.412 (-2.259)
23.	Burroughs Corp.	1.729 (6.360)	-.236 (-2.795)
24.	CCI Corp.	.236 (.346)	.493 (2.009)
25.	Caesors World	4.354 (2.753)	-1.124 (-2.217)
26.	Campbell Red Lake	1.451 (3.199)	-.433 (-2.520)
27.	Central Soye Co.	3.234 (3.956)	-.627 (-2.765)
28.	Champion Int'l	2.034 (4.168)	-.312 (-2.016)
29.	Chasebrough-Ponds	.221 (.870)	.217 (2.079)

Table 1 (cont'd.)

	Corporation	$\hat{\beta}_j$	$\hat{\gamma}_j$
30.	Cities Service	2.107 (5.010)	-.273 (-2.035)
31.	City Investing	2.111 (3.796)	-.348 (-1.936)
32.	Coleman Co. Inc.	2.032 (4.502)	-.431 (-2.811)

[a]The numbers in parentheses represent t-statistics.

Table 2

Cross-Sectional Regressions Between Value Line Rankings and the Betas of 1331 Companies*

$$M_{vj} = a + b\beta_j$$

$$\sigma_{vj} = a' + b'\beta_j$$

a	b	$\bar{R}^2$	D-W	a'	b'	$\bar{R}^2$	D-W
3.251	-.2391	.054	2.02	.6296	.1490	.084	2.01
(109.21)	(-8.72)			(43.07)	(11.06)		

*The numbers in parentheses represent t-statistics.

D-W stands for Durbin-Watson statistics.

$\bar{R}^2$ represents the adjusted R^2.

Appendix A

The List of 189 Firms with Significant γ Coefficient in Equation (3)

Am Int'l	Amr Corp.	Aetna Life & Casualty
Albertson's Inc.	Alcan Aluminum	Allegheny Int'l
Amerace Corp.	Amer. Broadcasting	Amer. Hoist & Derrick
Amfac, Inc.	Amrep Corp	Anchor Hocking Corp.
Avon Products	Ball Corp.	Bandag, Inc.
Bankamerica Corp.	Baxter Travenol Labs	Best Products
Boeing Company	Braniff Int'l. Corp.	British Petroleum
Brooklyn Union Gas	Burroughs Corp.	ECI Corp.
Caesars World	Campbell Red Lake	Central Soya Co.
Champion Int'l Corp.	Chesebrough Ponds	Cities Service
City Investing Co.	Coleman Co. Inc.	Colonial Penn Group
Cominco Ltd.	Computer Sciences	Copperweld Corp.
Cox Communications	Crane Co.	Cross (A.T.)
Dana Corporation	Data General Corp.	Deere & Co.
Deltona Corp.	Dennison Mfg.	Dial Corp.
Disney (Walt) Prod.	Diversified Ind.	A G Edwards and Sons
El Paso Co.	Electronic Assoc	Empire Distric Elec
Equitable Life Mortg.	Evans Products Corp	Far West Financial
Federal-Mogul	Figgie Int'l	Fin'l Santa Barbara
First Mississippi	First Natl St Bancor	Fruehauf Corp
Fuqua Ind.	Gatx Corp	Gemini Fund
General Cinema	Gerber Products	Getty Oil
Giant Portland Cement	Giddings & Lewis	Gleason Works
Gulton Ind	Handleman	Harsco Corp.
Hewlett-Packard Co.	Hillenbrand Inds.	Hilton Hotels
Hoover Universal Inc.	Hunt (Phil A) Chem	Imperial Oil Ltd. "A"
Ingersoll-Rand Co.	Interco, Inc.	Int'l Flav & Frag
Int. Reetifier Corp.	Interstate Baker	Interstate Power
Jamesway Corp.	Jewel Companies	Johnson & Johnson
Kdt Ints	Kansas City Southern	Kennametal Inc.
Kyocera Corp. (ADR)	La Quinta Motor Inns	Lennar Corp.
Leverage Fund Boston	Libby Owens Ford	Lockheed Corp.
MCA Inc.	Macmillan Inc.	Madison Fund
Manhattan Industries	Map Co. Inc.	Maryland & Cup Corp.
Masco Corp.	McIntyre Mines Ltd.	Metromedia, Inc.
Miller-Wohl	Monarch Machine Tool	NVF Co.
National Gypsum	New York Times	Newmont Mining
Niagra Shave Corp.	Nicor, Inc.	Norlin Corp
Nortek Inc.	Northwest Airlines	Northwest Energy
Olin Corp.	Oneok Inc.	Opelika Mfg.
Overseas Shipholding	Pacific Gas & Electric	Parkers Pen Co.
Pennzoil Co.	Peoples Drug Store	Peoples Energy Corp
Petroleum & Res. Corp.	Philip Morris	Piedmont Nat. Gas
Pioneer Corp	Pitney-Bowes	Pneumo Corp.
Polaroid Corp.	Ponderosa, Inc.	Presly, Cos.

Appendix A (cont'd.)

Onanex Corp.
Revere Copper & Brass
Rockwell Int'l
SPS Technologies
Scoa Ind.
Sears, Roebuck
Smith (A.O.) Corp
Southern Union Co.
Suave Shoe Corp.
Swank Inc.
Talley Ind.
Texfi Industries
Travelers Corp.
United Brands
U.S. Shoe Corp.
Vista Resources Inc.
Washington Gas Light
Western Pacific Ind.

RCA Corp.
Revlon, Inc.
Ronson Corp.
Sabine Corp
Scott & Fetzer Co.
Shell Transport
South Jersey Ind.
Standard Oil (Ind.)
Sunbeam Corp
Teco Energy Inc.
Tesoro Petroleum
Tiger Int'l Inc.
Tri-South Invert Inc.
U.S. Gypsum Co.
Univar
Wainoco Oil
Washington Nat'l. Cp.
Wheeling-Pittsburgh

Reeding & Bates
Rexham Corp.
Ryan Homes
Santa Fe Industries
Scottys Inc.
Simmonds Prec. Prod's
Southern Pacific
Stop & Shop Cos
Superior Oil
Taft Broadcasting
Texaco, Inc.
Tokheim Corp.
Union Oil Co. Calif.
U.S. Industries
Valley Nat'l Corp
Warnaco Inc.
Westwart Transm'n