Yes, The Value Line Enigma Is Still Alive: Evidence from Online Timeliness Rank Changes

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Beginning June 9, 2005, Value Line started announcing its *Timeliness* changes online at 10:00 am on Thursday, one day earlier than Friday noon's post delivery. We confirm that the Value Line effect still exists but shifts to Thursday in the Internet era. Unlike previous findings, the next-day abnormal return after the announcement has disappeared, suggesting that the market efficiently priced the change. We find that a portfolio upgraded from rank 5 to 4 gains the highest cumulative abnormal return of 9.07% over a 50-day window. Finally, we find that the post-earnings announcement drift does not explain the Value Line enigma.

Keywords: Analyst recommendations, market efficiency, Value Line

JEL Classifications: G11; G14

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1. Introduction

Most previous studies of the Value Line effect conclude that rank changes and initial reviews add value for investors. Conversely, some researchers cast doubt on this conclusion by arguing that the Value Line effect is merely a manifestation of the post-earnings announcement drift. This study re-examines the existence of the Value Line effect. In contrast to previous studies using data from when Value Line was distributed only in printed form and mailed to subscribers, we study the first period that Value Line was distributed to subscribers through its web site as well as in print.

Published by Value Line Publishing, Inc., Value Line Investment Survey covers approximately 1,700 stocks and is best known for the *Timeliness* rank of a stock's expected investment performance (see Womack, 1996; Das, Levine, and Sivaramakrishnan, 1998, for further discussion). Copeland and Mayers (1982) and Stickel (1985), among others, show that Value Line rank changes have significant effects on common stock prices.

Traditionally, Value Line makes a rank-change decision on Wednesday, finalizes the decision on Friday, and mails the *Investment Survey* with an intended delivery day of the following Friday (seven days after the final decision). For researchers, there are two problems with mail-based recommendations. First, most previous studies use data provided directly by Value Line that are preliminary ranks as of Wednesday instead of the final ranks as of Friday that subscribers actually receive (Stickel, 1985). Value Line management estimates that approximately four ranks per week are changed between Wednesday and Friday due to unusual events. Such inconsistency understates the effect of a rank change on security prices and biases the results against finding a rank-change effect. Second, although Value Line targets all subscribers to receive the issue by mail on the following Friday, some subscribers inevitably receive the issue

early or late (Peterson, 1987). Due to early mail arrival or leakage of recommendations, trading days immediately preceding the intended arrival date could also capture information effects (Rogers and Owers, 1984). These and other studies report abnormal returns associated with rank changes over several days around the intended Friday release date.

Beginning on June 9, 2005, Value Line made its *Timeliness* rank changes available to all subscribers on its web site at 10:00 a.m. EST on Thursdays. If the Value Line enigma exists, then it should move along with the rank-change announcement date and thereby shift one day backwards to Thursday. Since Value Line is still mailing out its newsletters to subscribers with an intended delivery on Friday, we want to know whether newsletters are still relevant to the Value Line enigma. We also are interested in how long it takes the market to reflect rank changes released on the Internet. Further, we use this new setting to re-examine whether the Value Line effect is just a by-product of the post-earnings announcement drift.

Our study differs from previous work in that it focuses on weekly rank-change reviews on different announcement days, examines a more efficient information dissemination channel (the Internet), uses less noisy data, and employs a more robust cross-sectional statistical analysis with more control variables compared to prior studies.

2. Related studies on the Value Line effect

As a potential rejection of the semi-strong form of market efficiency, the *Value Line Enigma* (so named by Copeland and Mayers, 1982) has existed since its debut in 1967 . Black (1973, p.14) concludes, "In sum, portfolios managed on the basis of the Value Line ratings provide consistently superior performance, even after transaction costs and management fees, for some investors."

Consistent with Black's claim, Holloway (1981, 1983) finds significant abnormal performance for portfolios with rank 1 (highest) stocks. Huberman and Kandel (1987) show that rank 1 and 2 stocks outperform rank 4 and 5 stocks even after controlling for firm size. Copeland and Mayers (1982) find that the abnormal return spread between rank 1 and 2 stocks is 6.8% on an annualized risk-adjusted basis. Stickel (1985) further finds that rank changes from 2 to 1 have the most dramatic positive impact on stock prices and such an impact causes multiple-day abnormal returns. Peterson (1987, 1995) confirms the Value Line effect.

In contrast to Value Line effect proponents, Rogers and Owers (1984) and Pawlukiewicz and Preece (1991) cast doubt on the Value Line effect when studying *Value Line Special Situations Service*. Affleck-Graves and Mendenhall (1992) find no evidence of abnormal performance once rank changes have been adjusted for earnings surprises, implying that the Value Line enigma is merely a manifestation of post-earnings announcement drift. However, Choi (2000) implements techniques similar to those of Affleck-Graves and Mendenhall (1992) and concludes that the Value Line effect does not need earnings surprises to outpace the models on a gross basis.

3. Data

Our sample covers online rank changes between June 9, 2005 and October 12, 2006.[1] Weekly updates of *Timeliness* are directly downloaded every Thursday from online VLIS. We require that all firms must have 2005-2006 return data from the Center for Research in Security Prices (CRSP). Finally, we obtain the consensus earnings forecast from Institutional Brokers Estimate System (IBES).

The final sample covers 71 weekly rank changes from 1,506 U.S. companies. There are a total of 4,048 reviews, including 3,803 rank-change reviews, 120 initial reviews, and 125

[1] Value Line moved its weekly review release time to 8:00 am EST on Mondays after October 12, 2006.

dropped reviews.[2] Another 203 reviews are also removed from the sample because of missing data or for not appearing in the IBES database.

4. Methods

4.1 Event study

We follow Peterson (1987) and use the Scholes and Williams (1977) market model to estimate expected returns.[3] Like Stickel (1985), we use event days from t+51 to t+290 as the market model estimation period.[4] Finally, for inference interpretation, we use the Patell (1976) Z-test that examines whether average abnormal stock returns are equal to zero.[5] To avoid the dependence on normality of return distributions as assumed in the Patell parametric test, we report the Cowan (1992) Z-test, a nonparametric generalized sign test. We use one-tail tests in our event study due to the explicit direction of sentiment change from Value Line's upgrade or downgrade recommendations.

4.2 The Value Line effect and post-earnings announcement drift test

Affleck-Graves and Mendenhall (1992) argue that the Value Line enigma is a manifestation of post-earnings announcement drift (*PEAD*) and that timeliness ranks have no predictive power for firms with small earnings surprises. However, Choi (2000) rejects the claim by demonstrating significant abnormal returns for Value Line portfolios even after adjusting for earnings surprises. To examine this controversy, we use a different regression model with the

[2] A rank can be dropped from review under many circumstances, such as corporate scandals, incomplete data, etc.

[3] As robustness tests of the results, we also use market-adjusted Fama-French and Carhart four-factor models to obtain expected returns. The results on event study and subsequent tests are qualitatively the same. The results are available from the authors.

[4] The primary reason for using a post-event estimation window is because Copeland and Mayers (1982) argue that the abnormal returns associated with Value Line's recommendations persist up to 13 weeks after the recommendations are made public. Furthermore, Value Line analysts do include the relative historical performance of the stock when issuing timeliness ranks. Hence, parameters needed to compute expected returns should be estimated over a period after the initial listings. The importance of using a post-event estimation window is also stated in Cowan, Nayar, and Singh (1990). As a standard practice, the minimum estimation length is set to three trading days. Stocks that lack available trading data are dropped from our event study.

[5] We also consider tests corrected for serial dependence (CDA) and potential variance changes (StdCsect). The results are similar and not reported in detail.

White correction controlling for heteroskedasticity. Stickel (1985) and Huberman and Kandel (1987) argue that stock price movements are associated with firm size, so we control for firm size in the model. Since *PEAD* is not linear in earnings changes and is driven by the most extreme earnings changes, we follow Affleck-Graves and Mendenhall's (1992) approach and impose a quintile rank variable to control for this nonlinearity. In addition, previous studies argue that one parameter in the ranking that Value Line assigns a stock is its previous price performance (Copeland and Mayers, 1982; Stickel, 1985; Peterson, 1987). We control for the price momentum effect in the model. Our cross-sectional model is:[6]

$$CAR(t_1,t_2)_i = \beta_0 + \sum_{k=1}^{7}\beta_i D_{k,i} + \beta_8 SIZE_i + \beta_9 MOM_i + \beta_{10} ES_i + \beta_{11} Quin_i + \beta_{12} DIFF_i + \beta_{13} SAME_i + \varepsilon_i, \quad (1)$$

where *CAR* = the cumulative abnormal return for stock *i* between time t_1 and t_2. *D* = the dummy variable and equals one if stock *i* falls into one of the rank-change groups (ranging from one to seven). The intercept measures the estimate for the base group (rank 8). *SIZE* = the control variable for the size of the firm and is measured as the log of a firm's market equity. *MOM* = the price momentum, which is stock *i*'s cumulative 50-day raw returns prior to event date (t0).[7] *ES* = the earnings surprise of the firm defined below. *Quin* = the coded variable, which is an integer between one and five and represents the Value Line forecast error quintile. For instance, *Quin* = one (five) if the stock *i* belongs to the bottom (top) 20% earnings shock. The quintile cutoff point is based on the entire Compustat population. *DIFF* = the control variable for the days between the earnings per share (*EPS*) announcement and the rank change for stock

[6] As a robustness test, we also use Choi's (2000) approach to purge the top and bottom quintile stocks with large earnings shocks; the results are similar and not reported in detail.

[7] Stickel (1985, page 129) shows a clear price momentum 50 days prior to event day zero across eight groups of stocks.

i. *SAME* = the dummy variable and equals one if stock *i*'s rank change occurs on the same day as its *EPS* announcements.

In line with Affleck-Graves and Mendenhall (1992) and Choi (2000), we use a four-quarter seasonal random walk (SRW) model without drift to forecast earnings.[8] Specifically, the quarterly earnings surprise is calculated as follows:

$$ES_{i,t} = \frac{(AE_{i,t} - EF_{i,t})}{P_{i,t}} \ , \qquad (2)$$

where $ES_{i,t}$ is the most recent price-deflated earnings surprise for stock *i* at quarter *t* on or before Value Line's rank-change announcement day. $AE_{i,t}$ is the actual *EPS* of stock *i* reported in quarter *t*. $EF_{i,t}$ is the forecasted *EPS*, which is $AE_{i,t-4}$ for stock *i* in quarter *t*-4. $P_{i,t}$ is stock *i*'s closing price 10 trading days before the earnings release for quarter *t*.

5. Results

5.1 Abnormal return surrounding rank-change date

Since we have initial and drop rank reviews and rank-change reviews, our sample is demarcated into two categories. Panel A of Table 1 lists the first category: initial/drop reviews. Ranks under this category are not subject to a rank change, and hence, we record them as their initial rank or their last rank before being dropped. According to Value Line, stocks in rank 1 are expected to have the best relative performance over the next 12 months, while stocks in rank 5 are expected to have the worst relative performance over the next 12 months. We reclassify ranks 1 and 2 as *bullish* recommendations, 3 as *neutral*, and ranks 4 and 5 as *bearish* recommendations. Panel B of Table 1 shows the second category where the stocks are subject to a rank change. Value Line indicates whether a rank assignment is a change from the previous ranking

[8] Results from using the IBES analyst forecasts model ($EF_{i,t}$ = median of earnings forecast for stock *i* at quarter *t*) as shown in Philbrick and Ricks (1991) are consistent with our SRW model's results and not reported in detail.

and also the direction of a rank change. We further define eight groups that represent rank changes in different directions. G1 to G4 are defined as *upgraded* groups while G5 to G8 are defined as *downgraded* groups. Following Stickel (1985), stocks moving two ranks (e.g., 3 to 1) are consistent with stocks moving one rank (e.g., 2 to 1) and we do not further separate them.

---Please place Table 1 here ---

Panel C demonstrates the buy-and-hold abnormal returns for different windows starting from the rank-change date. The CAAR (-50,50) window shows that cumulative abnormal returns decrease from G1 to G8, similar to results reported by Stickel (1985). The CAAR (-50, -1) window discloses a price momentum 50 days before the event date. The CAAR (0,0) window shows that G1 and G2 benefit from Value Line's *upgrade* review with a one-day significant abnormal return of 1.23% and 0.07%, respectively. Not surprisingly, G5 suffers from Value Line's *downgrade* review with a significant -1.09% abnormal return while G7 experiences an unexpected 0.08% jump on the review date. In the CAAR (0,50) window, it appears that G4 (rank change from 5 to 4) generates the best abnormal return of 9.07% following the event date, which is inconsistent with previous literature and indicates that investors respond most positively to stocks that have been upgraded from Strong Sell to Sell. A graphical demonstration of CAAR (0,50) is in Figure 1.

---Please place Figure 1 here ---

Figure 1 shows that a simple buy-and-hold strategy in G4 generates about 9% cumulative abnormal returns over a holding period of 51 days. In contrast, a buy-and-hold strategy in G1 generates merely 2.26% over the same holding period. A 9.07% cumulative abnormal return for G4 is considered profitable even after accounting for transaction costs as shown in Choi

(2000).[9] This finding supports Black's (1973) argument and benefits investors who trade according to Value Line's rank-change information.

In Figure 2, we plot average abnormal relative volume (AARV, hereafter) during the same 101-day window. All groups show abnormal volume jumps around five trading days prior to rank-change announcements. Furthermore, AARVs of G1 and G5 have significant jumps on the rank-change day. We propound that the abnormal change in volume could be due to leakage of information, also see Rogers and Owers (1984). The window between the initial rank-change date and the date received by subscribers is approximately seven days or five trading days. An abnormal change in volume five days prior to Value Line's official announcement implies that informed agents are already trading on the rank-change information before it is announced to the public, ceteris paribus.

---Please place Figure 2 here ---

Table 2 presents the average abnormal returns (AAR, hereafter) with Patell Z and Cowan Z statistics and the CAAR for the eight rank-change groups. Results in Table 2 indicate that subsequent performance for each group follows through its performance prior to the rank change, which again suggests that the Value Line ranking system upgrades stocks with positive momentum and downgrades stocks with negative momentum (Stickel, 1985). The tests of significant AAR at day zero in Table 2 reject the null hypothesis of no information content for the Value Line rank change. Consistent with previous findings, G1 generates the most significant effect on a one-day return (AAR_{g1}= 1.23%, Patell Z_{g1} = 11.18, Cowan Z_{g1} = 7.62). Although G2

[9] As stated in Choi (2000, p. 490), the average round-trip transaction cost for a NYSE/Amex largest cap stock is 0.57% (0.31% Buy + 0.26% Sell) while 3.81% (1.78% Buy + 2.03% Sell) for a smallest stock; on the other hand, an average round-trip transaction cost for a Nasdaq largest cap stock is 0.40% (0.24% + 0.16%) while 5.76% (2.85% Buy + 2.91% Sell) for a smallest stock. No matter what combination of size is in a Value Line portfolio (although large- size stocks dominate in VLIS), transaction costs clearly do not write off the 9.07% abnormal return of G4 in general.

also shows significant price movement on the event date, the magnitude of return (AAR_{g2}= 0.07%, Patell Z_{g2} = 1.68, Cowan Z_{g2} = 1.65) is smaller than that in G1. On the contrary, when stocks are downgraded from Rank 1 to Rank 2 (G5), the AAR_{g5} is -1.09% with Patell Z_{g5} = -10.26 and Cowan Z_{g5} = -6.39. The negative response of G5 is almost symmetric to the positive response (G1). The response for G8 is statistically insignificant, indicating that the market has already adjusted to possible bad news related with *bearish* stocks.

---Please place Table 2 here ---

Previous literature records that significant returns occur at least three days around (t-1, t0 and t+1) event dates. The post-announcement drift is primarily due to an inefficient mail delivery procedure (Peterson, 1987). However, the results in Table 2 provide contradictory evidence. Specifically, the findings indicate no significant abnormal return (except G4) on Friday, one day after the event date, consistent with Internet-based rank changes being priced more rapidly, if not instantly. Based on the results of Table 2, we conclude that releasing rank changes on the Internet has rendered the mailed print edition largely irrelevant to the Value Line enigma.

5.2 Price adjustment of individual securities to a rank change

Previous studies report that the next-day (t+1) adjustment of portfolio returns to Value Line's new information is significant when delivered by the U.S. Postal Service (Stickel, 1985; Peterson, 1987). In this section we revisit the stock-price adjustment on day t+1 to Value Line rank-change information under the new online delivery system. Although we observe that G1 does not experience a next-day significant price adjustment in Table 2, we carry out a stronger test used in Stickel (1985) to test whether stocks with a significant abnormal reaction on the event date will experience a significant next-day price movement. To make our results comparable, we follow Stickel (1985) and select securities in G1 that have significant abnormal per-

formance on the event date.[10] The selection criterion is based on the fact that securities in G1 tend to have larger adjustment magnitudes. We define significant performance as standardized abnormal return (SAR, hereafter) greater than 1.65 (statistically different from zero at the 10% level). This filter requirement results in 93 securities in G1 with significant abnormal performance on event day zero (Thursday).

---Please place Table 3 here ---

In contrast to Stickel (1985), we fail to reject the null hypothesis that stock prices adjust in a single day (day zero). For the 93 securities in G1 with significant SAR, the AAR is significant only on the event date (AAR_{all} = 2.95%, Patell Z_{all} = 16.22, Cowan Z_{all} = 7.95) but insignificant afterwards. To examine whether the next-day price adjustments are different across firm size, we split the 93 total sample into three groups according to the firm's market cap: small (top 1/3 of sample), mid (middle 1/3 of sample), and large (bottom 1/3 of sample) stocks. Table 3 indicates that the results on the small and large cap sub-samples are consistent with the full sample tests (AAR_{small} = 4.18%, Patell Z_{small} = 11.31, Cowan Z_{small} = 5.34; AAR_{large} = 1.62%, Patell Z_{large} = 5.49, Cowan Z_{large} = 3.58). The magnitude of the response is appreciably higher for small caps than for large caps, which suggests that small stocks respond to news much more strongly than large stocks. In sum, the price adjustment to a rank-change test confirms the results in Table 2 of the disappearance of the next-day drift.

5.3 Stock price reaction to initial reviews

Peterson (1987) shows that security prices react to initial reviews made by VLIS. Furthermore, there is a three-day abnormal return surrounding the rank release date (t-1, 0 and t+1).

[10] Limiting the analysis to the stocks that have the stronger market reaction could bias toward finding that the adjustment is also quick. This would affect the results in Stickel (1985) as well as ours, so the comparison between our result and Stickel's should still be valid.

To examine whether the market still reacts to initial reviews with drift, we employ a procedure similar to Peterson (1987).

---Please place Table 4 here ---

The findings in Table 4 confirm Peterson's (1987) results that initial reviews convey information to the market. We also find that when securities are initially added to *bullish* (*bearish)* rankings, the Value Line effect is *positive* (*negative*) and statistically significant on the event date. Consistently, however, the next day (t+1) adjustment pattern found by Peterson (1987) has disappeared. When securities are initially classified as *neutral* by Value Line, they do not experience significant movement on the review day ($AAR_{Neutralt0}$ = -0.27%, Patell $Z_{Neutralt0}$ = -0.14, Cowan $Z_{Neutralt0}$ = -0.48) but have a significant drop on the following day ($AAR_{Neutralt+1}$ = -0.51%, Patell $Z_{Neutralt+1}$ = -2.54, Cowan $Z_{Neutralt+1}$ = -2.50). O'Brien, McNichols, Lin (2005), among others suggest that *neutral* reviews have *negative* implications among sell-side analysts. Given that Value Line is not a sell-side agency, *neutral* rankings by Value Line could imply that the future movement of the stock is uncertain. We can see from Table 4 that on the initial review date investors react more to *bullish* and *bearish* rankings and less to *neutral* rankings. *Neutral* sentiments are highly uncertain and could downplay their attractiveness relative to the more clear *bullish* or *bearish* counterpart. The uncertain response from investors to Value Line's initial Rank 3 can also be detected from thin trading volume ($AARV_{Neutralt0}$ = 2.15%, Patell $Z_{Neutralt0}$ = 1.23, Cowan $Z_{Neutralt0}$ = 2.47) on the initial review date. Rank 3 securities also experience insignificant volume reactions over multiple days around the release day compared to significant AARV on most days under *bullish* and *bearish* securities.

5.4. Test for post-earnings announcement drift and firm-size effect

In this section we address the criticism of Affleck-Graves and Mendenhall (1992) and examine whether the Value Line enigma is merely a manifestation of post-earnings announcement drift.

---Please place Table 5 here ---

When CAAR is regressed against a group of dummy variables (as a measure of the Value Line ranking effect) (Model 1), the results show a significant difference between G1 (D_1 = 0.0117, *t-stat*$_1$ = 6.14) and G8, where the latter one is the base group. The difference is also pronounced between G5 (D_5 = -0.0111, *t-stat*$_5$ = -6.00) and G8. The coefficients on D_1 and D_5 have opposite signs, which confirm the event-study results that G1 (G5) has the best (worst) performance. On the other hand, when CAAR is regressed against earnings shock with quintile rank variable and firm size as control variables (Model 2), neither earnings shock nor size is statistically significant, indicating that the Value Line enigma is not a manifestation of either post-earnings announcement drift or size effect. When dummy variables are combined with the control variables (Model 3), the parameter estimates for the group dummy variables are still significant. Further, the results are robust to periods from the one-day window to the 51-day window. Not surprisingly, the Value Line ranking effect on abnormal returns slowly fades when prolonging the testing window.

6. Conclusion

This study re-examines the existence of the Value Line enigma following online rank changes between June 9, 2005 and October 12, 2006. We find that the Value Line *Timeliness* rank-change enigma still exists but shifts one day ahead to Thursday instead of its conventional Friday. Since Value Line is still mailing its print edition for delivery every Friday in this period,

the disappearance of the Friday effect suggests that the print edition has become largely irrelevant for the Value Line enigma.

Consistent with Stickel (1985), we also find that a *Timeliness* rank upgraded from 2 to 1 generates a daily 1.23% average abnormal return while a *Timeliness* rank downgraded from 1 to 2 has the opposite effect with a daily -1.09%. We show that portfolios upgraded from timeliness rank 5 to 4 yield the highest CAAR of 9.07% when using a buy-and-hold strategy, something not previously reported in the literature. Such a CAAR is large enough to exceed transaction costs. Additonally, we observe that the next day abnormal return following initial reviews found by Peterson (1987) has disappeared with online availability of timeliness rank. Finally, we test the relation between post-earnings announcement drift and the Value Line enigma and confirm Choi's (2000) argument that the Value Line enigma is not due to post-announcement drift.

In sum, using a new setting along with a previously unavailable data set, we find that the Value Line enigma, such as rank change and initial review effects, still exists but shifts according to Value Line information release date. The new and accelerated online delivery system comes with benefits including less time for information leakage, quicker reflection of information into stock prices, and most importantly, allows investors to access the information quicker and more efficiently, which in turn promotes overall market efficiency.

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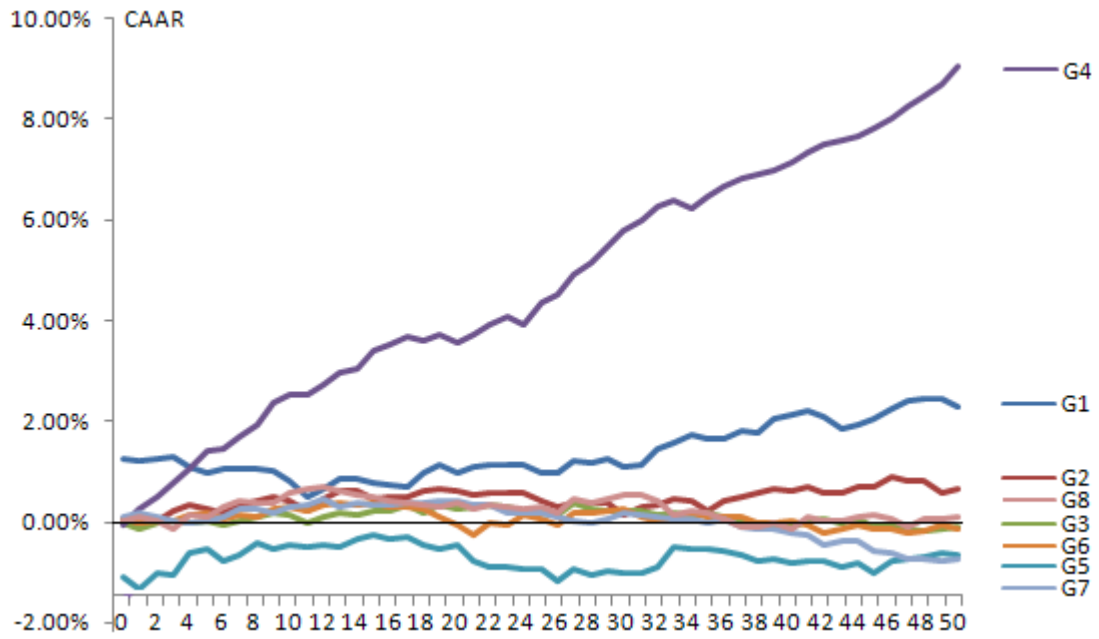

Figure 1
Cumulative average abnormal return (CAAR) by rank-change group from day 0 to day +50

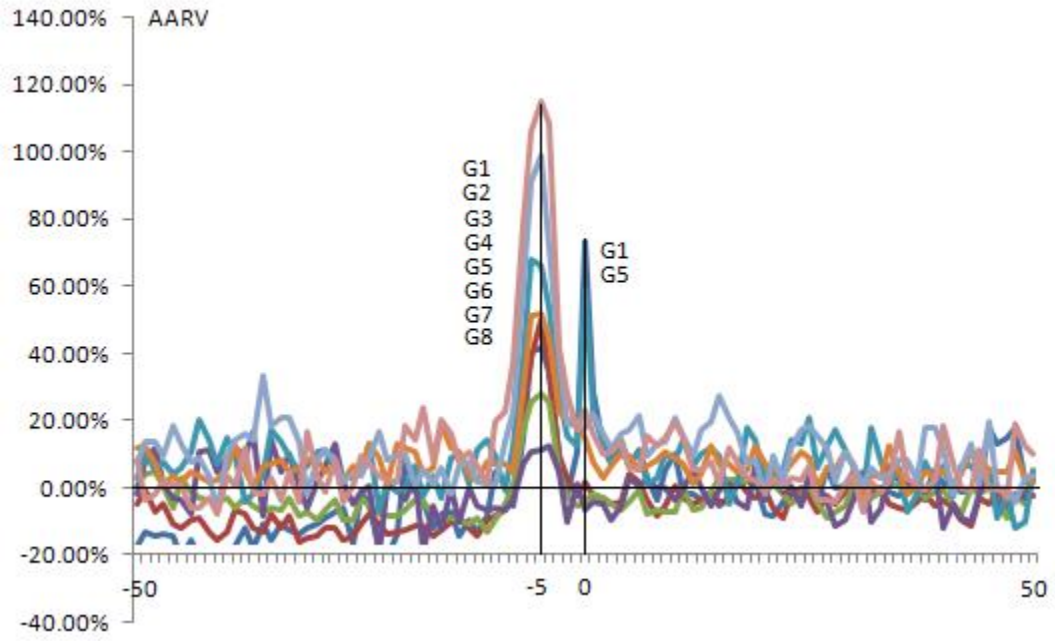

Figure 2
Average abnormal relative volume (AARV) by rank-change group from day -50 to day +50

Table 1
Descriptive statistics of Value Line weekly rank changes between June 9, 2005 and October 12, 2006

Initial review/drop events are not subjected to a rank change and therefore are reported in their original five-scale rank. We define rank moving-up stocks as bullish in G1 to G4 and rank moving-down stocks as bearish in G5 to G8. The number of observations in the cross-sectional tests is lower because we lose 203 stocks that do not match with IBES database or have missing earnings data. CAAR(t_1, t_2) represents the cumulative average abnormal return between time $t_1$and t_2 using the Scholes-Williams market model. Patell Z statistics are are in i*talics* under each associated CAAR.

Panel A. Initial review	(*Bullish*)	(*Bullish*)	(*Neutral*)	(*Bearish*)	(*Bearish*)
Initial review rank	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Number of observations	9	28	63	19	1
Review dropped from rank	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Number of observations	4	20	65	34	2

Panel B. Observations with each group								
Group number	G1	G2	G3	G4	G5	G6	G7	G8
From rank	Rank 2	Rank 3	Rank 4	Rank 5	Rank 1	Rank 2	Rank 3	Rank 4
To rank	Rank 1	Rank 2	Rank 3	Rank 4	Rank 2	Rank 3	Rank 4	Rank 5
Upgrade/downgrade	Up	Up	Up	Up	Down	Down	Down	Down
Number of observations before cross-sectional tests	289	673	633	292	295	689	616	305
Number of observations in cross-sectional tests	281	633	605	277	287	640	583	294

Panel C. Buy-and-hold abnormal return								
Group number	G1	G2	G3	G4	G5	G6	G7	G8
CAAR (-50,50)	16.74%	10.62%	6.10%	24.14%	-10.47%	-12.14%	-13.37%	-15.59%
Patell Z $_{CAAR(-50,50)}$	*14.16****	*12.71****	*10.49****	*4.63****	*-8.08****	*-15.32****	*-15.32****	*-12.21****
CAAR(-50,-1)	14.48%	9.93%	6.23%	15.07%	-9.81%	-11.99%	-12.62%	-15.65%
Patell Z $_{CAAR(-50,-1)}$	*21.85****	*20.56****	*20.06****	*6.92****	*-12.62****	*-27.33****	*-26.84****	*-20.69****
CAAR(0,0)	1.23%	0.07%	-0.01%	-0.08%	-1.09%	0.06%	0.08%	0.01%
Patell Z $_{CAAR(0,0)}$	*11.18****	*1.68**	*-1.13*	*-0.91*	*-10.26****	*2.11**	*1.48$*	*0.11*
CAAR (0,50)	2.26%	0.69%	-0.13%	9.07%	-0.66%	-0.15%	-0.75%	0.06%
Patell Z $_{CAAR(0,50)}$	*3.53****	*1.04*	*2.56***	*2.37***	*-0.98*	*0.53*	*0.44*	*0.03*

The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively, using a one-tailed test.

Table 2
Event study on returns by rank change

The sample contains stocks experiencing a Value Line rank change between June 9, 2005 and October 12, 2006. Groups G1-G8 are defined in Table 1, panel B. AAR is percentage daily average abnormal return; CAAR is cumulative average abnormal return. Event day zero is the Thursday publication date of a Value Line rank changes. AAR of (-50,-4) is the average abnormal return on day t-4 while CAAR of (-50,-4) is the cumulative average abnormal return from t-50 to t-4. AAR of (4, 50) is the average abnormal return on day t+4 while CAAR of (4,50) is the cumulative average abnormal return from t-50 to t+50. Patell Z and Cowan Z test statistics are for AAR.

G1: Ranks 2 to 1

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	0.24%	0.91	-0.74	13.62%
-3	0.12%	-0.78	1.26	13.74%
-2	0.24%	3.24***	2.32*	13.98%
-1	0.53%	5.43***	3.73***	14.51%
0	1.23%	11.18***	7.62***	15.74%
1	-0.05%	-1.06	-0.15	15.69%
2	0.06%	0.03	2.55**	15.75%
3	0.02%	1.03	0.67	15.77%
(4, 50)	-0.17%	-0.99	-0.39	16.74%

G2: Ranks 3 to 2

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	0.39%	5.01***	0.57	9.55%
-3	0.20%	2.14*	2.50**	9.75%
-2	0.19%	3.73***	3.35***	9.94%
-1	0.01%	0.11	1.03	9.95%
0	0.07%	1.68*	1.65*	10.02%
1	-0.13%	-1.24	-1.18	9.89%
2	0.10%	3.59***	2.50**	9.99%
3	0.19%	2.25*	2.81**	10.18%
(4, 50)	0.12%	2.34**	1.34$	10.62%

G3: Ranks 4 to 3

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	0.14%	8.61***	-0.57	6.17%
-3	0.01%	32.42***	-0.01	6.18%
-2	0.07%	1.61$	1.42$	6.25%
-1	-0.05%	0.95	-0.73	6.20%
0	-0.01%	-1.13	-0.33	6.19%
1	-0.11%	-0.33	-1.09	6.08%
2	0.10%	1.61$	1.82*	6.18%
3	0.03%	3.73***	1.58$	6.21%
(4, 50)	-0.02%	1.25	-1.05	6.10%

G4: Ranks 5 to 4

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	0.30%	1.00	-0.46	14.00%
-3	0.31%	0.61	1.53$	14.31%
-2	0.38%	0.71	0.94	14.69%
-1	0.39%	2.71**	0.59	15.08%
0	-0.08%	-0.91	-1.75*	15.00%
1	0.32%	1.23	0.24	15.32%
2	0.24%	1.11	1.30$	15.56%
3	0.28%	0.32	1.18	15.84%
(4, 50)	0.26%	0.96	2.12*	24.14%

The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively, using a one- tailed test.

Table 2 – Continued

G5 Ranks 1 to 2

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	-0.69%	-6.74***	-2.19*	-9.49%
-3	-0.25%	-2.25*	0.02	-9.74%
-2	0.03%	0.25	0.84	-9.71%
-1	-0.09%	-0.82	-0.44	-9.80%
0	-1.09%	-10.26***	-6.39***	-10.89%
1	-0.26%	-1.12	-0.68	-11.15%
2	0.33%	2.97**	2.94**	-10.82%
3	-0.05%	-0.62	-0.56	-10.87%
(4, 50)	0.44%	3.95***	3.17***	-10.47%

G6: Ranks 2 to 3

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	-0.61%	-8.40***	-3.36***	-11.74%
-3	-0.13%	-1.93*	-1.30$	-11.87%
-2	-0.09%	-2.55**	-0.31	-11.96%
-1	-0.03%	-0.72	-0.46	-11.99%
0	0.06%	2.11*	1.37$	-11.93%
1	-0.08%	-1.11	-1.19	-12.01%
2	0.03%	-1.15	-1.00	-11.98%
3	0.02%	1.33$	0.30	-11.96%
(4, 50)	0.10%	0.47	0.99	-12.14%

G7: Ranks 3 to 4

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	-0.57%	-8.37***	-0.47	-12.64%
-3	-0.24%	-4.23***	-2.73**	-12.88%
-2	0.01%	0.08	2.19*	-12.87%
-1	0.23%	3.32***	3.32***	-12.64%
0	0.08%	1.48$	1.30$	-12.56%
1	0.10%	0.19	1.24	-12.46%
2	-0.09%	-1.29$	-0.31	-12.55%
3	-0.07%	-0.62	0.42	-12.62%
(4, 50)	-0.07%	-0.87	0.50	-13.37%

G8: Ranks 4 to 5

Event days	AAR	Patell Z	Cowan Z	CAAR
(-50, -4)	-0.89%	-8.67***	-1.51$	-15.34%
-3	-0.17%	-1.52$	-1.97*	-15.51%
-2	-0.07%	-0.71	-1.28	-15.58%
-1	-0.04%	-0.54	0.44	-15.62%
0	0.01%	0.11	1.25	-15.61%
1	0.06%	0.53	-0.02	-15.55%
2	-0.06%	-0.16	0.10	-15.61%
3	-0.15%	-1.89*	-1.97*	-15.76%
(4, 50)	0.26%	2.19*	0.44	-15.59%

The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively, using a one- tailed test.

Table 3
Price adjustment of individual securities in response to a rank change

Percentage average abnormal return (AAR) for stocks experiencing a Value Line rank change from rank 2 to rank 1 (Group G1) between June 9, 2005 and October 12, 2006 and a significant standardized abnormal return (SAR) at the 0.1% level. Event day zero is the Thursday publication date of a Value Line rank changes.

93 stocks in G1

		AAR	Patell Z	Cowan Z
Event day 0	Thu	2.95%	16.22***	7.95***
Event day +1	Fri	0.08%	1.13	1.17
Event day +2	Mon	-0.18%	-1.08	1.58$
Event day +3	Tue	-0.26%	-2.23*	-0.82
Event day +4	Wed	-0.22%	-0.36	-0.82

31 smallest stocks in G1

		AAR	Patell Z	Cowan Z
Event day 0	Thu	4.18%	11.31***	5.34***
Event day +1	Fri	0.28%	0.99	1.02
Event day +2	Mon	-0.46%	-0.97	-0.24
Event day +3	Tue	-0.44%	-1.13	-0.24
Event day +4	Wed	-0.44%	-0.98	-0.59

31 largest stocks in G1

		AAR	Patell Z	Cowan Z
Event day 0	Thu	1.62%	5.49***	3.58***
Event day +1	Fri	0.04%	0.02	0.45
Event day +2	Mon	0.33%	1.39$	2.19*
Event day +3	Tue	-0.48%	-1.76*	-0.95
Event day +4	Wed	-0.63%	-1.98*	-1.64$

The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively, using a one-tailed test.

Table 4
Market reaction to Value Line initial review

This table shows the event study results for a Value Line initial review, along with percentage daily average abnormal return (AAR), cumulative average abnormal return (CAAR), average abnormal relative volume (AARV), and cumulative abnormal relative volume (CARV) for stocks experiencing a Value Line rank change between June 9th, 2005 and October 12th, 2006. Stocks receive an initial review from Value Line in one of its five ranks. We define ranks 1 and 2 as bullish recommendations from Value Line, rank 3 as neutral, and ranks 4 and 5 as bearish recommendations. Event day zero is the Thursday publication date of a Value Line rank changes. AAR of (-50,-4) is the average abnormal return on day t-4 while CAAR of (-50,-4) is the cumulative average abnormal return from t-50 to t-4. AAR of (4, 50) is the average abnormal return on day t+4 while CAAR of (4,50) is the cumulative average abnormal return from t-50 to t+50. Patell Z and Cowan Z test statistics are for AAR and AARV.

Bullish initial review ranks 1 and 2 (N=37)

Event days	AAR	Patell Z_{AAR}	Cowan Z_{AAR}	CAAR	AARV	Patell Z_{AARV}	Cowan Z_{AARV}	CARV
(-50,-4)	0.01%	-0.23	0.09	5.32%	8.10%	0.40	0.64	656.10%
-3	-0.26%	-0.93	-1.55$	5.32%	3.40%	0.87	1.33$	659.50%
-2	0.17%	0.29	1.08	5.06%	3.51%	0.90	1.33$	663.01%
-1	0.59%	2.22*	2.07*	5.23%	10.48%	1.82*	2.01*	673.49%
0	0.43%	1.29$	1.38$	5.82%	27.79%	3.30***	3.04**	701.28%
1	0.10%	0.06	-1.22	6.25%	45.96%	2.65**	3.73***	747.24%
2	0.51%	1.48$	2.40**	6.35%	37.44%	2.47**	3.73***	784.68%
3	0.54%	1.41$	0.42	6.86%	62.64%	1.50$	1.67*	847.32%
(4,50)	0.36%	0.77	-0.90	9.78%	43.46%	1.01	2.01*	2,975.69%

Neutral initial review rank 3 (N=63)

Event days	AAR	Patell Z_{AAR}	Cowan Z_{AAR}	CAAR	AARV	Patell Z_{AARV}	Cowan Z_{AARV}	CARV
(-50,-4)	0.20%	0.89	-0.23	-3.23%	16.49%	2.15*	1.94$	198.08%
-3	-0.38%	-1.60	-1.49	-3.61%	-2.23%	0.61	1.41	195.85%
-2	0.13%	0.15	0.28	-3.48%	-12.38%	-0.12	0.08	183.47%
-1	-0.06%	0.12	0.28	-3.54%	-7.93%	0.63	1.96$	175.54%
0	-0.27%	-0.14	-0.48	-3.81%	2.15%	1.12	2.47*	177.69%
1	-0.51%	-2.54*	-2.50*	-4.32%	-0.01%	0.97	3.00**	177.68%
2	0.08%	0.78	1.03	-4.24%	2.42%	1.22	1.94$	180.10%
3	-0.26%	-0.85	-0.23	-4.50%	44.40%	4.60***	1.94$	224.50%
(4,50)	-0.13%	-1.39	-0.73	-5.82%	17.28%	1.48	2.20*	737.13%

Bearish initial review ranks 4 and 5 (N=20)

Event days	AAR	Patell Z_{AAR}	Cowan Z_{AAR}	CAAR	AARV	Patell Z_{AARV}	Cowan Z_{AARV}	CARV
(-50,-4)	-0.24%	-0.83	-0.72	-7.14%	14.19%	4.78***	-0.04	1430.20%
-3	-1.05%	-2.48**	-2.06*	-8.19%	-7.65%	1.24	0.44	1422.55%
-2	-0.47%	-1.42$	-1.61$	-8.66%	10.17%	2.09*	1.36$	1432.72%
-1	-0.06%	0.16	-0.27	-8.72%	14.95%	1.58$	1.83*	1447.67%
0	-0.07%	-0.58	-0.27	-8.79%	24.97%	1.94*	1.83*	1472.64%
1	-0.03%	-0.23	-0.27	-8.82%	16.00%	1.27	2.76**	1488.64%
2	-0.20%	-0.12	1.07	-9.02%	-5.68%	-0.10	0.89	1482.96%
3	-0.48%	-1.34$	-1.17	-9.50%	9.20%	1.15	0.89	1492.16%
(4,50)	0.21%	0.75	1.07	-11.28%	12.59%	1.14	0.89	1781.82%

The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively, using a one-tailed test.

Table 5
Value Line effect versus earnings shock

This is a cross-sectional regression model controlling for heteroskedasticity:

$$CAR(t_1,t_2)_i = \beta_0 + \sum_{k=1}^{7}\beta_i D_{k,i} + \beta_8 SIZE_i + \beta_9 MOM_i + \beta_{10} ES_i + \beta_{11} Quin_i + \beta_{12} DIFF_i + \beta_{13} SAME_i + \varepsilon_i$$

CAR (t_1, t_2) represents the cumulative average abnormal return between time t+1and t+2 using a Scholes-Williams (1977) market model. Dummy variable D_k equals to unity if *k* falls into one of the seven groups. Group 8 is the base group. *SIZE* is the log of market equity on the Value Line rank-change announcement date. *MOM* is the previous 50 days cumulative raw return. ES is the most recent price-deflated earnings surprise for stock i. *Quin* is a coded variable that represents the Value Line forecast error quintile. Quin=1 if the security belongs to bottom 20% negative earnings shock. DIFF is to control for the days between EPS announcements and publication of Value Line rank changes. SAME equals to unity if the Value Line rank-change release occurs on the same day as EPS announcements. Model 1 is when CAAR is regressed against group dummy variables; Model 2 is when CAAR is regressed control variables; Model 3 is when CAAR is regressed against both group dummy variables and control variables.

On event day

CAR(0,0)	*D1*	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*SIZE*	*MOM*	*ES*	*Quin*	*DIFF*	*SAME*	*Intercept*
Model 1	0.0117	0.0004	-0.0008	-0.0012	-0.0111	-0.0005	0.0001							0.0006
t-stat	*6.14****	*0.24*	*-0.54*	*-0.52*	*-6.00****	*-0.31*	*0.08*							*0.47*
Model 2								0.0001	0.0013	-0.0523	0.0008	0.0000	-0.0128	-0.0028
t-stat								*0.23*	*0.43*	*-1.05*	*2.07***	*-1.60*	*-1.60*	*-0.46*
Model 3	0.0127	0.0012	0.0004	0.0002	-0.0119	-0.0010	-0.0001	0.0002	-0.0079	-0.0555	0.0009	0.0000	-0.0119	-0.0056
t-stat	*5.70****	*0.71*	*0.26*	*0.12*	*-6.06****	*-0.68*	*-0.09*	*0.61*	*-2.07***	*-1.12*	*1.94**	*-1.08*	*-1.52*	*-0.87*

5-day window

CAR(0,4)	*D1*	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*SIZE*	*MOM*	*ES*	*Quin*	*DIFF*	*SAME*	*Intercept*
Model 1	0.0095	0.0028	-0.0011	0.0082	-0.0072	-0.0018	-0.0014							0.001
t-stat	*2.30***	*0.81*	*-0.33*	*0.84*	*-1.82**	*-0.54*	*-0.41*							*0.33*
Model 2								0.0002	0.0029	-0.3876	0.0022	0.0000	-0.0047	-0.0097
t-stat								*0.29*	*0.30*	*-1.08*	*1.03*	*0.36*	*-0.31*	*-0.51*
Model 3	0.014	0.0074	0.0021	0.0087	-0.0056	0.0003	-0.0002	0.0003	-0.0109	-0.3858	0.002	0.0000	-0.0035	-0.0136
t-stat	*2.31***	*1.48*	*0.48*	*1.30*	*-1.26*	*0.08*	*-0.04*	*0.35*	*-0.85*	*-1.08*	*0.77*	*0.45*	*-0.23*	*-0.63*

51-day window

CAR(0,50)	*D1*	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*SIZE*	*MOM*	*ES*	*Quin*	*DIFF*	*SAME*	*Intercept*
Model 1	0.0261	0.0107	-0.0016	0.0907	-0.0034	-0.0017	-0.0075							-0.0026
t-stat	*2.13***	*1.00*	*-0.14*	*1.08*	*-0.26*	*-0.16*	*-0.65*							*-0.29*
Model 2								0.0004	0.0686	-3.3281	0.0196	0.0002	0.0201	-0.0673
t-stat								*0.09*	*0.97*	*-0.96*	*0.99*	*1.18*	*0.65*	*-0.50*
Model 3	0.0114	0.0015	-0.012	0.0634	-0.0072	0.0024	-0.0033	0.0014	0.0546	-3.2973	0.0219	0.0002	0.0193	-0.0979
t-stat	*0.31*	*0.05*	*-0.47*	*1.29*	*-0.37*	*0.18*	*-0.26*	*0.26*	*0.56*	*-0.95*	*0.90*	*1.13*	*0.61*	*-0.58*

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.