Value-Glamour and Accruals Mispricing: One Anomaly or Two?

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Abstract

We investigate whether the accruals anomaly documented by Sloan (1996) in the accounting literature is distinct from the value-glamour anomaly documented in the finance literature. We find that the accruals strategy earns abnormal returns incremental to past sales growth, book-to-market and earnings-to-price proxies of value-glamour. However, after controlling for the cash flow-to-price ratio, we do not observe any relation between accruals and future abnormal returns. Hence, it appears that the mispricing attributed to accruals is a manifestation of mispricing related to the cash flow-to-price proxy of the value-glamour phenomenon.

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I. Introduction

This study explores the relation between two prominent market anomalies documented in the finance and the accounting literatures - the value-glamour anomaly popularized by Lakonishok, Shleifer and Vishny (1994) (hereafter, LSV) and the accruals anomaly introduced by Sloan (1996). Although both the anomalies represent mispricing of similar past accounting data, we are not aware of a systematic attempt as yet in either literature to relate them. Such an examination can reveal whether these two empirical regularities capture common or two distinct phenomena. We are motivated by a desire to seek a simpler representation of the two anomalies, i.e., apply an Occam's Razor to these mispricing patterns, especially because they both appear to be associated with the market's inability to process related accounting information.

The value-glamour anomaly refers to the empirical regularity that future returns of "value" firms are higher than future returns of "glamour" firms. Value stocks are out-of-favor stocks that have low stock prices relative to past growth and fundamentals. That is, value stocks are stocks that have high book-to-market ratio (B/M), high earnings-to-price ratio (E/P), high cash flow-to-price ratio (C/P) and low past growth in sales, earnings and/or cash flows. On the other hand, glamour stocks are characterized by strong past performance and stock prices that are high relative to past growth and fundamentals. These stocks have low values of B/M, E/P, C/P and strong past growth in sales, earnings and/or cash flows. LSV attribute the superior (poor) future performance of value (glamour) stocks to errors in expectations about their future growth prospects by investors. That is, value (glamour) stocks are underpriced (overpriced) because the

market is overly pessimistic (optimistic) about their future performance due to their weak (strong) past performance. Subsequently, when the past growth rate of these stocks mean-reverts, the market is negatively surprised by the performance of glamour stocks and positively surprised by the performance of value stocks. This results in lower future returns for glamour stocks and higher future returns for value stocks. The value-glamour anomaly is one of the most actively researched asset pricing regularities in the recent finance literature.

The accruals anomaly, documented by Sloan (1996), refers to the strong negative relation between the current level of accruals and future stock returns. Sloan (1996) shows that the negative relation between accruals and future returns occurs because the market fails to appreciate the fact that the accrual component of earnings is less persistent (or more mean-reverting) than the cash flow component of earnings. Hence, the market appears to overreact to earnings that contain a large accrual component (positive or negative), without appreciating fully that these accruals will likely reverse in the next period. Because accruals reverse, the market's overreaction is subsequently corrected upon realizing that the prior period earnings are not sustainable. This results in lower future returns for firms with high level of current accruals and higher future returns for firms with low level of current accruals. The accruals anomaly has attracted significant attention among researchers as evidenced by the number of published and working papers in the accounting literature (see Zach 2002 for a summary).

We hypothesize that the value-glamour and the accruals anomalies are related since they both appear to represent overreactions to past accounting data. While the value-glamour anomaly is driven by the market's extrapolation of past growth in sales,

earnings and cash flows, the accruals anomaly is driven by the market's extrapolation of past accruals. Moreover, sales growth and accruals are likely to be positively correlated while cash flows and accruals are negatively correlated (Dechow, Kothari and Watts 1998). Consequently, firms with high sales growth are likely to have large positive accruals and correspondingly lower C/P ratios (glamour firms). Similarly, firms with low sales growth are likely to have negative accruals and correspondingly higher C/P ratios (value firms). Thus, it is at least *prima facie* likely that the value-glamour anomaly is a special case of the accruals anomaly or vice-versa. Our objective is to explore two related research questions: (i) Is the overreaction to past sales growth, earnings and cash flows documented by LSV a manifestation of overreaction to accruals documented by Sloan (1996) or do these anomalies capture unrelated phenomena? and (ii) To the extent the two anomalies capture mispricing related to common information, does the abnormal return associated with one get mitigated or subsumed by the other?

Our results suggest that the two anomalies are closely related. We find a strong association between the magnitude of accruals and the magnitudes of three of the four variables that have been used to capture the value-glamour phenomenon, namely, sales growth, B/M and C/P. This association also suggests that returns to a hedge strategy using value-glamour proxies are likely to mimic and even subsume returns to a hedge strategy using accruals, or vice-versa. Consistent with this prediction, we find that sales growth is not related to future returns, after controlling for accruals. Thus, the relation between sales growth and future returns documented in LSV is due to accruals. In contrast, accruals do not subsume the relation between future returns and E/P indicating that the two variables appear to capture different phenomena. The results that compare

accruals and B/M are mixed. However, and most importantly, we are unable to find a relation between accruals and future returns, after controlling for C/P. Thus, C/P subsumes the relation between accruals and future returns. Given that C/P has been shown to be the most robust proxy for the value-glamour effect (LSV; Chan, Hamao and Lakonishok 1991), our finding suggests that the accruals anomaly appears to be a special case of the value-glamour anomaly. This finding is robust to several supplementary analyses and sensitivity checks.

Our study contributes to extant literature along several dimensions. First, the evidence presented here provides a better understanding of the link between accruals and several proxies of the value-glamour anomaly. Second, our finding that accruals do not have predictive power for future returns after controlling for C/P suggests, at a minimum, that these two variables capture similar information. At the extreme, this finding implies that C/P largely subsumes the accruals anomaly. Third, our paper suggests that the numerous extensions of the accruals anomaly and the value-glamour anomalies documented in the two respective literatures provide overlapping evidence of the same underlying mispricing phenomenon. In the accounting literature, a number of papers show that the accruals anomaly does not get arbitraged away in the presence of sophisticated market intermediaries such as analysts (Barth and Hutton 2001; Bradshaw et al. 2001), institutional investors (Ali, Hwang and Trombley 2001) and short sellers (Richardson 2001). In parallel, several papers in the finance literature document that the relation between C/P and future returns has been robust over several years (e.g., LSV; Chan et al. 1991; Fama and French 1992,1998; Davis 1994; Haugen and Baker 1996). Finally, our evidence throws open the possibility that the value-glamour phenomenon

drives the mispricing attributed to "earnings quality" (Chan et al. 2001), managerial manipulation of accruals (Xie 2001) or accrual manipulation around IPOs and SEOs (Teoh, Welch and Wong 1998a, 1998b).

The remainder of the paper proceeds as follows. Section II describes the value-glamour and accruals anomalies and provides arguments for the relation between the two anomalies. Section III presents our sample, variable definitions and descriptive statistics on returns from the two anomalies. Section IV reports results of tests that examine the interaction between accruals and various proxies of the value-glamour anomaly. Section V presents sensitivity checks to examine robustness of our findings, while Section VI provides some concluding remarks.

II. Value-Glamour and Accruals Anomalies

Since Graham and Dodd (1934), academics and investment managers have argued that value stocks with high ratios of book-to-market (B/M), earnings-to-price (E/P), or cash flow-to-price (C/P) outperform glamour stocks with correspondingly low ratios. In an influential paper, Lakonishok, Shleifer and Vishny (1994) [LSV] attribute the superior (inferior) performance of value (glamour) stocks to errors in expectations on the part of investors about future growth prospects of these firms.[1] LSV posit and find that value stocks are underpriced because investors appear to extrapolate poor past growth rates into the future and hence, are pessimistic about such stocks. On the other hand, investors are overly optimistic about glamour stocks and have higher expectations of future growth because these firms had strong earnings and growth in the past. As growth rates mean-

[1] In contrast to the "errors in expectations" explanation offered by Lakonishok et al. (1994), Fama and French (1992) suggest that the premium associated with value stocks is compensation for risk. Other explanations offered in the literature for the book-to-market anomaly include data snooping and selection biases (Kothari, Shanken and Sloan 1995).

revert in the future, investors are negatively (positively) surprised by the performance of glamour (value) stocks. La Porta (1996) and Dechow and Sloan (1997) show that the value-glamour phenomenon is at least partly explained by the capital market's naïve interpretation of analyst forecasts. Consistent with the errors in expectations hypothesis, La Porta et al. (1997) find that abnormal returns around subsequent earnings announcements are substantially higher for value stocks than for glamour stocks. The value-glamour anomaly is clearly one of the more widely researched stock market anomalies in the finance literature, as evidenced by the significant number of studies that have examined this anomaly. A partial list includes Basu (1977), Rosenberg, Reid and Lanstein (1985), Chan et al. (1991), Fama and French (1992, 1995, 1996, 1998), Chopra, Lakonishok and Ritter (1992), Davis (1994), Kothari, Shanken and Sloan (1995), Haugen and Baker (1996), La Porta (1996), La Porta et al. (1997), Daniel and Titman (1997), Davis, Fama and French (2000), Doukas, Kim and Pantzalis (2002) and Griffin and Lemmon (2002).

In the recent accounting literature, the accruals anomaly is one of the most prominent asset pricing regularities. Sloan (1996) documents that investors fail to correctly price the accrual component of earnings. In particular, the accrual component of earnings has lower persistence than the cash component but the market incorrectly overweights the accrual component while simultaneously underweighting the cash component. Sloan shows that a hedge strategy of buying firms with low accruals and selling firms with high accruals earns significant abnormal returns in the year following portfolio formation. The accruals anomaly has been extended and further investigated by several studies since Sloan (1996). For example, researchers (e.g., Chan, Chan,

Jegadeesh and Lakonishok 2001; Hribar 2001; Thomas and Zhang 2001) have examined various components of accruals to identify components that contribute to the accruals anomaly. Another set of papers investigates the extent to which information intermediaries such as analysts and institutional investors have a bearing on the accruals anomaly (e.g., Ali et al. 2001; Barth and Hutton 2001; Beneish and Vargus 2001; Bradshaw et al. 2001; Richardson 2001). Others have investigated whether the accruals anomaly is: (i) caused by management manipulation (e.g., Xie 2001; Chan et al. 2001); (ii) distinct from the post-earnings announcement drift (Collins and Hribar 2000); (iii) due to growth in net operating assets (Fairfield, Whisenant and Yohn 2001; Richardson, Sloan, Soliman and Tuna 2001); and (iv) due to mergers and divestitures (Zach 2002).

The objective of our study is to examine the relation between the accrual and the value-glamour anomalies. We posit that the two anomalies are related because both anomalies represent overreactions to past accounting data. In the value-glamour anomaly, investors extrapolate past growth in sales, earnings and cash flow, and realize subsequently, mostly at the time of future earnings announcements (La Porta et al. 1997), that such growth is not sustainable because growth rates mean-revert. In the case of the accruals anomaly, investors extrapolate past accruals into the future and are surprised when earnings announced subsequently are lower or higher due to reversals in accruals. Thus, both anomalies relate to errors in expectations about future earnings.

Furthermore, certain proxies for the value-glamour effect and accruals are closely linked. For example, sales growth, one of the proxies for value-glamour, is positively correlated with accruals. Consider the model of earnings, cash flows, and accruals developed in Dechow et al. (1998). Assuming that sales follow a random walk, a

constant fraction of sales (α) is on credit, all expenses are paid in cash, and the cash margin on sales is a constant θ, Dechow et al. (1998) show that

$$\text{Cash flows}_t = \theta\ \text{Sales}_t - \alpha\varepsilon_t \quad (1)$$

$$\text{Earnings}_t = \text{Cash flows}_t + \alpha\varepsilon_t \quad (2)$$

$$\text{Accruals}_t = \alpha\varepsilon_t \quad (3)$$

where $\varepsilon_t = \text{Sales}_t - \text{Sales}_{t-1}$ is change in sales. Thus, accruals are positively related to sales growth. By relaxing the assumption of the random walk model of sales, it can be shown that accruals are related to both current and past growth (see Kothari, Leone and Wasley 2001). Hence, firms with large positive accruals are more likely to be glamour firms (firms with high sales growth) and firms with smaller positive or negative accruals are more likely to be value firms (firms with smaller sales growth).

Accruals are also negatively correlated with cash from operations.[2] Barth, Cram and Nelson (2001) find that the cross-sectional correlation between accruals and cash is –0.58. Considering the negative correlation, it is reasonable to expect a firm with high (low) accruals to have a low (high) cash flow-to-price ratio. Hence, firms with high (low) accruals are likely to be glamour (value) stocks.

III. Sample, Variable Definitions and Descriptive Statistics

Sample

We start with the universe of firms listed on the NYSE, AMEX and Nasdaq markets for which requisite financial and price information are available on the CRSP

[2] It is harder to predict, *a priori*, whether a firm with high accruals would have a higher or lower E/P, for two countervailing reasons. On the one hand, the cross-sectional correlation between accruals and earnings is positive (0.44 as per Barth et al. 2001), suggesting that high accrual firms ought to be high E/P or value firms, *ceteris paribus*. On the other hand, the relation between accruals and C/P suggests that a high accrual firm ought to be a low C/P or a glamour firm. Note that LSV view E/P and C/P as relatively interchangeable proxies for the value-glamour effect.

and the *Compustat* tapes. We exclude closed-end funds, investment trusts and foreign companies. Due to the difficulties involved in interpreting accruals for financial firms we drop financial firms with SIC codes 6000-6999 from the sample.

We measure financial statement data for a 25-year period 1973 to 1997. Because some of the descriptive data require future returns for at least three years, we end our sample period in 1997. All firms with available data are included in the sample, regardless of fiscal year-ends.[3] Similar to LSV, we eliminate firms with negative book values, as book-to-market ratios for such firms do not lend themselves to intuitive interpretations.[4] After eliminating firm-years without adequate data to compute any of the financial statement variables (discussed below) or returns, we are left with 70,578 firm-year observations.

Definition of Variables

We measure accruals using the balance sheet method (see Sloan 1996) as follows:

$$\text{Accruals} = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep \quad (4)$$

where ΔCA = change in current assets (*Compustat* item 4),

$\Delta Cash$ = change in cash/cash equivalents (*Compustat* item 1),

ΔCL = change in current liabilities (*Compustat* item 5),

ΔSTD = change in debt included in current liabilities (*Compustat* item 34),

ΔTP = change in income taxes payable (*Compustat* item 71), and

Dep = depreciation and amortization expense (*Compustat* item 14).

[3] We eliminate firms with sales of less than one million dollars to avoid the small denominator problem in determining growth rates.

[4] Our results are not, however, sensitive to the inclusion of such firms.

The definition of earnings employed in the tests is operating income after depreciation (*Compustat* data item 178). Cash flows from operations is derived as the difference between operating income after depreciation and accruals. Following Sloan (1996), we scale earnings, cash flows and accruals variables by average total assets (*Compustat* data item 6).[5]

Following LSV and several others, we use four empirical proxies to capture the value-glamour effect: past sales growth (SG), B/M, E/P and C/P. We measure past sales growth as the average of annual growth in sales over the previous three years. We compute the book-to-market ratio as the ratio of the fiscal year-end book value of equity (*Compustat* data item 60) to the market value of equity. Earnings-to-price ratio is operating income after depreciation (*Compustat* data item 178) scaled by the market value of equity while cash flow-to-price is cash flow from operations (explained above) scaled by the market value of equity. Size is the natural logarithm of market value of equity. We measure market value of equity at the end of the fourth month after the firm's fiscal year to ensure that all the accounting variables for the fiscal year are available at the portfolio formation date.

Computation of Abnormal Returns

Each year, we rank stocks by accruals and each of the four value-glamour proxies and assign them to deciles. Annual raw buy-and-hold returns and size-adjusted abnormal returns for each firm are calculated for each of the three years after the

[5] In a recent paper, Collins and Hribar (2002) point out that the above-mentioned balance sheet method of estimating accruals can introduce measurement error in accruals, particularly in the presence of mergers, acquisitions, and divestitures. Therefore, as a robustness test, we replicate our analysis using the more precise measure of accruals determined from SFAS 95 disclosures and obtain similar results (see Section V). We report SFAS 95 based analysis merely as a sensitivity check because of the limited time-series of available SFAS 95 data (11 years).

portfolios are formed. If a firm disappears from CRSP during a year, its return is replaced until the end of the year with a return of the corresponding size decile portfolio. At the end of each year, the portfolio is rebalanced and each surviving stock gets the same weight.

To compute return of the size decile portfolios, we first assign all the firms to deciles.[6] The portfolio return for each decile is given by the value-weighted return of all the firms in that decile.[7] If a firm disappears during a given year, we replace its return with the return on the value-weighted index return till the end of the year. Next year, the portfolio is rebalanced. The annual size-adjusted return for a firm is the difference between the annual buy-and-hold return for the firm and the average annual buy-and-hold return of the size decile portfolio to which the firm belongs.

Descriptive Characteristics on the Value-Glamour and the Accruals Anomalies

We begin the analysis by providing descriptive statistics for each of the decile portfolios sorted by accruals and the value-glamour proxies, namely SG (sales growth), B/M, E/P and C/P. Panel A of Table 1 reports the characteristics of the decile portfolios sorted by accruals. The mean accruals-to-totals assets ratio for the lowest decile (decile 1) is –21% and for the highest decile (decile 10) is 16.8%. The mean annual sales growth for firms in decile 1 of accruals is 14.4% compared to an annual sales growth of 36.5% for firms in decile 10 of accruals. Similarly, the mean book-to-market ratio for the smallest accruals decile is 0.995, and the ratio declines almost monotonically to 0.711 for the largest accruals decile. Hence, the smallest accrual decile comprises relatively high

[6] In assigning size decile ranks, the decile break-points are computed using the NYSE/AMEX universe of firms.

[7] Results are insensitive to equally-weighting the return of firms in the benchmark portfolio.

book-to-market firms and the largest accrual decile consists of relatively low book-to-market firms.

A similar pattern is observed for the cash flow-to-price ratio. The mean C/P for firms in accruals decile 1 is 0.561, and the ratio monotonically decreases to –0.117 for the firms in the accruals decile 10.[8] Therefore, each of the above proxies for the value-glamour effect exhibits a strong relation with accruals. However, the average E/P is –0.084 for the lowest decile of accruals and 0.149 for the highest decile of accruals. Further, we do not observe much variation in E/P beyond the fifth decile of the accrual portfolio. Thus, in contrast to other value-glamour proxies, there does not appear to be a strong relation between E/P and accruals. We conjecture that accruals likely smooth out volatile cash flows from operations and perhaps reduce the correlation between accruals and E/P. Overall, the patterns exhibited by the value-glamour proxies across the accrual portfolios are consistent with our conjecture that the two phenomena are related. In particular, it appears that low accrual firms are value firms and high accrual firms are glamour firms.

The remaining panels of Table 1 report characteristics of portfolios sorted on each of the four proxies of value-glamour. The summary statistics in these panels highlight four aspects of the data. First, we find a strong association between accruals and the value-glamour proxies (with the exception of E/P). For example, Panels B and C show a consistent monotonic relation between accruals and sales growth as well as accruals and

[8] Note that we do not remove firms with negative E/P and C/P for two reasons. First, the number of firms taking one-time charges to earnings has increased substantially in recent years leading to significant negative earnings observations (Collins, Pincus and Xie 1999). In fact, elimination of negative E/P and C/P firms would result in losing approximately 20% of the sample. Second, we do not eliminate such firms to be consistent with prior literature on the value-glamour anomaly (LSV) or the accrual anomaly (Sloan 1996; Chan et al. 2001). Nevertheless, our results are robust to excluding negative values of E/P and C/P.

B/M. Second, the value-glamour proxies (except for E/P) track one another fairly well. For example, the mean value of C/P is 0.079 for firms in decile 1 of B/M ratio and increases monotonically to 0.434 in decile 10 of B/M (see panel C). Third, E/P does not appear to be related to two other proxies of value-glamour, namely sales growth and B/M. Fourth, panel E reveals a strong link between C/P and accruals. C/P also exhibits a strong association with the other three proxies of value-glamour. In sum, Table 1 suggests a systematic relation between accruals and the various proxies of value-glamour. However, we do not observe a systematic relation either between accruals and E/P or between E/P and other proxies of value-glamour.

Returns to Accruals and Value-Glamour Anomalies

In this section, we document returns to both the accruals and the value-glamour anomalies for our sample. Table 2 reports raw returns and size-adjusted (abnormal) returns for each of the three years following portfolio formation. The return accumulation period begins four months after the fiscal year-end to ensure complete dissemination of accounting information in financial statements of the previous fiscal year. The returns for year 1 are buy-and-hold returns for 12 months after portfolio formation (+1 to +12). The returns for year 2 and year 3 are, respectively, over months +13 to +24 and +25 to +36, relative to the month of portfolio formation. To avoid potential inflation of t-statistics, we treat each year as one observation. The means and t-statistics are thus computed over 25 observations, one for each year from 1973 to 1997.

Panel A of Table 2 reports the abnormal returns to the accruals strategy. The lowest-accrual decile earns a raw return of 22.4% in the first post-formation year while the top decile of accruals earns an average return of 12.4%. Using size-adjusted returns,

we find that firms in the bottom decile of accruals earn a return of 1.3% and those in the top decile earn a return of –8.5%. The accruals strategy requires that we take a long position in firms that are in the bottom decile of accruals and a short position in firms that are in the top decile of accruals. Thus, the abnormal return to this hedge portfolio is 9.8% (t-statistic = 4.14) in year 1. This result is similar to that documented by Sloan (1996). The abnormal return in year 2 to the hedge portfolio is 5.7%, although that return is not statistically significant (t-statistic = 1.74). Consistent with Sloan (1996), we observe that abnormal returns to the accruals strategy weaken in the second year and disappear thereafter.

Panel B of Table 2 replicates the return to a sales growth strategy. We document that stocks with high past sales growth (glamour) stocks have an average annual raw return of 12.3% and those with low past sales growth (value) stocks have an average annual return of 20.4% in the first year following portfolio formation. Using size-adjusted returns, we find that the average annual return is –7.1% for high sales growth stocks and –1% for low sales growth stocks. Thus, the average annual abnormal return to the sales growth strategy in the first year is 6.0% (t-statistic = 2.33). The sales-growth strategy does not earn an abnormal return in year 2 and beyond.

Panels C, D and E report returns to the strategy based on B/M, E/P and C/P, respectively. In year 1, the B/M strategy earns an abnormal return of 7.9% (t-statistic = 2.72) while the E/P strategy earns 7.7% (t-statistic = 2.92). The B/M strategy is profitable in the second year but the E/P strategy is not. Abnormal return to the C/P strategy is 12.6% (t-statistic = 5.34) in year 1 and 6.6% (t-statistic = 2.14) in year 2. Thus, the C/P strategy generates the largest abnormal return among all strategies and it

generates significant abnormal returns in each of the first two years. This result is also consistent with LSV, who show that the value-glamour partition based on C/P produces the largest abnormal return. In sum, we are able to successfully replicate the accruals and value-glamour anomalies for our sample. The next section explores in detail the relation between the two anomalies.

IV. Comparing Accruals and Value-Glamour Strategies

So far, we have examined the accruals and value-glamour strategies independently. In this section, we investigate the extent to which these two anomalies overlap with and differ from each other. To facilitate a parsimonious presentation of various results from this investigation, we consider two-dimensional or bivariate joint strategies, where one dimension is accruals and the other dimension is one value-glamour proxy at a time. Specifically, we examine abnormal returns to four such two-dimensional strategies - accruals and SG, accruals and B/M, accruals and E/P, and accruals and C/P. We focus on the abnormal returns only in the first year after portfolio formation because statistically significant abnormal returns are found only in the first year for most strategies.

Accruals and Sales Growth Strategies

To implement the two-dimensional strategies, we sort stocks independently on both accruals and past sales growth (SG) and then focus on the intersections resulting from these independent sorts. We classify stocks on each of the two variables into quintiles.[9] Given that our focus is on extreme quintiles, we combine quintiles 2, 3 and 4

[9] Note that classifying stocks along decile breakpoints would imply parsing out the universe of firms into 100 portfolios thereby reducing the number of firms in each portfolio significantly, leading to large standard

together. Thus, effectively, we sort stocks into three groups, top 20% (Group 1), middle 60% (Group 2) and bottom 20% (Group 3) for both accruals and SG.

For the groups sorted based on accruals, Group 1 comprises stocks in the bottom quintile of accruals (Acc1). Group 2 comprises stocks in quintiles 2, 3, and 4 of accruals (Acc2) while group 3 has stocks from the top quintile of accruals (Acc3). Analogously, stocks are assigned into three groups based on SG (SG1, SG2, SG3). Thus, SG1 contains stocks with lowest past sales growth (value stocks), SG2 has stocks in quintiles 2, 3 and 4, and SG3 comprises firms with the highest past sales growth (glamour stocks). This procedure results in the stocks being assigned to nine cells, as shown in Panel A of Table 3. This panel contains the size-adjusted returns of these nine accruals-SG portfolio combinations for the first year after portfolio formation. The rows report the abnormal returns to each of the three accrual groups while the columns provide returns to each of the three SG groups. Similar to returns reported in Table 2, the returns and the corresponding t-statistics are based on a time-series of 25 observations.

Panel B of Table 3 shows the abnormal returns to i) a basic accruals strategy, i.e., taking a long position on the lowest accrual portfolio (Acc1) and a short position on the highest accrual portfolio (Acc3) and, ii) a basic SG strategy, i.e., taking a long position on the lowest SG portfolio (SG1) and a short position on the highest SG portfolio (SG3). Thus, our basic hedge measure is an unconditional hedge measure determined as the difference in abnormal returns between the extreme accrual and SG groups. The returns to an independent accruals strategy and an independent SG strategy based on extreme quintiles of stocks are 6.88% (t-statistic = 3.95) and 4.52% (t-statistic = 2.20),

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errors in test-statistics for abnormal returns to hedge strategies across two-dimensional partitions. This approach is consistent with that used by other studies in both the finance and the accounting literatures.

respectively. Note that grouping the stocks into quintiles as opposed to deciles (refer Table 2) reduces the magnitude of abnormal returns somewhat. To investigate the interaction between the two strategies, we use three approaches, the control hedge test, the non-overlap hedge test, and a regression approach.

Control Hedge Portfolio Test

Under the control hedge portfolio test, we assess whether the accruals effect survives after holding the effect of SG constant and vice-versa. A number of papers in the literature (e.g., Reinganum 1981; Banz 1981; Jaffe, Keim and Westerfield 1989; Greig 1992; Hong, Lim and Stein 2000) have used this approach to address related questions. For example, Reinganum (1981) uses this approach to test whether the size effect and the E/P effect are independent of each other. By reading across the rows in panel A of Table 3, we can observe abnormal returns to SG portfolios, holding accruals constant. Similarly, in each column we can assess the abnormal returns to the accruals strategy holding SG constant.

The abnormal returns to the control hedges are reported in Panel C of Table 3. The accruals strategy (Acc1 – Acc3) earns positive abnormal returns across two of the three SG groups. In particular, the abnormal returns to the accruals strategy are 5.31% (t-statistic = 2.08), 6.89% (t-statistic = 4.79) and 4.25% (t-statistic = 1.45) across SG groups 1, 2 and 3, respectively. Thus, the accruals strategy does not work for high sales growth firms. The SG strategy (SG1-SG3) is profitable only for low accrual firms (Acc1) but not for the mid and high accrual firms (Acc2 and Acc3). Overall, the results suggest that the accruals strategy generates abnormal returns in two out of three groups of SG while the

SG strategy survives in only one of the three accrual groups. Hence, the accruals effect appears to be stronger than the sales growth effect.

Non-Overlap Hedge Test

An alternative way to assess whether the accruals anomaly survives over and above the SG strategy is to eliminate firms in convergent extreme groups (see shaded cells in panel A). In particular, the lowest accrual and the lowest SG portfolios (Acc1, SG1) are predicted to earn positive abnormal returns under both the strategies while the highest accrual and the highest SG portfolios (Acc3, SG3) are predicted to earn negative abnormal returns under both the strategies. We form a new portfolio (labeled as "non-overlap hedge") where we eliminate firm-years in these convergent cells and assess whether each of the strategies individually can still earn abnormal returns. In other words, we assess the return to a long position on the lowest accrual portfolio without considering the value firms (Acc1, SG1) and a short position on the highest accrual portfolio after eliminating glamour firms (Acc3, SG3). Analogously, we form a non-overlap hedge portfolio for SG by taking a long position on SG1 after eliminating lowest accrual firms (Acc1, SG1) and a short position on SG3 after eliminating highest accrual firms (Acc3, SG3).

The results of non-overlap hedge test are reported in panel D of Table 3. The abnormal return to the non-overlap accrual hedge portfolio is a statistically significant 5.14% (t-statistic = 3.48). Thus, the accruals strategy generates abnormal returns even after removing common firms where the two strategies have the same directional prediction. However, the abnormal return to the non-overlap hedge portfolio for the SG strategy is a statistically insignificant 1.82% (t-statistic = 0.78). Thus, the predictive

power of SG for future returns disappears once firms in cells with congruent predictions under the two anomalies are eliminated. However, the accruals strategy earns significant abnormal returns even after removing firms in the convergent cells. This result further suggests that the accruals and SG capture common information and that the accruals strategy dominates the SG strategy in predicting future returns.

Regression Approach

A complementary approach to the cell-based analysis discussed above is to run a cross-sectional regression of abnormal returns on SG and accruals. However, the regression approach imposes a linear structure on the relation between returns and the variable under investigation, even though abnormal returns across the different cells suggest that the relation may be non-linear. The argument in favor of using a regression approach is the simplicity associated with the interpretation of results.

Panel E of Table 3 presents a regression of size-adjusted abnormal returns on ranks of accruals and SG.[10] The strategy that underlies this regression is the construction of zero-investment portfolios (Fama and MacBeth 1973). Portfolios are formed as follows: For each year from 1973 to 1997, we calculate the scaled decile rank for accruals and SG for each firm. In particular, we rank the values of accruals and SG into deciles (0,9) each year and divide the decile number by nine so that each observation related to accruals and SG takes a value ranging between zero and one. We estimate separate cross-sectional OLS regression of size-adjusted returns on the accrual and SG decile ranks for each of the 25 years in the sample. We consider size-adjusted returns here to be

[10] We introduce size as a control variable to guard against findings in other papers that size-adjusted raw returns may not fully control for size (e.g., Foster, Olsen and Shevlin 1984; Bernard 1987).

consistent with the returns used in the cell approach.[11] The coefficients on accruals and SG can be interpreted as the abnormal return to a zero-investment strategy in the respective variable. Tests of statistical significance of the coefficients are based on the standard errors calculated from the distribution of the individual yearly coefficients. This test overcomes bias due to cross-sectional dependence in error terms (Bernard 1987).

The first row of Panel E confirms the presence of statistically significant abnormal returns to an accruals strategy. The average annual coefficient on the accruals variable is -0.077 (t-statistic = -6.40). That is, the implied annual abnormal return to the accruals strategy is 7.7%. Note that the abnormal returns from the regression approach is different from the returns reported under a basic hedge strategy (see Panel A) because of the linearity imposed by the regression specification. The accruals strategy is consistent over time as the coefficient is negative in 23 out of 25 years and is statistically significant in 15 years.

The average annual coefficient on SG is also significant, 4.7%, with a t-statistic of 2.77. The coefficient is negative in 20 out of 25 years and statistically significant in 12 years. When accruals and SG are considered together in the regression, the coefficient on SG drops to 3.0% and is not significant (t-statistic = 1.86). On the other hand, the coefficient on accruals continues to be large and significant (7.0%, t-statistic = 6.50). Moreover, the coefficient is negative in 22 out of 25 years and is significant for 15 years as before. Taken together, the evidence presented in Table 3 suggests that the abnormal returns documented by LSV to the sales growth strategy are likely attributable to accruals and that accruals subsume the relation between past sales growth and future returns. We

[11] In untabulated analyses, we find that our inferences are similar to those reported when the dependent variable is raw returns with size introduced as a control variable.

now turn to the relation between accruals and the book-to-market proxy of the value-glamour anomaly.

Accruals and Book-to-Market Strategies

Panel A of Table 4 reports the returns to a two-by-two classification of accruals and book-to-market (B/M) strategies. As before, in panels B through D we present the results of the three hedge strategies (basic hedge, control hedge, non-overlap hedge). In panel E we report results from the regression approach. Panel B shows that a basic B/M strategy (long high B/M and short low B/M) earns an average annual abnormal return of 5.30% (t-statistic = 2.43) compared to an average annual abnormal return of 6.88% (t-statistic = 3.95) for the basic accruals strategy.

Results of the control hedge test reported in Panel C show that the accruals strategy earns significant abnormal returns in two out of three B/M groups (B/M2 and B/M3). Similarly, the B/M strategy earns significant abnormal returns in two out of three accrual groups (Acc1 and Acc2). Thus, both strategies continue to generate abnormal returns after controlling for the other.

A closer examination of the results in Panel A suggests that one can combine the information in accruals to refine the B/M strategy and vice-versa. Because high B/M and high accrual stocks (B/M3, Acc3) earn negative abnormal returns, the value investment strategy could be refined to exclude high accrual firms from the value portfolio. This finding is similar in spirit to Piotroski (2000) who shows that one can use financial statement information to refine the value investment strategy. Specifically, he finds that value stocks with strong financial statement fundamentals generate higher abnormal returns than a plain vanilla value strategy. Similarly, one can also use information about

B/M to refine the accruals strategy. In particular, a conditional accruals strategy that excludes glamour stocks (BM1) from low accrual portfolio is more profitable than a plain vanilla accrual strategy. This is because low accrual firms that are glamour stocks (Acc1, B/M1) earn negative returns.

The results from the non-overlap hedge test suggest that the B/M effect is mitigated in the presence of accruals (see Panel D of Table 4). Recall that in this test we eliminate convergent cells where the two anomalies under investigation have the same prediction. In the case of accruals and B/M, we eliminate firms in the intersection of the lowest accrual and the highest B/M portfolios (Acc1, B/M3) as well as firms in the intersection of the highest accrual and the lowest B/M portfolios (Acc3, B/M1). While we find that the accruals strategy earns significant abnormal return of 5.38% (t-statistic = 3.33), the B/M strategy is not able to generate significant abnormal returns (3.40%, t-statistic = 1.71) in the absence of firms in the convergent cells.

Regression results reported in panel E of Table 4 show that both accruals and B/M individually are significantly related to future returns. When both the variables are included in the regression together, we find that the coefficient on accruals is 7.1% with a t-statistic of 6.42. Thus, accruals continue to be related to future returns after controlling for B/M. The coefficient on B/M is 6.3% with a t-statistic of 1.97. Although the coefficient is not significant at the 5% level, the magnitude of the coefficient is high and the p-value is 0.06. Moreover, the coefficient is positive in 18 out of 25 years. Taken together, the above results suggest that accruals and B/M capture different mispricing although the predictive ability of B/M is weakened in the presence of accruals.

Accruals and Earnings-to-Price Strategies

In Table 5 we report results of the relation between the accruals and E/P strategies. Panel B of Table 5 shows that both the basic E/P strategy and the accruals strategy earn significant abnormal returns. When the control hedge tests are considered (panel C), the accruals strategy earns significant abnormal returns in all the three E/P groups. The E/P strategy also earns significant abnormal returns in two out of three accrual groups (Acc1 and Acc2). The results of the non-overlap hedge test (panel D) show that both the accruals and the E/P strategy earn significant abnormal returns even after eliminating firms in the convergent cells (Acc3, E/P3). The inference from the regression results is similar. The coefficients on accruals and E/P are both significant in the combined regression.

Similar to the result documented for B/M, we find that the information in E/P and accruals can be profitably combined to refine each strategy. Value stocks with high accruals (E/P3, Acc3) and glamour stocks with low accruals (Acc1, E/P1) earn negative abnormal returns. Thus, the value strategy could be refined to exclude high accrual firms from the E/P3 portfolio whereas the accruals strategy could be refined to exclude low E/P firms from the low accrual portfolio. Furthermore, note that high accrual firms (Acc3) earn negative abnormal returns across the three E/P groups. That is, the market appears to overreact to accruals for high accrual firms, regardless of their value-glamour status. Overall, the results seem to suggest that the accruals and the E/P capture distinct mispricing and that the information in one strategy can be used to refine the other to earn higher abnormal returns.

Accruals and Cash flow-to-Price Strategies

Results related to the interaction between accruals and C/P are presented in Table 6. The results of the basic hedge strategy shows that the C/P strategy generates abnormal returns of 12.41% compared to 6.88% generated by the accruals strategy (see Panel B). The results of the control hedge test (panel C) show that the accrual portfolio does not earn significant abnormal returns across any of the three C/P groups. In contrast, the C/P strategy earns abnormal returns of 14.69% (t-statistic = 3.49), 11.73% (t-statistic = 4.81) and 6.71% (t-statistic = 1.25) across the three accrual groups.

When we consider the non-overlap hedge, i.e., eliminate the convergent cells (Acc1, C/P3) and (Acc3, C/P1), we find that the abnormal return to the accruals strategy is only 1.2% with a t-statistic of 0.60. On other hand, the abnormal return to the C/P strategy is 12.40% (t-statistic = 4.84). Thus, C/P and accruals appear to capture similar information, but C/P subsumes the predictive power of accruals for future returns. The regression results presented in panel E confirm this inference. Specifically, in the presence of C/P, the abnormal return to the accruals strategy is only 0.8%, and this return is not statistically significant (t-statistic = 0.38). On the other hand, the abnormal return to the C/P strategy is 12.9% after controlling for accruals (t-statistic = 3.85). Thus, a combined reading of the evidence from Table 6 indicates that C/P and accruals capture common mispricing and that C/P subsumes the relation between accruals and future returns.

Summary

Overall, the results of the interaction between accruals and the proxies for the value-glamour phenomenon indicate that the two anomalies are related. More important,

the result that the C/P anomaly subsumes the accruals anomaly suggests a simplified representation of two prominent asset-pricing anomalies. While we still do not fully understand the reasons for the C/P anomaly, our findings are important because they demonstrate that the accruals anomaly in the accounting literature may be a manifestation of the C/P anomaly shown in the finance literature. This result provides an integrated perspective on the seemingly disparate findings in accounting and finance research on these two anomalies. It is quite plausible that insiders appreciate the accruals anomaly (Beneish and Vargus 2001) while analysts do not (Ali et al. 2001; Barth and Hutton 2001; Bradshaw et al. 2001) because insiders appear to understand the value-glamour effect (Rozeff and Zaman 1998) while analysts' forecasts do not adjust for that effect (e.g., La Porta 1996).

V. Robustness checks

Combined Value-Glamour Proxies and Accruals

An obvious question that a reader may ask is how can accruals simultaneously get subsumed by C/P, dominate sales growth and yet be independent of E/P. We conjecture that C/P is empirically the dominant variable among the value-glamour proxies. This conjecture is borne out by the regression results presented in Panel A of Table 7. When the value-glamour proxies are considered together, B/M and E/P lose their predictive ability in the presence of C/P. In particular, the return to a C/P strategy is 10.9% (t-statistic = 8.36) while the return to B/M is 0.6% (t statistic = 0.22) and E/P is 0.3% (t-tatistic = 1.19). The coefficient on sales growth is however significantly negative but the return of 3.2% is considerably smaller than that of the C/P strategy. This is broadly consistent with findings reported by LSV.

Next, for completeness, we conduct regressions where we include all the value-glamour proxies together to determine the incremental importance of accruals. Notice that we do not consider E/P and C/P in the same regression to be consistent with prior research and to avoid tautological links between accruals, E/P, and C/P. In the presence of E/P, SG, and B/M, accruals earn a significant incremental return of 8.2% (t-statistic = 7.81). However, when we use C/P instead of E/P, the accruals variable is rendered statistically insignificant. Most important, C/P is the only variable that is statistically significant in this specification. Hence, our result that C/P subsumes accruals is robust to controlling for other value-glamour proxies.

Sensitivity to Negative E/P and C/P

To examine the impact of including negative E/P and negative C/P firms in the sample, we include a dummy variable DE/P (DC/P) that is takes on the value of 1 if earnings (cash flows) are negative, zero otherwise. The results of the modified regression are reported in Panel B of Table 7. We find that the coefficients on DE/P and DC/P are statistically insignificant. This implies that the abnormal returns attributable to negative earnings or cash flow firm-years are not statistically different from those earned by positive E/P and C/P firm-years. More important, our results previously reported are unaffected by the inclusion of the dummy variables.

SFAS 95 based Definition of Accruals

In a recent study, Collins and Hribar (2002) argue that deriving accruals from changes in current assets and liabilities using the balance sheet method adopted here introduces measurement error in the accrual measure. Instead, they recommend using cash flow from operations as determined under SFAS 95 to derive accruals. To examine

whether our results are robust to a more precise measure of accruals, we replicate our regression results from 1987-1997 using the accrual measure based on SFAS 95 cash flow disclosures.[12] Results presented in Panel C reveal that the accruals variable is not statistically significant in the presence of the C/P variable. In particular, the return to an accruals strategy, in the presence of the C/P variable, is –4.6% (t-statistic = -1.74) while the return to C/P strategy is 9.9% (t-statistic = 2.36). Hence, our inference is insensitive to the SFAS 95 based accruals definition.

VI. Conclusions

In this paper, we investigate whether the accruals anomaly documented by Sloan (1996) and the value-glamour anomaly that has been widely investigated in the finance literature are related. We consider such a possibility because both anomalies rely on the market's inability to fully appreciate persistence or past growth of related accounting measures such as sales, cash flows, earnings and accruals.

Our results suggest that the two anomalies are related. While accruals subsume the relation between past sales growth and future returns, the cash flow-to-price ratio subsumes the relation between accruals and future returns. These results are robust to several specification checks such as consistency of these strategies over time, inclusion or exclusion of negative C/P firms and the refined definition of accruals based on cash flow from operations data reported under SFAS 95. Thus, we argue that at a minimum, the returns to accruals strategy and to the C/P strategy reflect the same underlying phenomena. At the extreme, the evidence suggests that the accruals anomaly is a special case of the value-glamour anomaly.

[12] Even though SFAS 95 was effective for fiscal years ending in 1988, earlier adoption was encouraged.

Our findings have important implications for research on the accruals anomaly. We conjecture that the robustness of the accruals anomaly in several replications in the accounting literature is a manifestation of the C/P anomaly found across several changes in research design, time-periods and institutional environments in the finance literature. Thus, it is plausible that the same factors drive the mispricing of both accruals and the cash to price variable. More important, inferences drawn by past research suggesting that the capital market's fixation on accounting accruals may be open to question. We hope that a parsimonious representation of these two anomalies will aid future work aimed at fully explaining why these mispricing patterns occur in the first place.

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Table 1
Summary Statistics for Firm Characteristics across Accrual and Value-Glamour Portfolios

Panel A: Accruals Portfolio

	Decile									
	1	2	3	4	5	6	7	8	9	10
Accruals/TA	-0.210	-0.105	-0.074	-0.054	-0.038	-0.022	-0.004	0.019	0.056	0.168
MVE	231.368	615.765	1015.320	1095.530	1151.780	960.929	830.945	520.242	357.101	189.365
MVE rank	3.024	4.155	4.725	5.149	5.335	5.218	4.910	4.471	4.035	3.600
B/M	0.995	0.979	0.962	0.938	0.947	0.919	0.879	0.851	0.831	0.711
Sales growth	0.144	0.150	0.141	0.145	0.152	0.164	0.168	0.175	0.222	0.365
C/P	0.561	0.353	0.307	0.270	0.252	0.220	0.172	0.121	0.052	-0.117
E/P	-0.084	0.063	0.130	0.150	0.168	0.176	0.167	0.161	0.157	0.149

Panel B: Sales Growth Portfolio

	Value				Decile					Glamour
	1	2	3	4	5	6	7	8	9	10
Sales growth	-0.107	0.001	0.042	0.072	0.101	0.132	0.171	0.226	0.324	0.880
Accruals/TA	-0.082	-0.052	-0.040	-0.033	-0.029	-0.023	-0.015	-0.008	-0.000	0.021
MVE	313.246	645.715	897.212	1059.490	996.106	854.004	732.448	619.245	501.541	349.805
MVE rank	2.907	3.923	4.595	4.950	4.996	4.956	4.808	4.652	4.470	4.364
B/M	1.248	1.178	1.078	0.973	0.905	0.839	0.796	0.732	0.667	0.596
C/P	-0.057	0.101	0.154	0.168	0.164	0.169	0.161	0.155	0.139	0.111
E/P	0.278	0.268	0.261	0.252	0.235	0.223	0.201	0.184	0.171	0.118

Table 1 (Cont'd)
Summary Statistics for Firm Characteristics across Accrual and Value-Glamour Portfolios

Panel C: B/M Portfolio

	Glamour				Decile					Value
	1	2	3	4	5	6	7	8	9	10
B/M	0.177	0.336	0.459	0.575	0.691	0.814	0.952	1.138	1.434	2.436
Accruals/TA	-0.014	-0.011	-0.015	-0.021	-0.023	-0.026	-0.029	-0.033	-0.038	-0.051
MVE	1510.860	1302.760	1032.110	839.769	758.151	554.431	436.909	298.522	167.225	70.095
MVE rank	5.262	5.616	5.437	5.173	4.975	4.736	4.384	3.768	3.062	2.210
Sales growth	0.319	0.257	0.229	0.220	0.182	0.162	0.143	0.137	0.111	0.082
C/P	0.079	0.114	0.144	0.171	0.202	0.229	0.251	0.273	0.292	0.434
E/P	0.035	0.087	0.112	0.134	0.151	0.166	0.176	0.172	0.150	0.081

Panel D: E/P Portfolio

	Glamour				Decile					Value
	1	2	3	4	5	6	7	8	9	10
Earnings/price	-0.377	0.005	0.067	0.103	0.131	0.159	0.188	0.226	0.283	0.480
Accruals/TA	-0.101	-0.037	-0.012	-0.012	-0.016	-0.017	-0.018	-0.017	-0.016	-0.015
MVE	73.797	269.600	629.813	1108.320	1214.200	1190.190	916.826	686.951	545.306	333.232
MVE rank	2.291	3.816	4.623	5.295	5.411	5.328	5.092	4.804	4.437	3.521
B/M	1.255	0.719	0.631	0.635	0.695	0.755	0.833	0.935	1.083	1.474
Sales growth	0.115	0.220	0.266	0.218	0.186	0.172	0.161	0.157	0.156	0.194
C/P	0.059	0.087	0.111	0.136	0.167	0.199	0.227	0.273	0.341	0.590

Table 1 (Cont'd)
Summary Statistics for Firm Characteristics across Accrual and Value-Glamour Portfolios

Panel E: C/P Portfolio

	Glamour				Decile					Value
	1	2	3	4	5	6	7	8	9	10
Cash/price	-0.281	0.015	0.072	0.115	0.154	0.197	0.247	0.312	0.418	0.945
Accruals/TA	0.073	0.037	0.009	-0.010	-0.025	-0.037	-0.049	-0.061	-0.075	-0.127
MVE	69.052	273.876	676.562	1138.070	1068.910	1014.670	935.842	938.919	610.933	241.253
MVE rank	2.533	3.973	4.826	5.266	5.283	5.251	5.044	4.920	4.457	3.063
B/M	1.046	0.601	0.591	0.629	0.714	0.789	0.881	0.982	1.142	1.637
Sales growth	0.237	0.282	0.249	0.196	0.181	0.156	0.145	0.132	0.136	0.127
E/P	-0.124	0.042	0.081	0.111	0.131	0.152	0.173	0.199	0.236	0.265

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Variables for each firm are measured at the end of the fourth month after fiscal year-end. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Cash flow from operations is derived as the difference between operating income after depreciation and accruals. B/M is the ratio of book value of equity to market value of equity, Sales growth refers to pre-formation 3-year average growth rate of sales. Earnings-to-price ratios are computed as operating income after depreciation (Compustat 178) scaled by the market value of equity. Cash to price ratio is cash flow from operations discussed above scaled by the market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end.

Table 2
Returns to Accrual and Value-Glamour Portfolios

Panel A: Accruals Portfolio

	Decile											
	1	2	3	4	5	6	7	8	9	10	1-10	t-stat
R1	0.224	0.207	0.219	0.211	0.203	0.197	0.193	0.180	0.171	0.124	0.100	1.73
R2	0.239	0.220	0.221	0.218	0.211	0.214	0.209	0.212	0.203	0.173	0.066	1.13
R3	0.219	0.221	0.202	0.202	0.199	0.204	0.198	0.203	0.184	0.181	0.038	0.73
SAR1	0.013	0.006	0.025	0.017	0.008	0.004	0.004	-0.017	-0.032	-0.085	0.098	4.14
SAR2	0.015	0.014	0.017	0.019	0.011	0.017	0.006	0.008	-0.006	-0.042	0.057	1.74
SAR3	0.010	0.028	0.016	0.019	0.015	0.018	0.018	0.014	-0.005	-0.016	0.026	0.91

Panel B: Sales Growth Portfolio

	Value			Decile						Glamour		
	1	2	3	4	5	6	7	8	9	10	1-10	t-stat
R1	0.204	0.222	0.207	0.204	0.195	0.201	0.197	0.189	0.184	0.123	0.081	1.49
R2	0.235	0.225	0.224	0.216	0.204	0.207	0.213	0.211	0.209	0.176	0.059	1.08
R3	0.206	0.211	0.194	0.200	0.203	0.198	0.191	0.207	0.205	0.193	0.012	0.24
SAR1	-0.010	0.018	0.006	0.007	0.000	0.004	0.005	-0.006	-0.011	-0.071	0.060	2.33
SAR2	0.000	0.006	0.017	0.015	0.007	0.009	0.012	0.010	0.010	-0.028	0.028	0.82
SAR3	-0.005	0.010	0.002	0.015	0.020	0.016	0.010	0.025	0.012	0.006	0.011	0.35

Panel C: B/M Portfolio

	Glamour				Decile					Value		
	1	2	3	4	5	6	7	8	9	10	10-1	t-stat
R1	0.108	0.156	0.171	0.171	0.183	0.197	0.221	0.225	0.232	0.262	0.154	2.89
R2	0.137	0.184	0.188	0.204	0.219	0.217	0.230	0.227	0.255	0.261	0.124	2.58
R3	0.149	0.184	0.191	0.184	0.189	0.200	0.219	0.225	0.225	0.245	0.196	1.89
SAR1	-0.062	-0.018	-0.013	-0.013	-0.005	0.004	0.017	0.013	0.008	0.015	0.079	2.72
SAR2	-0.057	-0.013	-0.004	0.007	0.021	0.017	0.022	0.009	0.031	0.028	0.086	2.79
SAR3	-0.022	0.008	0.009	0.002	0.009	0.013	0.029	0.029	0.021	0.020	0.043	1.29

Table 2 (Cont'd)
Returns to Accrual and Value-Glamour Portfolios

Panel D: E/P Portfolio

	Glamour				Decile					Value		
	1	2	3	4	5	6	7	8	9	10	10-1	t-stat
R1	0.172	0.129	0.146	0.156	0.186	0.187	0.204	0.227	0.246	0.274	0.102	1.80
R2	0.234	0.183	0.184	0.211	0.200	0.213	0.222	0.215	0.229	0.236	0.002	0.03
R3	0.223	0.175	0.194	0.204	0.196	0.192	0.200	0.192	0.209	0.231	0.008	0.13
SAR1	-0.041	-0.048	-0.029	-0.021	0.002	-0.004	0.004	0.020	0.025	0.036	0.077	2.92
SAR2	0.001	-0.019	-0.013	0.012	0.002	0.011	0.021	0.014	0.020	0.015	0.014	0.35
SAR3	0.009	-0.003	0.012	0.023	0.016	0.009	0.012	0.003	0.014	0.021	0.013	0.34

Panel E: C/P Portfolio

	Glamour				Decile					Value		
	1	2	3	4	5	6	7	8	9	10	10-1	t-stat
R1	0.131	0.105	0.151	0.165	0.189	0.203	0.213	0.227	0.262	0.280	0.149	2.65
R2	0.193	0.178	0.189	0.201	0.210	0.223	0.220	0.229	0.231	0.249	0.056	1.01
R3	0.219	0.161	0.183	0.194	0.187	0.206	0.194	0.199	0.230	0.238	0.019	0.32
SAR1	-0.081	-0.073	-0.027	-0.022	0.003	0.008	0.019	0.025	0.047	0.044	0.126	5.34
SAR2	-0.037	-0.025	-0.007	0.004	0.009	0.022	0.021	0.025	0.022	0.028	0.066	2.14
SAR3	0.009	-0.018	0.005	0.014	0.008	0.023	0.009	0.008	0.032	0.025	0.016	0.39

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. R1 (SAR1) refers to raw returns (size-adjusted returns) on a portfolio for months 1-12. R2 (SAR2) refers to raw returns (size-adjusted returns) on a portfolio for months 13-24. R3 (SAR3) refers to raw returns (size-adjusted returns) on a portfolio for months 25-36. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Cash flow from operations is derived as the difference between operating income after depreciation and accruals. B/M is the ratio of book value of equity to market value of equity, Sales growth refers to pre-formation 3-year average growth rate of sales. Earnings-to-price ratios are computed as operating income after depreciation (Compustat 178) scaled by the market value of equity. Cash to price ratio is cash flow from operations discussed above scaled by the market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end.

Table 3
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and Sales Growth

Panel A: Accruals (Acc) and Sales Growth (SG) – Quintile Analysis

	Value		Glamour
	SG 1	SG 2	SG 3
Acc1	1.87%	2.10%*	-4.00%
	(4706)	(6939)	(2433)
Acc2	0.37%	1.23%*	-1.03%
	(7837)	(27899)	(6631)
Acc3	-3.44%	-4.79%**	-8.25%**
	(1534)	(7537)	(5062)

Panels B-D: Test Statistics of Various Hedge Strategies

Hedge Type	SAR1	t-statistic
Panel B: Basic hedges		
Acc1-Acc3	6.88%	3.95**
SG1-SG3	4.52%	2.20*
Panel C: Control hedge test		
SG1 constant: Acc1-Acc3	5.31%	2.08*
SG2 constant: Acc1-Acc3	6.89%	4.79**
SG3 constant: Acc1-Acc3	4.25%	1.45
Acc1 constant: SG1-SG3	5.87%	2.14*
Acc2 constant: SG1-SG3	1.40%	0.67
Acc3 constant: SG1-SG3	4.81%	1.75
Panel D: Non-overlap hedge test		
-Long of weighted average of (Acc1, SG2) & (Acc1, SG3) -Short on weighted average of (Acc3, SG1) &(Acc3, SG3)	5.14%	3.48**
-Long of weighted average of (SG1, Acc2) & (SG1, Acc3) -Short on weighted average of (SG3, Acc1) & (SG3, Acc2)	1.82%	0.78

Table 3 (Cont'd)
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and Sales Growth

Panel E: Regression Approach – SAR1 as the Dependent Variable

	Intercept	Acc	SG	Size
Mean	0.031	-0.077		0.004
t-statistic	(2.39)*	(-6.40)**		(0.30)
# years negative		23/25		
# years significant		15/25		
Mean	0.015		-0.047	0.007
t-statistic	(1.23)		(-2.77)*	(0.47)
# years negative			20/25	
# years significant			12/25	
Mean	0.041	-0.070	-0.030	0.008
t-statistic	(2.93)**	(-6.50)**	(-1.86)	(0.49)
# years negative		22/25	16/25	
# years significant		15/25	9/25	

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. SAR1 refers to size-adjusted returns on a portfolio for months 1-12. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Sales growth refers to pre-formation 3-year average growth rate of sales and Size is the log of market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. **(*) refers to significance at the 1% (5%) level, two-tail. Statistical significance is assessed from Fama-Macbeth averages of returns and t-statistics over the years estimated.

Table 4
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and B/M

Panel A: Accruals (Acc) and Book-to-Market (B/M) – Quintile Analysis

	Glamour		Value
	B/M 1	B/M 2	B/M 3
Acc 1	-3.92%	1.51%	3.49%
	(2764)	(7773)	(3541)
Acc 2	-2.55%	1.07%*	2.36%*
	(7396)	(26518)	(8453)
Acc 3	-7.71%**	-4.67%**	-6.74%**
	(3922)	(8075)	(2136)

Panels B-D: Test Statistics of Various Hedge Strategies

Hedge Type	SAR1	t-statistic
Panel B: Basic hedges		
Acc1-Acc3	6.88%	3.95**
B/M3-B/M1	5.30%	2.43*
Panel C: Control hedge test		
B/M1 constant: Acc1-Acc3	3.79%	1.01
B/M2 constant: Acc1-Acc3	4.91%	2.08*
B/M3 constant: Acc1-Acc3	10.23%	3.90**
Acc1 constant: B/M3-B/M1	7.41%	2.08*
Acc2 constant: B/M3-B/M1	4.91%	2.67*
Acc3 constant: B/M3-B/M1	0.97%	0.34
Panel D: Non-overlap hedge test		
-Long of weighted average of (Acc1, B/M1) & (Acc1, B/M2) and Short on weighted average of (Acc3, B/M2) & (Acc3, B/M3)	5.38%	3.33**
-Long of weighted average of (B/M3, Acc2) & (B/M3, Acc3) and -Short on weighted average of (B/M1, Acc1) & (B/M1, Acc2)	3.40%	1.71

Table 4 (Cont'd)
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and B/M

Panel E: Regression Approach – SAR1 as the Dependent Variable

	Intercept	Acc	B/M	Size
Mean	0.031	-0.077		0.004
t-statistic	(2.39)*	(-6.40)**		(0.30)
# years negative		23/25		
# years significant		15/25		
Mean	-0.053		0.071	0.028
t-statistic	(-2.01)		(2.19)*	(1.34)
# years positive			18/25	
# years significant			17/25	
Mean	-0.013	-0.071	0.063	0.026
t-statistic	(-0.49)	(-6.42)**	(1.97)	(1.27)
# years predicted direction		21/25	18/25	
# years significant		15/25	16/25	

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. SAR1 refers to size-adjusted returns on a portfolio for months 1-12. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). B/M is the ratio of book value of equity to market value of equity. Size is the log of market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. **(*) refers to significance at the 1% (5%) level, two-tail. Statistical significance is assessed from Fama-Macbeth averages of returns and t-statistics over the years estimated.

Table 5
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and E/P

Panel A: Accruals (Acc) and Earnings-to-Price (E/P) – Quintile Analysis

	Glamour E/P 1	E/P 2	Value E/P 3
Acc1	-3.45%	2.86%**	7.17%**
	(5513)	(6557)	(2008)
Acc2	-4.19%	0.50%	4.64%**
	(6324)	(26742)	(9301)
Acc3	-9.24%**	-5.45%**	-5.04%**
	(2221)	(9078)	(2834)

Panels B-D: Test Statistics of Various Hedge Strategies

Hedge Type	SAR1	t-statistic
Panel B: Basic hedges		
Acc1-Acc3	6.88%	3.95**
E/P3-E/P1	7.60%	3.47**
Panel C: Control hedge test		
E/P1 constant: Acc1-Acc3	5.79%	5.57**
E/P2 constant: Acc1-Acc3	5.41%	4.92**
E/P3 constant: Acc1-Acc3	12.21%	5.79**
Acc1 constant: E/P3-E/P1	10.62%	3.85**
Acc2 constant: E/P3-E/P1	8.83%	3.80**
Acc3 constant: E/P3-E/P1	4.20%	1.44
Panel D: Non-overlap hedge test		
-Long of weighted average of (Acc1, E/P1) & (Acc1, E/P2) -Short on weighted average of (Acc3, E/P2) & (Acc3, E/P3)	5.43%	2.98**
-Long of weighted average of (E/P3, Acc2) & (E/P3, Acc3) -Short on weighted average of (E/P1, Acc1) & (E/P1, Acc2)	6.30%	2.77**

Table 5 (Cont'd)
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and E/P

Panel E: Regression Approach – SAR1 as the Dependent Variable

	Intercept	Acc	E/P	Size
Mean	0.031	-0.077		0.004
t-statistic	(2.39)*	(-6.40)**		(0.30)
# years negative		23/25		
# years significant		15/25		
Mean	-0.047		0.088	-0.008
t-statistic	(-2.12)*		(2.94)**	(-0.56)
# years positive			19/25	
# years significant			17/25	
Mean	-0.008	-0.092	0.102	-0.008
t-statistic	(-0.39)	(-6.99)**	(3.32)**	(-0.56)
# years in predicted direction		23/25	19/25	
# years significant		17/25	15/25	

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. SAR1 refers to size-adjusted returns on a portfolio for months 1-12. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Size is the log of market value of equity. Earnings-to-price ratios are computed as operating income after depreciation (Compustat 178) scaled by the market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. **(*) refers to significance at the 1% (5%) level, two-tail. Statistical significance is assessed from Fama-Macbeth averages of returns and t-statistics over the years estimated.

Table 6
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and C/P

Panel A: Accruals (Acc) and Cash flow-to-Price (C/P) – Quintile Analysis

	Glamour C/P 1	C/P 2	Value C/P 3
Acc 1	-10.42%*	0.13%	4.27%*
	(1489)	(6235)	(6354)
Acc 2	-6.68%**	0.79%*	5.05%**
	(4714)	(30033)	(7620)
Acc 3	-8.27%**	-2.83%*	-1.43%
	(7894)	(6095)	(144)

Panels B-D: Test Statistics of Various Hedge Strategies

Test statistics of various hedge strategies Hedge Type	Return	t-statistic
Panel B: Basic hedges		
Acc1-Acc3	6.88%	3.95**
C/P3-C/P1	12.41%	5.97**
Panel C: Control hedge position		
C/P1 constant: Acc1-Acc3	-2.15%	-0.51
C/P2 constant: Acc1-Acc3	2.96%	1.66
C/P3 constant: Acc1-Acc3	5.70%	1.04
Acc1 constant: C/P3-C/P1	14.69%	3.49**
Acc2 constant: C/P3-C/P1	11.73%	4.81**
Acc3 constant: C/P3-C/P1	6.70%	1.25
Panel D: Non-overlap hedge position		
-Long of weighted average of (Acc1, C/P1) & (Acc1, C/P2) -Short on weighted average of (Acc3, C/P2) & (Acc3, C/P3)	1.20%	0.60
-Long of weighted average of (C/P3, Acc1) & (C/P3, Acc2) -Short on weighted average of (C/P1, Acc1) & (C/P1, Acc2)	12.40%	4.84**

Table 6 (Cont'd)
Comparison of One-Year Abnormal Returns for Portfolios Based on Accruals and C/P

Panel E: Regression Approach – SAR1 as the Dependent Variable

	Intercept	Acc	C/P	Size
Mean	0.031	-0.077		0.004
t-statistic	(2.39)*	(-6.40)**		(0.30)
# years negative		23/25		
# years significant		15/25		
Mean	-0.071		0.133	-0.002
t-statistic	(-3.54)**		(5.23)**	(-0.15)
# years positive			21/25	
# years significant			20/25	
Mean	-0.066	-0.008	0.129	-0.003
t-statistic	(-2.01)	(-0.38)	(3.85)**	(-0.18)
# years in predicted direction		13/25	21/25	
# years significant		6/25	17/25	

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. SAR1 refers to size-adjusted returns on a portfolio for months 1-12. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Cash flow from operations is derived as the difference between operating income after depreciation and accruals. Size is the log of market value of equity. Cash flow-to-price ratio is cash flow from operations discussed above scaled by the market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. **(*) refers to significance at the 1% (5%) level, two-tail. Statistical significance is assessed from Fama-Macbeth averages of returns and t-statistics over the years estimated.

Table 7
Regression Results - Sensitivity Analyses

Panel A: Combined Assessment of Value-Glamour Proxies and Accruals

	Intercept	Acc	B/M	GS	E/P	C/P	Size
Mean	-0.064		0.006	-0.032	0.030	0.109	0.002
t-statistic	(-2.05)		(0.22)	(-2.46)*	(1.19)	(8.36)**	(0.10)
Mean	-0.012	-0.082	0.020	-0.032	0.099		0.006
t-statistic	(-0.43)	(-7.81)**	(0.75)	(-2.37)*	(3.95)**		(0.31)
Mean	-0.063	-0.002	0.008	-0.025		0.126	0.006
t-statistic	(-1.67)	(-0.10)	(0.32)	(-1.87)		(4.84)**	(0.34)

Panel B: Regression Results – Sensitivity to Negative E/P and C/P Firms

	Intercept	Acc	E/P	DE/P	C/P	DC/P	Size
Mean	0.009	-0.097	0.085	-0.037			-0.015
t-statistic	(0.39)	(-7.96)**	(2.60)*	(-1.87)			(-1.02)
Mean	-0.051	-0.008			0.113	-0.029	-0.008
t-statistic	(-1.56)	(-0.40)			(3.18)**	(-1.90)	(-0.51)

Panel C: Regression Results using FAS95 Based Cash flow and Accrual Measures

	Intercept	Acc	B/M	GS	E/P	C/P	Size
Mean	0.043	-0.101	0.055				-0.028
t-statistic	(1.12)	(-9.04)**	(1.27)				(-1.01)
Mean	0.093	-0.099		-0.034			-0.045
t-statistic	(6.99)**	(-8.74)**		(-2.07)			(-2.77)*
Mean	0.068	-0.113			0.040		-0.058
t-statistic	(3.17)**	(-7.50)**			(1.25)		(-4.31)**
Mean	0.005	-0.046				0.099	-0.058
t-statistic	(0.12)	(-1.74)				(2.36)*	(-4.42)**

Table 7 (Cont'd)
Regression Results - Sensitivity Analyses

The sample comprises all domestic common stocks (except financial firms) on NYSE, Amex and Nasdaq with coverage on CRSP and Compustat for firms with financial statement data from 1973 to 1997 and with available data. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years estimated. SAR1 refers to size-adjusted returns on a portfolio for months 1-12. Accruals is defined as (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep where ΔCA = change in current assets (Compustat item 4), ΔCash = change in cash/cash equivalents (Compustat item 1), ΔCL = change in current liabilities (Compustat item 5), ΔSTD = change in debt included in current liabilities (Compustat item 34), ΔTP = change in income taxes payable (Compustat item 71), and Dep = depreciation and amortization expense (Compustat item 14). Earnings is operating income after depreciation (Compustat data item 178). Cash flow from operations is derived as the difference between operating income after depreciation and accruals. B/M is the ratio of book value of equity to market value of equity, Sales growth refers to pre-formation 3-year average growth rate of sales. Earnings-to-price ratios are computed as operating income after depreciation (Compustat 178) scaled by the market value of equity. Size is the log of market value of equity. Cash flow-to-price ratio is cash flow from operations discussed above scaled by the market value of equity. Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. DE/P (DC/P) represents dummy variables that assume the value of 1 if E/P (C/P) is negative, zero otherwise. For Panel C, earnings are defined as income before extraordinary items and discontinued operations (Compustat data item 18). Cash flows from operations are defined as net cash flow from operating activities (Compustat data item 308) les the accrual portion of extraordinary items (Compustat data item 124). Accruals used in regressions reported in Panel C is the difference between Earnings and cash flows from operations as defined above. **(*) refers to significance at the 1% (5%) level, two-tail. Statistical significance is assessed from Fama-Macbeth averages of returns and t-statistics over the years estimated.