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

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ABSTRACT: We investigate whether the accruals anomaly is a manifestation of the glamour stock phenomenon documented in the finance literature. Value (glamour) stocks, characterized by low (high) past sales growth, high (low) book-to-market (*B/M*), high (low) earnings-to-price (*E/P*), and high (low) cash flow-to-price (*C/P*), are known to earn positive (negative) future abnormal returns. Note that "*C*" or cash flow is operationalized in the finance literature as earnings adjusted for depreciation. Sloan (1996) shows that firms with low (high) total accruals earn positive (negative) future abnormal returns. We find that a new variable, operating cash flows measured as earnings adjusted for depreciation and working capital accruals, scaled by price (*CFO/P*) captures mispricing attributed to the four traditional value-glamour proxies and accruals. Interpretation of this finding depends on the reader's priors. If the reader believes that value-glamour phenomenon can be operationalized only as *C/P*, and not *CFO/P*, then one would conclude that *CFO/P* is a parsimonious variable that captures the mispricing attributes of two distinct anomalies, value glamour and accruals. However, if a reader views the value-glamour anomaly broadly as a fundamentals-to-price anomaly, then (1) the *CFO/P* variable can be considered an expanded value-glamour proxy and; (2) our results are consistent with Beaver's (2002) conjecture that the accruals anomaly is the glamour stock phenomenon in disguise.

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I. INTRODUCTION

The mispricing of accruals may in fact be the "glamour stock" phenomenon in disguise.
—William H. Beaver (2002, 468)

In this paper, we investigate the relation between the value-glamour anomaly documented in the finance literature and the accruals anomaly introduced by Sloan (1996) in the accounting literature. Each of these anomalies has been extensively investigated in its respective field; however, we are not aware of a systematic attempt as yet in either literature to relate them. We are motivated by a desire to seek a simpler representation of the two anomalies, i.e., apply 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. Identifying a parsimonious measure to capture these mispricing patterns can potentially simplify the research agenda and eventually enhance our understanding of the underlying causes of these anomalies.

Since Graham and Dodd (1934), academics and investment managers have argued that stocks with high ratios of fundamentals to price (value stocks) such as book-to-market (B/M), earnings-to-price (E/P), or cash-flow-to-price (C/P) outperform stocks with correspondingly low fundamentals-to-price ratios (glamour stocks). While this phenomenon is robust to replication, researchers are divided over why it occurs. One group (e.g., Lakonishok et al. 1994) (hereafter LSV) attributes the phenomenon to investors' errors-in-expectations. In particular, they argue that investors are excessively optimistic (pessimistic) about glamour (value) stocks and have higher (lower) expectations of future growth due to their strong (weak) past performance. As growth rates mean-revert in the future, investors are negatively (positively) surprised by the performance of glamour (value) stocks. An alternative explanation is that value firms outperform glamour firms because they are riskier (Fama and French 1992, 1993, 1996).

In a seminal article in the accounting literature, Sloan (1996) shows that investors fail to fully understand the differential persistence of accruals and cash flows. That is, investors tend to overweight (underweight) accruals (cash flows) when forming future earnings expectations only to be systematically surprised when accruals turn out, in the future, to be less persistent than cash flows. As a result, high-accruals firms earn lower abnormal returns than low-accruals firms.

A priori, there are at least four reasons to expect that the two mispricing patterns capture a similar phenomenon. First, Beaver (2002, 468) conjectures that accruals mispricing may be related to the value-glamour mispricing based on evidence in McNichols (2000) that discretionary accruals are positively related to forecasted growth. Second, both anomalies document future returns linked to related accounting data. In particular, sales growth, a common value-glamour proxy, and accruals are likely to be positively correlated (Dechow et al. 1998). Consequently, firms with high sales growth are likely to have large positive accruals (glamour firms) and firms with low sales growth are likely to have negative accruals (value firms). Third, research on return predictability can be grouped into two major categories, a short-term continuation or momentum (underreaction) and a medium- to long-term reversal (overreaction). The value-glamour anomaly and the accruals anomaly are both associated with reversal of prior returns. Fourth, future abnormal returns to both the value-glamour and accruals strategies are concentrated around subsequent earnings announcements (LaPorta et al. 1997; Sloan 1996) suggesting that the market learns about errors in expectations about growth and accruals from common accounting information released around earnings announcements.

We find that accruals are associated with future returns after controlling for the four value-glamour proxies traditionally employed in the finance literature, i.e., past sales growth, *B/M*, *E/P*, and *C/P*.[1] Similarly, *B/M*, *E/P*, and *C/P* are associated with future returns after controlling for accruals. Hence, if we were to focus on the value-glamour proxies traditionally used in the finance literature, we have to conclude that accruals and value-glamour mispricing are distinct from each other. However, a crucial point underlying this inference relates to the measurement of operating cash flows in the *C/P* ratio. The finance literature tends to measure operating cash flows as earnings plus depreciation ("*C*") and thereby assumes that depreciation is the only significant accrual that needs to be added back to earnings. This assumption is obviously incorrect because earnings adjusted for *both working capital accruals and depreciation* constitute operating cash flows.

When we consider the refined definition of operating cash flows (i.e., earnings *plus* depreciation *minus* working capital accruals), and create a new variable labeled *CFO/P*, two interesting findings emerge. First, *CFO/P* is a powerful and comprehensive measure that subsumes the mispricing attributed to *all* the other value-glamour proxies. Specifically, in the presence of *CFO/P*, none of the other value-glamour proxies is related to future returns. Hence, *CFO/P*, a fundamental valuation attribute scaled by stock price, can arguably be viewed as a parsimonious representation of the value-glamour anomaly, perhaps even as an expanded value-glamour proxy.

Second, accruals are not related to future returns after controlling for *CFO/P*. Therefore, *CFO/P* not only parsimoniously captures mispricing related to the traditional value-glamour variables, but also picks up mispricing attributed to accruals. This happens because *CFO/P* accounts for the traditional value-glamour anomaly via the price deflator in the denominator and the accruals anomaly via the correlation between accruals and *CFO* in the numerator. Additional analysis shows that *CFO/P* subsumes mispricing attributable to discretionary accruals, measured per the modified Jones (1991) model, as well.

Our results are open to *two* plausible interpretations, depending on the reader's priors about *CFO/P*. If the reader views the traditionally used *C/P* measure, and not the expanded *CFO/P* measure introduced here, as the definitive value-glamour variable, then our evidence does not support Beaver's (2002) conjecture that the accruals anomaly is the glamour stock phenomenon in disguise. Rather, this reader would view *CFO/P* as a comprehensive *mega* proxy that subsumes the role of accruals and the traditional value-glamour variables in predicting future returns.

Alternatively, if the reader views the value-glamour anomaly broadly as the fundamentals-to-price anomaly (consistent with LSV 1994, 1541) and is therefore willing to interpret *CFO/P* as an expanded value-glamour proxy, then one would conclude that the accruals anomaly is indeed the expanded glamour stock phenomenon in disguise.

Our study contributes to the accounting and finance literatures in four ways. First, while the accruals and value-glamour anomalies have been investigated in great depth on their own, we are among the first to systematically examine the relation between these pricing patterns. Second, if the reader is willing to entertain *CFO/P* as an expanded value-glamour proxy, our results show that the accruals (and discretionary accruals) mispricing is subsumed by *CFO/P*. Because cash flows are more persistent and less subject to manipulation than accruals, this alternate interpretation of the results raises interesting questions about whether

[1] Of these variables, Sloan (1996) controls for *B/M* and *E/P* in his paper.

accruals (and discretionary accruals) mispricing is due to the market's inability to understand managers' attempts to manage reported earnings or due to the market's difficulty in assessing the persistence of cash flows or past growth.

Third, from a practical standpoint, we have simplified the research agenda related to asset pricing. Our results suggest that a researcher can control for the accruals and the value-glamour phenomenon parsimoniously via just one variable, *CFO*/*P*. Finally, our results highlight the importance of measuring operating cash flows correctly. The finance literature typically uses the *C*/*P* ratio, in addition to the *E*/*P* ratio, as a value-glamour proxy arguing that reported earnings are subject to accounting manipulations and are hence unrepresentative of the economic earnings with which shareholders ought to be concerned (e.g., LSV 1994; Keim and Hawawini 2002). However, several finance papers often fail to recognize that cash flows, measured as earnings plus depreciation, include the effects of working capital accruals and is therefore *not* devoid of accounting discretion especially because most earnings management is likely accomplished via working capital accruals and not via depreciation accruals.[2]

The remainder of the paper proceeds as follows. Section II describes the prior literature related to the value-glamour and accruals anomalies and provides arguments for the relation between the two anomalies. Section III describes the data. Section IV presents results of tests that examine the interaction between accruals and various proxies of the value-glamour anomaly. Section V reports the properties of the *CFO*/*P* variable and Section VI presents sensitivity checks to examine robustness of our findings. Section VII provides concluding remarks.

II. RELATED RESEARCH

The value-glamour phenomenon refers to the empirical regularity that firms with lower past sales growth, or high book-to-market (*B*/*M*) or, high earnings-to-price (*E*/*P*), or high cash-to-price (*C*/*P*) ratios (value firms) outperform firms with high past sales growth, low *B*/*M*, low *E*/*P*, or low *C*/*P* ratios (glamour firms). In an influential paper, Lakonishok et al. (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. 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-revert in the future, investors are negatively (positively) surprised by the performance of glamour (value) stocks. Consistent with the errors in expectations hypothesis, La Porta et al. (1997) find that abnormal returns around subsequent earnings announcements are significantly higher for value stocks than for glamour 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.

In contrast to the behavioral explanation offered by LSV for the value/glamour phenomenon, several authors led by Fama and French (1992, 1993, 1996) (e.g., Doukas et al. 2002) argue that the higher returns to value stocks represent compensation for risk. However, Daniel and Titman (1997) do not find evidence of a discernable risk factor associated

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[2] If finance researchers are interested in purging reported earnings of accounting discretion, one might think that they could use the *CFO*/*P* measure as *CFO* captures the pure operating cash flows of the firm. However, as we have shown, *CFO*/*P* picks up the mispricing related to accruals. Hence, it may very well be impossible to purge *E*/*P* of accounting discretion at all.

with value or glamour firms. Moreover, La Porta et al. (1997) and Skinner and Sloan (2002), among others, show that abnormal returns to the value-glamour strategy are concentrated around earnings announcements and, hence, do not support risk-based explanations. Yet others (e.g., Kothari et al. 1995) propose that the value-glamour phenomenon may be due to data snooping and survivorship bias, although results in Chan et al. (1996) and out of sample evidence in Davis (1994) and Haughen and Baker (1996) seem to suggest that data-related biases are unlikely to be the main cause of the value-glamour phenomenon. In sum, there is no consensus yet on the underlying reasons for observing the mispricing patterns associated with the value-glamour proxies.

In the recent accounting literature, the accruals anomaly is one of the most researched anomalies. 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 accruals component while simultaneously underweighting the cash component. Sloan (1996) shows that a hedge strategy of buying firms with low accruals and shorting firms with high accruals earns significant abnormal returns in the year following portfolio formation, especially around subsequent earnings announcements. The accruals anomaly has been extended and further investigated by several studies since Sloan (1996).[3]

The objective of our study is to examine the relation between the accruals and the value-glamour anomalies to facilitate a better understanding of the two anomalies.[4] 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 earnings into the future and are surprised when earnings announced subsequently are lower or higher than expected due to accrual reversals. Thus, both anomalies relate to errors in expectations about future fundamentals.

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. Dechow et al. (1998) analytically demonstrate that accruals are positively related to sales growth. McNichols (2000) shows that accruals are higher for firms with high expected (forecasted) earnings growth. 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 operating cash flows (Dechow 1994). Barth et al. (2001) find that the cross-sectional correlation between accruals and cash flows is significantly negative (Spearman $\rho = -0.58$ in their data). Considering the negative correlation, it is reasonable to expect a firm with high (low) accruals to have a low (high)

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[3] For example, researchers (e.g., Chan et al. 2001; Hribar 2001; Thomas and Zhang 2002) 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. 2000; Barth and Hutton 2001; Beneish and Vargus 2002; Bradshaw et al. 2001). Others have investigated whether the accruals anomaly is: (1) caused by management manipulation (e.g., Xie 2001; Chan et al. 2001); (2) distinct from the post-earnings announcement drift (Collins and Hribar 2000); (3) due to growth in net operating assets (Fairfield et al. 2001; Richardson et al. 2001); (4) due to mergers and divestitures (Zach 2002); and (5) found in international stock markets (Pincus et al. 2003).

[4] Other examples of accounting papers that try to reconcile two or more mispricing patterns include Greig (1992), Collins and Hribar (2000), and Raedy (2000).

cash-flow-to-price ratio. Hence, firms with high (low) accruals are likely to be glamour (value) firms. However, it is important to recognize that the negative correlation between cash flows and accruals applies only to operating cash flows as measured in the accounting literature, i.e., earnings adjusted for both depreciation and working capital accruals. The finance literature traditionally measures cash flows as earnings plus depreciation. The empirical correlation between cash-flow-to-price as defined in finance (hereafter labeled *C/P*) and accruals is likely to be low (Spearman $\rho = 0.05$ in our data). Hence, we consider separately the effects of cash-flow-to-price ratio (*CFO/P*) using the accounting definition of operating cash flows (*CFO*).

Our paper is related to the evidence presented in Houge and Loughran (2000) who argue that accruals mispricing is distinct from cash flow mispricing where cash flows are defined as operating cash flows (*CFO*) scaled by total assets (*CFO/TA*). Our work differs from Houge and Loughran (2000) in several ways. First, Houge and Loughran (2000) concentrate on validating Sloan's (1996) assertion that taking positions on *CFO/TA* ought to yield symmetric abnormal returns to positions taken on accruals scaled by total assets. In contrast, our interest lies in conducting a systematic exploration of the relation between two well-documented mispricing patterns in the accounting and finance literatures. Second, unlike Houge and Loughran (2000), our focus is on *CFO* scaled by price, not total assets. *CFO/P* subsumes mispricing patterns attributed to the traditional value-glamour proxies while *CFO/TA* does not.

Third, Houge and Loughran (2000) argue that the accruals and *CFO/TA* strategies are independent partly because a portfolio that combines information in accruals and *CFO/TA* generates higher abnormal returns than either the accruals or the *CFO/TA* strategy by itself. In contrast, we find that after controlling for *CFO/TA*, accruals (scaled by total assets) is not related to future abnormal returns. Moreover, their inference relies on an arguably weak premise. One cannot infer that two strategies are independent just because the combined portfolio is more profitable than the individual portfolios. For example, we find that hedge portfolios that combine information in accruals and sales growth generate greater returns than a strategy based purely on accruals or sales growth. However, after controlling for accruals, either in regression analysis or in the nonoverlap hedge test described later, sales growth is not related to future returns.

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 return data are available on the Compustat and the CRSP tapes. We exclude closed-end funds, investment trusts, and foreign companies. Due to the difficulties involved in interpreting accruals for financial firms we drop firms with SIC codes 6000–6999 from the sample. Our analysis covers the 25-year period from 1973 to 1997.[5] 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.[6] Similar to LSV, we eliminate firms with negative book values, as book-to-market ratios for such firms do not lend themselves to intuitive interpretation as a growth proxy.[7] After eliminating firm-years without adequate data to compute any of the

[5] Our analysis begins in 1973 because prior to 1971, fewer than 500 firms with the required data are available. We lose data related to 1971 and 1972 because sales growth is computed as a three-year growth rate.

[6] We eliminate firms with sales of less than \$1 million to avoid the small denominator problem in determining growth rates.

[7] Our results are not, however, insensitive to the inclusion of such firms.

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:

$$\text{Accruals} = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep \quad (1)$$

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). Following Sloan (1996), we scale accruals by average total assets (Compustat data item 6) and label the resultant variable as *Acc*.[8]

We use four empirical proxies traditionally used in the finance literature to capture the value-glamour effect: past sales growth (*SG*), *B/M*, *E/P*, and *C/P* where "*C*," the cash flows, is measured as earnings (Compustat data item 178) plus depreciation (Compustat data item 14). We measure past sales growth (*SG*) as the average of annual growth in sales over the previous three years. We compute the book-to-market ratio (*B/M*) 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 (*E/P*) is operating income after depreciation (Compustat data item 178) scaled by the market value of equity while cash-flows-to-price ratio (*C/P*) is earnings plus depreciation scaled by the market value of equity. We measure market value of equity at the end of the fourth month after the firm's fiscal year-end to ensure that all the accounting variables for the previous fiscal year are available at the portfolio formation date.

We compute operating cash-flow-to-price ratio labeled "*CFO/P*" where *CFO* is the earnings plus depreciation *minus* working capital accruals. Our analysis initially focuses on comparing the abnormal returns due to accruals and the traditional value-glamour proxies. We explore the properties of the *CFO/P* variable in greater depth later in the paper.

Computation of Abnormal Returns

Each year, we rank firms by accruals, each of the four traditional value-glamour proxies (*SG*, *B/M*, *E/P*, and *C/P*) and *CFO/P* 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 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 firm gets the same weight.

To compute the return of the size decile portfolios, we first assign all the firms to deciles.[9] The portfolio return for each decile is given by the value-weighted return of all

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[8] In a recent paper, Hribar and Collins (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 No. 95 disclosures and obtain similar results (see Section VI). We report SFAS No. 95 based analysis merely as a sensitivity check because of the limited time-series of available SFAS No. 95 data (11 years).

[9] In assigning size decile ranks, the decile break-points are computed using the NYSE/Amex universe of firms. This practice is consistent with extant research (e.g., Lakonishok et al. 1994).

the firms in that decile.[10] 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 Statistics

We begin by providing descriptive statistics for variables of interest in Panel A of Table 1. The mean accruals to total assets ratio across all firms is negative (−0.03) suggesting that depreciation dominates other working capital accruals.[11] The average *B/M* ratio is 0.90, the average *E/P* ratio is 0.13 and the average sales growth rate is 18 percent. The correlation matrix in Panel B suggests three broad patterns of interest. First, as expected, *Acc* and *SG* are correlated (Spearman correlation = 0.26, $p < 0.01$). However, *Acc* is not as highly correlated with other value-glamour proxies, especially *B/M* and *C/P* (Spearman correlation = −0.05 and 0.05), indicating that accruals-related mispricing might be incremental to these measures. Second, *E/P* and *C/P* are highly correlated with each other (Spearman correlation = 0.91, $p < 0.01$) suggesting that *C/P* as measured by the finance literature is essentially *E/P* in disguise. Third, *CFO/P* exhibits a significant association with all the traditional value-glamour proxies, namely *SG*, *B/M*, *E/P*, and *C/P* (Spearman correlation = −0.14, 0.45, 0.61, 0.71, respectively, all $p < 0.01$). Moreover, *CFO/P* is highly correlated with *Acc* (Spearman correlation = −0.47, $p < 0.01$). This regularity hints at the possibility that *CFO/P* could perhaps capture abnormal returns related to both the traditional value-glamour proxies and accruals.

Next, we report returns to both the accruals and the value-glamour anomalies, as traditionally operationalized in the finance literature, 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, corresponding to years 1973 through 1997.

Panel A of Table 2 reports the abnormal returns to the accruals strategy. The lowest-accruals decile earns a raw return of 22.4 percent in the first post-formation year while the top decile of accruals earns an average return of 12.4 percent. Using size-adjusted returns, we find that firms in the bottom decile of accruals earn an abnormal return of 1.3 percent and those in the top decile earn an abnormal return of −8.5 percent. Consistent with other papers that examine NYSE/Amex/NASDAQ firms (e.g., Houge and Loughran 2000; Chan

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

[11] Note that the minimum and maximum of the descriptive statistics for accruals suggest extreme outlier observations. However, this will not influence our results because all our empirical tests use decile ranks as opposed to actual values.

TABLE 1
Summary Statistics

Panel A: Descriptive Statistics

Variable	Mean	Std. Dev.	Median	Min	Max
Acc	−0.03	0.11	−0.03	−1.29	3.03
A/P	−0.09	0.47	−0.04	−1.56	12.21
B/M	0.90	0.80	0.71	0.00	27.98
SG	0.18	0.57	0.12	−0.70	47.72
E/P	0.13	0.33	0.12	−17.34	6.85
C/P	0.23	0.35	0.19	−13.43	19.68
CFO/P	0.22	0.47	0.16	−12.32	28.93
CFO/TA	0.12	0.14	0.13	−3.05	1.94

Panel B: Correlation Statistics for the Overall Sample

Variable	*Acc*	*A/P*	*B/M*	*SG*	*E/P*	*C/P*	*CFO/P*	*CFO/TA*
Acc		**0.56**	**−0.06**	**0.11**	**0.22**	**0.09**	**−0.41**	**−0.47**
A/P	**0.90**		**−0.22**	**0.06**	**0.34**	**0.03**	**−0.76**	**−0.24**
B/M	**−0.05**	**−0.22**		**−0.09**	**0.10**	**0.34**	**0.29**	**−0.10**
SG	**0.26**	**0.29**	**−0.25**		**0.03**	0.01	**−0.04**	**−0.03**
E/P	**0.18**	**0.08**	**0.39**	**0.09**		**0.83**	**0.35**	**0.27**
C/P	**0.05**	**−0.09**	**0.54**	0.01	**0.91**		**0.55**	**0.25**
CFO/P	**−0.47**	**−0.60**	**0.45**	**−0.14**	**0.61**	**0.71**		**0.42**
CFO/TA	**−0.45**	**−0.36**	**−0.18**	**0.06**	**0.32**	**0.27**	**0.57**	

The sample (70,578 observations) comprises all U.S. 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 $(\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep$ 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). Earnings is operating income after depreciation (Compustat data item 178). Cash flow from operations (*CFO*) is derived as the difference between operating income after depreciation and accruals. *Acc* (*A/P*) is accruals scaled by average total assets (market value of equity). *SG* refers to pre-formation three-year average growth rate of sales. *B/M* is the ratio of book value of equity to market value of equity. *E/P* refers to earnings-to-price ratio computed as operating income after depreciation (Compustat 178) scaled by the market value of equity. *C/P* is cash-flow-to-price ratio is operating income after depreciation (Compustat 178) plus depreciation scaled by the market value of equity. *CFO/P* (*CFO/TA*) is *CFO* scaled by the market value of equity (average total assets). Market value of equity is computed using stock prices at the end of the fourth month after fiscal year-end. In Panel B, upper (lower) diagonal in panel reports Pearson (Spearman) correlations and all reported correlations that are significant at $p < 0.05$, two-tailed, are bolded.

TABLE 2
Returns to Various Portfolios

Panel A: Accruals (*Acc*) Portfolio

	Decile											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1–10**	**t-stat**
Acc	−0.210	−0.105	−0.074	−0.054	−0.038	−0.022	−0.004	0.019	0.056	0.168	—	—
*R*1	0.224	0.207	0.219	0.211	0.203	0.197	0.193	0.180	0.171	0.124	0.100	1.73
*R*2	0.239	0.220	0.221	0.218	0.211	0.214	0.209	0.212	0.203	0.173	0.066	1.13
*R*3	0.219	0.221	0.202	0.202	0.199	0.204	0.198	0.203	0.184	0.181	0.038	0.73
*SAR*1	0.013	0.006	0.025	0.017	0.008	0.004	0.004	−0.017	−0.032	−0.085	0.098	4.14
*SAR*2	0.015	0.014	0.017	0.019	0.011	0.017	0.006	0.008	−0.006	−0.042	0.057	1.74
*SAR*3	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 (*SG*) Portfolio

	Value	Decile								Glamour		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1–10**	**t-stat**
SG	−0.107	0.001	0.042	0.072	0.101	0.132	0.171	0.226	0.324	0.880	—	—
*R*1	0.204	0.222	0.207	0.204	0.195	0.201	0.197	0.189	0.184	0.123	0.081	1.49
*R*2	0.235	0.225	0.224	0.216	0.204	0.207	0.213	0.211	0.209	0.176	0.059	1.08
*R*3	0.206	0.211	0.194	0.200	0.203	0.198	0.191	0.207	0.205	0.193	0.013	0.24
*SAR*1	−0.010	0.018	0.006	0.007	0.000	0.004	0.005	−0.006	−0.011	−0.071	0.061	2.33
*SAR*2	0.000	0.006	0.017	0.015	0.007	0.009	0.012	0.010	0.010	−0.028	0.028	0.82
*SAR*3	−0.005	0.010	0.002	0.015	0.020	0.016	0.010	0.025	0.012	0.006	−0.011	−0.03

(*continued on next page*)

TABLE 2 (continued)

Panel C: Book-to-Market (*B/M*) Portfolio

	Glamour	Decile							Value		
	1	2	3	4	5	6	7	8	9	10	10–1	t-stat
B/M	0.177	0.336	0.459	0.575	0.691	0.814	0.952	1.138	1.434	2.436	—	—
*R*1	0.108	0.156	0.171	0.171	0.183	0.197	0.221	0.225	0.232	0.262	0.154	2.89
*R*2	0.137	0.184	0.188	0.204	0.219	0.217	0.230	0.227	0.255	0.261	0.124	2.58
*R*3	0.149	0.184	0.191	0.184	0.189	0.200	0.219	0.225	0.225	0.245	0.096	1.89
*SAR*1	−0.062	−0.018	−0.013	−0.013	−0.005	0.004	0.017	0.013	0.008	0.015	0.077	2.72
*SAR*2	−0.057	−0.013	−0.004	0.007	0.021	0.017	0.022	0.009	0.031	0.028	0.086	2.79
*SAR*3	−0.022	0.008	0.009	0.002	0.009	0.013	0.029	0.029	0.021	0.020	0.043	1.29

Panel D: Earnings-to-Price (*E/P*) Portfolio

	Glamour	Decile							Value		
	1	2	3	4	5	6	7	8	9	10	10–1	t-stat
E/P	−0.377	0.005	0.067	0.103	0.131	0.159	0.188	0.226	0.283	0.480	—	—
*R*1	0.172	0.129	0.146	0.156	0.186	0.187	0.204	0.227	0.246	0.274	0.102	1.80
*R*2	0.234	0.183	0.184	0.211	0.200	0.213	0.222	0.215	0.229	0.236	0.002	0.03
*R*3	0.223	0.175	0.194	0.204	0.196	0.192	0.200	0.192	0.209	0.231	0.008	0.13
*SAR*1	−0.041	−0.048	−0.029	−0.021	0.002	−0.004	0.004	0.020	0.025	0.036	0.077	2.92
*SAR*2	0.001	−0.019	−0.013	0.012	0.002	0.011	0.021	0.014	0.020	0.015	0.014	0.35
*SAR*3	0.009	−0.003	0.012	0.023	0.016	0.009	0.012	0.003	0.014	0.021	0.013	0.34

(continued on next page)

TABLE 2 (continued)

Panel E: Cash-Flow-to-Price (*C/P*) Portfolio

	Glamour	Decile							Value		
	1	2	3	4	5	6	7	8	9	10	10–1	t-stat
C/P	−0.212	0.063	0.117	0.156	0.192	0.229	0.271	0.325	0.408	0.731	—	—
*R*1	0.130	0.125	0.151	0.174	0.191	0.197	0.213	0.221	0.244	0.283	0.153	2.77
*R*2	0.205	0.169	0.193	0.208	0.207	0.214	0.215	0.228	0.231	0.256	0.051	0.79
*R*3	0.205	0.179	0.194	0.199	0.191	0.203	0.195	0.194	0.217	0.236	0.031	0.50
*SAR*1	−0.071	−0.048	−0.023	−0.009	0.002	0.002	0.012	0.009	0.027	0.043	0.114	4.64
*SAR*2	−0.017	−0.031	−0.006	0.009	0.004	0.015	0.013	0.023	0.017	0.035	0.052	1.18
*SAR*3	0.001	0.000	0.015	0.015	0.009	0.018	0.006	0.002	0.020	0.027	0.026	0.60

Panel F: Operating Cash-Flow-to-Price (*CFO/P*) Portfolio

	Decile											
	1	2	3	4	5	6	7	8	9	10	10–1	t-stat
CFO/P	−0.281	0.015	0.072	0.115	0.154	0.197	0.247	0.312	0.418	0.945	—	—
*R*1	0.131	0.105	0.151	0.165	0.189	0.203	0.213	0.227	0.262	0.280	0.149	2.65
*R*2	0.193	0.178	0.189	0.201	0.210	0.223	0.220	0.229	0.231	0.249	0.056	1.01
*R*3	0.219	0.161	0.183	0.194	0.187	0.206	0.194	0.199	0.230	0.238	0.019	0.32
*SAR*1	−0.081	−0.073	−0.027	−0.022	0.003	0.008	0.019	0.025	0.047	0.044	0.126	5.34
*SAR*2	−0.037	−0.025	−0.007	0.004	0.009	0.022	0.021	0.025	0.022	0.028	0.066	2.14
*SAR*3	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 (70,578 observations) comprises all U.S. 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. *R*1, *R*2, *R*3 (*SAR*1, *SAR*2, *SAR*3) refer to the average raw returns (size-adjusted returns) for a decile portfolio for months 1–12, 13–24, 25–36, respectively. Return accumulation begins four months after the fiscal year end. All returns reported above are Fama-Macbeth averages over the years 1973 to 1997. For variable definitions of other variables see Table 1.

et al. 2001; Beneish and Vargus 2002), we find that income-increasing accruals are associated with larger abnormal returns.[12] The abnormal return to this hedge portfolio is 9.8 percent (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 percent, 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.

Panels B–E of Table 2 replicate the return to the value-glamour proxies traditionally used in the finance literature while Panel F examines returns to the *CFO/P* variable. We observe a significant size-adjusted abnormal return for one year when positions are taken on *SG*, *E/P*, and *C/P*. However, size-adjusted abnormal returns persist for two years when stocks are sorted on *B/M*. It is interesting to note that the *CFO/P* strategy generates the largest size-adjusted abnormal return among all strategies for two years (year 1 return = 12.6 percent and year 2 return = 6.6 percent). In sum, we are able to successfully replicate the accruals and traditionally operationalized value-glamour anomalies and also document significant abnormal returns for the *CFO/P*-based strategy in our sample. The next section explores in detail the relation between the two anomalies.

IV. COMPARING ACCRUALS AND TRADITIONAL VALUE-GLAMOUR STRATEGIES

So far, we have examined the accruals and the traditional 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 initially consider two-dimensional or bivariate joint strategies, where one dimension is accruals and the other dimension is one value-glamour proxy at a time.[13] Thus, we examine abnormal returns to four two-dimensional strategies—(1) accruals and *SG*; (2) accruals and *B/M*; (3) accruals and *E/P*; and (4) accruals and *C/P*.

Methodology

To implement the two-dimensional strategies, we sort stocks independently on accruals and one traditional value-glamour proxy at a time and then focus on the intersections resulting from these independent sorts. To facilitate the exposition, we illustrate our tests based on two variables, accruals and sales growth (*SG*). We begin by classifying stocks on each of the two variables into quintiles.[14] Given that our focus is on extreme quintiles, we combine quintiles 2, 3, and 4 together. Thus, effectively, we sort stocks into three groups,

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[12] To investigate this issue further, we examine 50 firms from our sample at random from the extreme low accruals decile and review their annual reports. We find that the low accruals decile contains firms that have negative accruals for two reasons: (1) restructuring charges and discontinued operations; and (2) financial distress. While the low-accruals firms that are relatively healthy earn positive abnormal returns, the financially distressed firms earn negative abnormal returns. Hence, the conflicting direction of returns might explain why the overall returns to low-accruals portfolio turn out to be small. Consistent with Sloan (1996), when NASDAQ firms are removed from the sample, we find, in untabulated analyses, that abnormal returns associated with the extreme low-accruals portfolio are higher at 4.97 percent while those related to the extreme high accruals portfolio are lower at −3.67% (hedge return = 8.64%, t-statistic = 4.67).

[13] Another reason to opt for such a presentation of the results is that Sloan (1996) narrows the mispricing to one variable, accruals, whereas the value-glamour phenomenon is usually characterized in terms of four variables, *SG*, *B/M*, *E/P*, and *C/P*.

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

bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) for both accruals and *SG*.

For the groups sorted based on accruals, Group 1 comprises stocks in the bottom quintile of accruals (*Acc*1). Group 2 comprises stocks in quintiles 2, 3, and 4 of accruals (*Acc*2) while group 3 has stocks from the top quintile of accruals (*Acc*3). Analogously, stocks are assigned into three groups based on *SG* (*SG*1, *SG*2, *SG*3). Thus, *SG*1 contains stocks with lowest past sales growth (value stocks), *SG*2 has stocks in quintiles 2, 3, and 4 of sales growth, and *SG*3 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.[15] The rows report the abnormal returns to each of the three accruals groups while the columns provide returns to each of the three *SG* groups. Similar to the returns reported in Table 2, the returns and the corresponding t-statistics are based on a time-series of 25 annual observations.

We report results of four tests—basic hedge test, control hedge test, nonoverlap hedge test, and the regression approach—for each of the bivariate pairs.

Basic Hedge Test

The basic hedge test reports returns to an unconditional accruals and *SG* strategy. Panel B of Table 3 shows the abnormal returns to: (1) a basic accruals strategy, i.e., taking a long position on the lowest accruals portfolio (*Acc*1) and a short position on the highest accruals portfolio (*Acc*3) and (2) a basic *SG* strategy, i.e., taking a long position on the lowest *SG* portfolio (*SG*1) and a short position on the highest *SG* portfolio (*SG*3).

Control Hedge Portfolio Test

Under the control hedge portfolio test, we assess whether the accruals strategy is viable after holding the value-glamour proxy constant and vice versa. A number of papers in the literature (e.g., Reinganum 1981; Banz 1981; Jaffe et al. 1989; Greig 1992; Hong et al. 2000) have used this approach to address related questions. 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.

Nonoverlap Hedge Test

An alternative way to assess whether accruals mispricing exists over and above the *SG* strategy is to eliminate firms in convergent extreme groups (see shaded cells in Panel A). In particular, the lowest accruals and the lowest *SG* portfolios (*Acc*1, *SG*1) are predicted to earn positive abnormal returns under both the strategies while the highest accruals and the highest *SG* portfolios (*Acc*3, *SG*3) are predicted to earn negative abnormal returns under both the strategies. We form a new portfolio (labeled as "nonoverlap hedge") where we eliminate firm-years in these convergent cells and assess whether each of the strategies individually can still generate abnormal returns. In other words, we assess the return to a long position on the lowest accruals portfolio without considering the value firms (*Acc*1, *SG*1) and a short position on the highest accruals portfolio after eliminating glamour firms (*Acc*3, *SG*3). Analogously, we form a nonoverlap hedge portfolio for *SG* by taking a long

[15] 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.

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

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

	Value *SG*1	*SG*2	Glamour *SG*3	(*SG*1–*SG*3) Control Hedge
***Acc*1**	1.87%	2.10%*	−4.00%	5.87%*
	(4706)	(6939)	(2433)	(2.14)
***Acc*2**	0.37%	1.23%*	−1.03%	1.40%
	(7837)	(27899)	(6631)	(0.67)
***Acc*3**	−3.44%	−4.79%**	−8.25%**	4.81%
	(1534)	(7537)	(5062)	(1.75)
(*Acc*1–*Acc*3) Control Hedge	5.31%*	6.89%**	4.25%	
	(2.08)	(4.79)	(1.45)	

Panel B: Test Statistics of Hedge Strategies

Hedge Type	*SAR*1	t-statistic
Basic hedges		
*Acc*1–*Acc*3	6.88%	3.95**
*SG*1–*SG*3	4.52%	2.20*
Nonoverlap hedges		
Acc: Long (*Acc*1, *SG*2) and (*Acc*1, *SG*3) Short (*Acc*3, *SG*1) and (*Acc*3, *SG*2)	5.14%	3.48**
SG: Long (*SG*1, *Acc*2) and (*SG*1, *Acc*3) Short (*SG*3, *Acc*1) and (*SG*3, *Acc*2)	1.82%	0.78

Panel C: Regression Approach—*SAR*1 as the Dependent Variable

	Intercept	*Acc*	*SG*	Size
Mean	0.031*	−0.077**		0.004
t-statistic	(2.39)	(−6.40)		(0.30)
Mean	0.015		−0.047*	0.007
t-statistic	(1.23)		(−2.77)	(0.47)
Mean	0.041**	−0.070**	−0.030	0.008
t-statistic	(2.93)	(−6.50)	(−1.86)	(0.49)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.

The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *Acc*1, *Acc*2, *Acc*3 (*SG*1, *SG*2, *SG*3) represent stocks in three groups based on bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) sorted on accruals (*SG*) variables, respectively. In Panel A, the amount in percent represents average one-year-ahead size-adjusted abnormal returns for firms that belong to that cell. Mean-size-adjusted returns for each portfolio or cell are calculated each year and then averaged over the 25 years. The number of firms in each cell is reported in parentheses. For control hedge tests, the number in parentheses represents t-statistics. In Panel C, *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

position on *SG*1 after eliminating lowest accruals firms (*Acc*1, *SG*1) and a short position on *SG*3 after eliminating highest accruals firms (*Acc*3, *SG*3).

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 nonlinear. The argument in favor of using a regression approach is the simplicity associated with the interpretation of results. The regression approach involves projecting size-adjusted abnormal returns on ranks of accruals and *SG*.[16] 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 9 so that each observation related to accruals and *SG* takes a value ranging between 0 and 1. We estimate separate cross-sectional OLS regression of size-adjusted returns on the accruals and *SG* decile ranks for each of the 25 years in the sample.[17] The coefficients on *Acc* 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).

Relation between the Anomalies

Accruals and Sales Growth

Panel B of Table 3 shows that basic accruals and *SG* hedges earn abnormal returns of 6.88 percent and 4.52 percent, respectively. However returns to the sales growth strategy are subsumed by accruals. Note that, under the control hedge tests reported in Panel B, the accruals strategy (*Acc*1–*Acc*3) earns positive abnormal returns across two of the three *SG* groups (*SG*1 and *SG*2) while the *SG* strategy survives in only one of the three accrual groups (*Acc*1). Moreover, per the nonoverlap hedge test reported in Panel A, the predictive power of *SG* for future returns disappears once firms in extreme convergent accruals portfolio are eliminated (1.82 percent, t-statistic = 0.78). However, the accruals strategy earns significant abnormal returns even after removing firms in extreme convergent *SG* portfolios (5.14 percent, t-statistic = 3.48). The regression results reported in Panel C of Table 3 show that when accruals and *SG* are considered together in the regression, the incremental return to *SG* drops to 3.0 percent and is not significant (t-statistic = −1.86) while the incremental return to accruals continues to be large and significant (7 percent, t-statistic = −6.50).[18] 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.

Note that even though the accruals strategy subsumes the sales growth strategy, taking positions on the convergent (shaded) cells, i.e., long on low accruals and low sales growth

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16 We introduce size (natural logarithm of *MVE*) 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 et al. 1984; Bernard 1987).

17 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.

18 The negative coefficient on *SG* and *Acc* is consistent with taking long (short) positions on low (high) *SG*/*Acc*.

(*Acc*1, *SG*1) portfolio and short on high accruals and high sales growth (*Acc*3, *SG*3) portfolio generates a return of 10.14 percent, which is substantially higher than the returns obtained for the independent strategies (6.88 percent for accruals and 4.52 percent for sales growth). Thus, a higher return on the combined strategy is not conclusive evidence that the two individual strategies are independent of each other. Some researchers (e.g., Houge and Loughran 2000; Collins and Hribar 2000) have interpreted a higher return on the combined strategy as evidence that the individual strategies are independent. We submit that the nonoverlap hedge test proposed here is a more powerful way of assessing whether two strategies are indeed independent of each other.

Accruals and Book-to-Market

Analyses reported in Table 4 indicate that accruals and *B*/*M*, in general, capture different aspects of mispricing. The control hedge test reported in Panel A shows these strategies continue to generate abnormal returns after controlling for the other in at least two of the three possible cases. The results from the nonoverlap hedge test reported in Panel B suggest that the *B*/*M* effect is mitigated in the presence of accruals. While we find that the accruals strategy earns significant abnormal return of 5.38 percent (t-statistic = 3.33), the *B*/*M* strategy is not able to generate significant abnormal returns (3.40 percent, t-statistic = 1.71) in the absence of firms in the convergent cells. Regression results reported in Panel C of Table 4 show that when both the variables are included in the regression together, the returns to accruals is −7.1 percent with a t-statistic of −6.42 while the returns to *B*/*M* is 6.3 percent with a t-statistic of 1.97. Although the coefficient on *B*/*M* is not significant at the 5 percent level, the magnitude of the coefficient is high and the p-value is 0.06. Moreover, untabulated results reveal that 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.

An interesting insight that emerges from Panel A of Table 4 is that one can combine information in accruals to refine the *B*/*M* strategy and vice versa. Note that high *B*/*M* and high accruals stocks (*B*/*M*3, *Acc*3) earn negative abnormal returns although *B*/*M*-based value investment strategy is expected to earn positive abnormal returns. Hence, excluding high accruals firms from the *B*/*M*3 portfolio would be more profitable than an unconditional *B*/*M*3 portfolio. Moreover, a conditional accruals strategy that excludes glamour stocks (*B*/*M*1) from low-accruals portfolio (*Acc*1) is more profitable than a plain vanilla accruals strategy. This is because low-accruals firms that are glamour stocks (*Acc*1, *B*/*M*1) earn negative returns although one would expect an unconditional position on low-accruals firms (*Acc*1) to earn positive abnormal returns.

Accruals and Earnings-to-Price and Cash-to-Price

The accruals strategy earns abnormal returns incremental to the *E*/*P* strategy as reported in Table 5. Note that when the control hedge tests are considered (Panel A), the accruals strategy earns significant abnormal returns in all the three *E*/*P* groups while the *E*/*P* strategy also earns significant abnormal returns in two out of three accruals groups (*Acc*1 and *Acc*2). The results of the nonoverlap hedge test (Panel B) show that both the accruals and the *E*/*P* strategy earn significant abnormal returns even after eliminating firms in the convergent cells (*Acc*3, *E*/*P*1) and (*Acc*1, *E*/*P*3). 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

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

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

	Glamour *B/M*1	*B/M*2	Value *B/M*3	(*B/M*3–*B/M*1) Control Hedge
*Acc*1	−3.92%	1.51%	3.49%	7.41%*
	(2764)	(7773)	(3541)	(2.08)
*Acc*2	−2.55%	1.07%*	2.36%*	4.91%*
	(7396)	(26518)	(8453)	(2.67)
*Acc*3	−7.71%**	−4.67%**	−6.74%**	0.97%
	(3922)	(8075)	(2136)	(0.34)
(*Acc*1–*Acc*3) Control Hedge	3.79%	6.18%*	10.23%**	
	(1.01)	(2.08)	(3.90)	

Panel B: Test Statistics of Hedge Strategies

Hedge Type		*SAR*1	t-statistic
	Basic hedges		
*Acc*1–*Acc*3		6.88%	3.95**
*B/M*3–*B/M*1		7.60%	3.47**
	Nonoverlap hedges		
Acc: Long (*Acc*1, *B/M*1) and (*Acc*1, *B/M*2) Short (*Acc*3, *B/M*2) and (*Acc*3, *B/M*3)		5.38%	3.33**
B/M: Long (*B/M*3, *Acc*2) and (*B/M*3, *Acc*3) Short (*B/M*1, *Acc*1) and (*B/M*1, *Acc*2)		3.40%	1.71

Panel C: Regression Approach—*SAR*1 as the Dependent Variable

	Intercept	*Acc*	*B/M*	Size
Mean	0.031*	−0.077**		0.004
t-statistic	(2.39)	(−6.40)		(0.30)
Mean	−0.053		0.071*	0.028
t-statistic	(−2.01)		(2.19)	(1.34)
Mean	−0.013	−0.071**	0.063	0.026
t-statistic	(−0.49)	(−6.42)	(1.97)	(1.27)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *Acc*1, *Acc*2, *Acc*3 (*B/M*1, *B/M*2, *B/M*3) represent stocks in three groups based on bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) sorted on accruals (*B/M*) variables, respectively. In Panel A, the amount in percent represents average one-year-ahead size-adjusted abnormal returns for firms that belong to that cell. Mean-size-adjusted returns for each portfolio or cell are calculated each year and then averaged over the 25 years. The number of firms in each cell is reported in parentheses. For control hedge tests, the number in parentheses represents t-statistics. In Panel C, *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

TABLE 5
Comparison of One-Year-Ahead Abnormal Returns for Portfolios Based on Accruals and Earnings-to-Price *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	(*E/P*3–*E/P*1) Control Hedge
***Acc*1**	−3.45%	2.86%	7.17%**	10.41%**
	(5513)	(6557)	(2008)	(3.85)
***Acc*2**	−4.19%	0.50%	4.64%**	8.83%**
	(6324)	(26742)	(9301)	(3.80)
***Acc*3**	−9.24%**	−5.45%**	−5.04%**	4.20%
	(2221)	(9078)	(2834)	(1.44)
(*Acc*1–*Acc*3) Control Hedge	5.79%**	8.31%**	12.21%**	
	(5.57)	(4.92)	(5.79)	

Panel B: Test Statistics of Hedge Strategies

Hedge Type	*SAR*1	t-statistic
Basic hedges		
*Acc*1–*Acc*3	6.88%	3.95**
*E/P*3–*E/P*1	7.60%	3.47**
Nonoverlap hedges		
Acc: Long (*Acc*1, *E/P*1) and (*Acc*1, *E/P*2) Short (*Acc*3, *E/P*2) and (*Acc*3, *E/P*3)	5.43%	2.98**
E/P: Long (*E/P*3, *Acc*2) and (*E/P*3, *Acc*3) Short (*E/P*1, *Acc*1) and (*E/P*1, *Acc*2)	6.30%	2.77**

Panel C: Regression Approach—*SAR*1 as the Dependent Variable

	Intercept	*Acc*	*E/P*	Size
Mean	0.031*	−0.077**		0.004
t-statistic	(2.39)	(−6.40)		(0.30)
Mean	−0.047*		0.088**	−0.008
t-statistic	(−2.12)		(2.94)	(−0.56)
Mean	−0.008	−0.092**	0.102**	−0.008
t-statistic	(−0.39)	(−6.99)	(3.32)	(−0.56)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.

The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *Acc*1, *Acc*2, *Acc*3 (*E/P*1, *E/P*2, *E/P*3) represent stocks in three groups based on bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) sorted on accruals (*E/P*) variables, respectively. In Panel A, the amount in percent represents average one-year-ahead size-adjusted abnormal returns for firms that belong to that cell. Mean-size-adjusted returns for each portfolio or cell are calculated each year and then averaged over the 25 years. The number of firms in each cell is reported in parentheses. For control hedge tests, the number in parentheses represents t-statistics. In Panel C, *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

(*E/P*3, *Acc*3) and glamour stocks with low accruals (*Acc*1, *E/P*1) earn negative abnormal returns. Thus, the value strategy could be refined to exclude high-accruals firms from the *E/P*3 portfolio, whereas the low-accruals portfolio could be refined to exclude low *E/P* firms. Furthermore, note that high-accruals firms (*Acc*3) earn negative abnormal returns across the three *E/P* groups. That is, the market appears to overreact to accruals for high-accruals firms, regardless of their value-glamour status as measured by *E/P*. Overall, the results seem to suggest that accruals and *E/P* capture distinct mispricing and that the information in one strategy can be used to refine the other to earn higher abnormal returns.

As an aside, the accruals and *E/P* portfolios represent a situation where a combined strategy earns higher returns (16.41 percent) than the individual strategies (6.88 percent for accruals and 7.60 percent for *E/P*) and the two strategies are independent of each other. This is because each individual strategy, accruals and *E/P*, is able to generate significant abnormal returns even after the overlapping firms are deleted. Recall that although the combined accruals and *SG* strategies generate greater abnormal returns than either accruals or *SG* by itself, the two strategies are not independent.

Table 6 presents a comparison of accruals and the *C/P* strategies. Given that *E/P* and *C/P* are highly correlated (Spearman correlation = 0.91, $p < 0.00$), we would expect the accruals strategy to earn abnormal returns after controlling for *C/P* as defined in the finance literature. Similar to the *E/P* related results in Table 5, we find that the accruals strategy appears to earn incremental returns after controlling for *C/P* and vice versa.

Summary

The accruals strategy dominates returns to the sales growth strategy and continues to generate abnormal returns incremental to the other three commonly used value-glamour proxies in the finance literature, namely *B/M*, *E/P*, and *C/P*. Hence, if one's priors are that value-glamour anomaly ought to be operationalized as these traditional proxies, then one would reject Beaver's (2002) conjecture that the accruals anomaly is the value-glamour phenomenon in disguise. However, as mentioned before, a caveat to this interpretation is that the finance literature mismeasures operating cash flows by only adjusting earnings for depreciation. In the following section, we consider the properties of *CFO/P* where *CFO* is measured as earnings adjusted for depreciation and working capital accruals.

V. OPERATING CASH-FLOW-TO-PRICE (*CFO/P*) MEASURE

In this section, we explore the properties of *CFO/P*. In particular, we examine the relation between *CFO/P* and (1) the traditional value glamour measures and (2) accruals.

CFO/P and Value-Glamour Proxies

CFO/P exhibits a significant association with all the traditional value-glamour proxies, namely *SG*, *B/M*, *E/P*, and *C/P* (see Panel B of Table 2). Moreover, untabulated results indicate that the relation between *CFO/P* and the other value-glamour proxies is monotonic across the decile portfolios of *CFO/P*. We next conduct regression analysis to compare abnormal returns generated using *CFO/P* and each of the other value-glamour anomalies. The results are presented in Table 7. When considered individually, each value-glamour proxy, namely, sales growth, *B/M*, *E/P*, and *C/P*, loses its predictive ability for future returns in the presence of *CFO/P*. We then consider all the value-glamour proxies together to determine whether *CFO/P* incrementally predicts future returns. We do not introduce *E/P* and *C/P* in the same regression to avoid collinearity issues and to be consistent with

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

Panel A: Accruals and Cash Flow-to-Price (*C/P*)—Quintile Analysis

	Glamour *C/P*1	*C/P*2	Value *C/P*3	(*C/P*3–*C/P*1) Control Hedge
***Acc*1**	−5.38%*	3.21%	5.91%**	11.41%**
	4469	6662	2945	(3.92)
***Acc*2**	−5.05%*	0.70%	4.81%**	9.86%**
	6416	23309	9080	(4.24)
***Acc*3**	−9.74%**	−4.85%**	−4.89%**	4.85%
	3183	8849	2101	(1.56)
(*Acc*1–*Acc*3) Control Hedge	4.36%	8.06%**	10.80%**	
	(1.22)	(4.27)	(4.79)	

Panel B: Test Statistics of Hedge Strategies

	Hedge Type	*SAR*1	t-statistic
	Basic hedges		
*Acc*1–*Acc*3		6.88%	3.95**
*C/P*3–*C/P*1		9.60%	4.31**
	Nonoverlap hedges		
Acc: Long (*Acc*1, *C/P*1) and (*Acc*1, *C/P*2) Short (*Acc*3, *C/P*2) and (*Acc*3, *C/P*3)		11.85%	5.72**
C/P: Long (*C/P*3, *Acc*2) and (*C/P*3, *Acc*3) Short (*C/P*1, *Acc*1) and (*C/P*1, *Acc*2)		4.92%	2.62*

Panel C: Regression Approach—*SAR*1 as the Dependent Variable

	Intercept	*Acc*	*C/P*	Size
Mean	0.031*	−0.077**		0.004
t-statistic	(2.39)	(−6.39)		(0.29)
Mean	−0.056*		0.101**	−0.001
t-statistic	(−2.48)		(3.36)	(−0.11)
Mean	−0.017	−0.076**	0.100**	−0.001
t-statistic	(−0.77)	(−6.48)	(3.32)	(−0.01)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *Acc*1, *Acc*2, *Acc*3 (*C/P*1, *C/P*2, *C/P*3) represent stocks in three groups based on bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) sorted on accruals (*C/P*) variables, respectively. In Panel A, the amount in percent represents average one-year-ahead size-adjusted abnormal returns for firms that belong to that cell. Mean-size-adjusted returns for each portfolio or cell are calculated each year and then averaged over the 25 years. The number of firms in each cell is reported in parentheses. For control hedge tests, the number in parentheses represents t-statistics. In Panel C, *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

TABLE 7
Regression of One-Year-Ahead Abnormal Returns on Traditional Value-Glamour Proxies and Operating Cash-Flow-to-Price (*CFO/P*)

	Intercept	*SG*	*B/M*	*E/P*	*C/P*	*CFO/P*	Size
Mean	−0.059**	−0.024				0.128**	0.001
t-statistic	(−2.94)	(−1.58)				(5.18)	(0.04)
Mean	−0.081*		0.017			0.127**	0.005
t-statistic	(−2.75)		(0.61)			(7.48)	(0.24)
Mean	−0.075**			0.018		0.123**	−0.006
t-statistic	(−3.09)			(0.68)		(6.77)	(−0.42)
Mean	−0.074**				0.018	0.121**	−0.006
t-statistic	(−3.10)				(0.09)	(8.64)	(−0.37)
Mean	−0.064	−0.032*	0.006	0.030		0.109**	0.002
t-statistic	(−2.05)	(−2.46)	(0.22)	(1.19)		(8.36)	(0.10)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

prior research (e.g., LSV).[19] The results suggest that *B/M* and *E/P* are not significant in the presence of *CFO/P*. In particular, the return to the *CFO/P* strategy is 10.9 percent (t-statistic = 8.36), while the return to *B/M* is 0.6 percent (t-statistic = 0.22) and *E/P* is 0.3 percent (t-statistic = 1.19). The coefficient on sales growth is, however, significantly negative but the return of 3.2 percent is considerably smaller than that of the *CFO/P* strategy. Thus, we conclude that *CFO/P* parsimoniously captures abnormal returns to the traditional value-glamour proxies.

CFO/P and the Accruals Anomaly

In this subsection, we consider the interaction between accruals and the *CFO/P* ratio. The basic hedge test, reported in Panel B of Table 8, shows that the *CFO/P* strategy generates abnormal returns of 12.41 percent compared to 6.88 percent generated by the accruals strategy. Note that the control hedge test (Panel A) shows that the accruals portfolio does not earn significant abnormal returns across any of the three *CFO/P* groups. In contrast, the *CFO/P* strategy earns abnormal returns of 14.69 percent (t-statistic = 3.49), 11.73 percent (t-statistic = 4.81), and 6.84 percent (t-statistic = 1.25) across the three accruals groups.

When we consider the nonoverlap hedge test, i.e., eliminate the convergent cells (*Acc*1, *CFO/P*3) and (*Acc*3, *CFO/P*1), we find that the abnormal return to the accruals strategy is only 1.2 percent with a t-statistic of 0.60. On other hand, the abnormal return to the *CFO/P* strategy is 12.40 percent (t-statistic = 4.84). Therefore, while *CFO/P* and accruals appear to capture similar information, *CFO/P* subsumes the predictive power of accruals

[19] Note that *E/P* and *C/P* are highly correlated (Spearman correlation = 0.91, $p < 0.00$ as reported). We also do not simultaneously consider *E/P*, *CFO/P*, and *Acc* in the same regression to avoid the tautological relations among earnings, accruals, and *CFO*.

TABLE 8
Comparison of One-Year Ahead Abnormal Returns for Portfolios Based on Accruals and Operating Cash Flow-to-Price (*CFO/P*)

Panel A: Accruals (*Acc*) and Operating Cash Flow-to-Price (*CFO/P*)—Quintile Analysis

	*CFO/P*1	*CFO/P*2	*CFO/P*3	(*CFO/P*3–*CFO/P*1) Control Hedge
*Acc*1	−10.42%* (1489)	0.13% (6235)	4.27%* (6354)	14.69%** (3.49)
*Acc*2	−6.68%** (4714)	0.79%* (30033)	5.05%** (7620)	11.73%** (4.81)
*Acc*3	−8.27%** (7894)	−2.83%* (6095)	−1.43% (144)	6.84% (1.25)
(*Acc*1–*Acc*3) Control Hedge	−2.15% (−0.51)	2.96% (1.66)	5.70% (1.04)	

Panel B: Test Statistics of Hedge Strategies

Hedge Type	*SAR*1	t-statistic
Basic hedges		
*Acc*1–*Acc*3	6.88%	3.95**
*CFO/P*3–*CFO/P*1	12.41%	5.97**
Nonoverlap hedges		
Acc: Long (*Acc*1, *CFO/P*1) and (*Acc*1, *CFO/P*2) Short (*Acc*3, *CFO/P*2) and (*Acc*3, *CFO/P*3)	1.20%	0.60
CFO/P: Long (*CFO/P*3, *Acc*2) and (*CFO/P*3, *Acc*3) Short (*CFO/P*1, *Acc*1) and (*CFO/P*1, *Acc*2)	12.40%	4.84**

Panel C: Regression Approach—*SAR*1 as the Dependent Variable

	Intercept	*Acc*	*CFO/P*	Size
Mean	0.031*	−0.077**		0.004
t-statistic	(2.39)	(−6.40)		0.030
Mean	−0.071**		0.133**	−0.002
t-statistic	(−3.54)		(5.23)	(−0.15)
Mean	−0.066	−0.008	0.129**	−0.003
t-statistic	(−2.01)	(−0.38)	(3.85)	(−0.18)

Panel D: Regression Approach—SAR1 as the Dependent Variable (including other traditional value-glamour proxies)

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.012	−0.082**	−0.032*	0.020	0.099**		0.006
t-statistic	(−0.43)	(−7.81)	(−2.37)	(0.75)	(3.95)		(0.31)
Mean	−0.063	−0.002	−0.025	0.008		0.126**	0.006
t-statistic	(−1.67)	(−0.10)	(−1.87)	(0.32)		(4.84)	(0.34)

(*continued on next page*)

TABLE 8 (continued)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *Acc*1, *Acc*2, *Acc*3 (*CFO/P*1, *CFO/P*2, *CFO/P*3) represent stocks in three groups based on bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) sorted on accruals (*CFO/P*) variables, respectively. In Panel A, the amount in percent represents average one-year-ahead size-adjusted abnormal returns for firms that belong to that cell. Mean-size-adjusted returns for each portfolio or cell are calculated each year and then averaged over the 25 years. The number of firms in each cell is reported in parentheses. For control hedge tests, the number in parentheses represents t-statistics. In Panels C and D, *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

for future returns. The regression results presented in Panel C confirm this inference. Specifically, in the presence of *CFO/P*, the abnormal return to the accruals strategy is only 0.8 percent, and this return is not statistically significant (t-statistic = −0.38). On the other hand, the abnormal return to the *CFO/P* strategy is 12.9 percent after controlling for accruals (t-statistic = 3.85).

Next, we conduct regressions where we include all the traditional value-glamour proxies together to determine the incremental importance of accruals. Results presented in Panel D of Table 8 suggest that, in the presence of *SG*, *B/M*, and *E/P* accruals earn a significant incremental return of 8.2 percent (t-statistic = −7.81). However, when we use *CFO/P* instead of *E/P*, the accruals variable is rendered statistically insignificant. Most important, *CFO/P* is the only variable that is statistically significant in this specification (coefficient = 0.126; t-statistic = 4.84). Hence, *CFO/P* subsumes accruals even after controlling for other traditional value-glamour proxies.

Source of *CFO/P*'s Predictive Power

The result that *CFO/P* empirically captures both the accruals and the traditional value-glamour anomalies is intriguing. In this subsection, we seek to better appreciate the nature of mispricing generated by the *CFO/P* variable.

Does the Scale Variable Matter?

CFO/P's advantage over other variables may stem from the fact that it captures important attributes of both the anomalies as traditionally documented in the accounting and finance literatures. We conjecture that the *CFO/P* ratio captures: (1) the accruals effect in the numerator via the negative correlation between accruals and *CFO*; and (2) the value-glamour phenomenon (the market's future growth expectations) via the deflation of *CFO* by price. If this conjecture were correct, we would expect *CFO* scaled by another variable to capture accruals-related mispricing but not the returns to the traditional value-glamour proxies. To be consistent with accruals-related scaling (*Acc*), we scale *CFO* by average total assets and compare the performance of thus defined *CFO/TA* with accruals and the other traditional value-glamour proxies.

Panel A of Table 9 shows that *CFO/TA* captures mispricing attributable to accruals as the predictive power of *Acc* disappears in the presence of *CFO/TA*. Thus, it appears as though the correlation between accruals and *CFO* explains why *CFO/P* picks up accruals-related mispricing. However, *CFO/TA* does not capture the traditional value-glamour attributes of *SG*, *B/M*, *E/P*, and *C/P* when these variables are individually pitted against *CFO/*

TABLE 9
Source of Mispricing of *CFO/P*

Panel A: Regression Results—Substituting *CFO/TA* for *CFO/P*

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*C/P*	*CFO/TA*	Size
Mean	−0.036	−0.026					0.109**	−0.029
t-statistic	(−1.52)	(−1.38)					(4.91)	(−1.97)
Mean	−0.030		−0.052**				0.124**	−0.030
t-statistic	(−2.05)		(−3.16)				(8.29)	(−1.90)
Mean	−0.121**			−0.095**			0.138**	−0.006
t-statistic	(−3.79)			(−2.81)			(8.15)	(−0.28)
Mean	−0.073**				0.060*		0.102**	−0.036*
t-statistic	(−3.33)				(2.22)		(8.36)	(−2.36)
Mean	−0.084**					0.077*	0.101**	−0.031
t-statistic	(−3.67)					(2.61)	(7.94)	(−1.95)
Mean	−0.097**		−0.040**	0.067*	0.039		0.121**	−0.009
t-statistic	(−3.02)		(−3.06)	(2.35)	(1.67)		(10.02)	(−0.48)
Mean	−0.106*	0.006	−0.031*	0.087*			0.141**	−0.006
t-statistic	(−2.58)	(0.30)	(−2.35)	(2.53)			(5.63)	(−0.29)

Panel B: Regression Results—Using Accruals Scaled by Market Value of Equity (*A/P*)

	Intercept	*A/P*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.004	−0.082**	−0.032*	0.008	0.096**		0.006
t-statistic	(−0.15)	(−7.19)	(−2.33)	(0.29)	(3.82)		(0.29)
Mean	−0.072	0.012	−0.027	0.009		0.135**	0.006
t-statistic	(−1.76)	(0.50)	(−1.99)	(0.32)		(4.55)	(0.30)

Panel C: Regression Results—Using Discretionary Accruals

	Intercept	*DAcc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.010	−0.082**	−0.041**	0.025	0.097**		0.011
t-statistic	(−0.37)	(−8.99)	(−3.09)	(0.92)	(3.86)		(0.60)
Mean	−0.052	−0.022	−0.023	0.014		0.116**	0.010
t-statistic	(−1.53)	(−1.74)	(−1.67)	(0.51)		(5.30)	(0.50)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. *DAcc* represents discretionary accruals estimated as the residual from a cross-sectional version of Jones (1991) model. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years.

TA. In contrast, recall that *CFO/P* picks up the mispricing related to each of the four traditional value-glamour proxies (see Table 7). Thus, unlike *CFO/P*, *CFO/TA* does not capture the value-glamour phenomenon. Hence, scaling *CFO* by price appears to explain why *CFO/P* is a value-glamour proxy. This result also indicates that returns to the *CFO/P* strategy are distinct from the *CFO/TA* mispricing documented by Houge and Loughran (2000).

Given that accruals and *CFO* are highly correlated, one might argue that (1) accruals scaled by price (*A/P*) would also be a powerful and all encompassing value-glamour proxy like *CFO/P*; and (2) *A/P* might subsume mispricing related to *CFO/P*. Panel B of Table 9 provides evidence on this issue. We find that *A/P* is not as powerful as *CFO/P* because *SG* and *E/P* continue to earn abnormal returns incremental to *A*/P. Furthermore, *A/P* does not subsume *CFO/P*. In fact, the *CFO/P* variable subsumes mispricing attributed both to *A/P* and the traditional value-glamour proxies. The return to *CFO/P* strategy is 13.5 percent (t-statistic = 4.55) after controlling for *A/P* and traditional value-glamour proxies.

We conjecture that *A/P*'s lack of power *vis-à-vis CFO/P* stems from two factors. First, accruals for most firms are negative. It is intuitively difficult to interpret a negative value scaled by price as a value-glamour proxy. A negative *A/P* ratio could represent one of several types of firms: (1) financially distressed firms that are shrinking; (2) genuine value firms that have experienced lower sales growth rates but are poised for a rebound; or (3) capital-intensive growing firms where depreciation accruals might overwhelm positive working capital accruals. Second, Sloan (1996) predicts that firms with high (low) accruals are overpriced (underpriced). Hence, scaling high (low) accruals by high (low) stock price perhaps distorts the cross-sectional rankings of *A/P* and thereby diminishes its ability to comprehensively capture the traditional value-glamour phenomenon. In other words, the numerator and the denominator of the *A/P* ratio work in the same direction (high or low). In contrast, the numerators and denominators of traditional value-glamour proxies such as *B/M* and *E/P* work in opposite directions. That is, high (low) values of book value or earnings scaled by low (high) market values of equity suggest that the market has under (over) priced the firm relative to fundamentals.

How Does CFO/P Compare with Returns to Discretionary Accruals?

Thus far, we have compared the returns to accruals and *CFO/P*. In an important extension of Sloan's (1996) work, Xie (2001) shows that the accruals phenomenon is primarily attributed to managerial discretion, proxied by discretionary accruals. Hence, we examine how *CFO/P* behaves in the presence of discretionary accruals. To investigate that issue, we calculate discretionary accruals using an annual cross-sectional version of the modified Jones (1991) model with two-digit SIC codes. Results are presented in Panel C of Table 9. Consistent with Xie (2001) we find that discretionary accruals drive accruals mispricing. Note that the incremental returns to discretionary accruals (8.2 percent) are similar in magnitude to that earned by total accruals (see Panel D of Table 8). More important, we find that discretionary accruals do not earn significant abnormal returns in the presence of *CFO/P*. Given that cash flows are more persistent and less prone to managerial manipulation than accruals in general and discretionary accruals in particular, our analysis raises the possibility that managerial discretion with respect to accounting choices does not drive returns to *CFO/P*. The market perhaps misunderstands cash flow persistence or past growth rates, as captured by *CFO/P*.

Summary

In the analysis presented above, we show that: (1) *CFO/P* captures abnormal returns to all traditional value-glamour proxies; and (2) *CFO/P* subsumes abnormal returns related to accruals, in general and discretionary accruals, in particular. If one is willing to view *CFO/P* as an expanded value-glamour proxy, then one would conclude that Beaver's (2002) conjecture is valid and the accruals anomaly is the glamour stock in disguise. This alternative interpretation of the results can be supported on three grounds: (1) there is precedence in the literature for viewing fundamental valuation attribute scaled by price as value-glamour proxy (e.g., LSV 1994, 1541) and *CFO* is a fundamental valuation attribute;

(2) *CFO* is merely a refined measure of the construct "cash flow" embedded in the cash-flow-to-price ratio used in the finance literature; and (3) *CFO/P* picks up mispricing related to all the other four traditional value-glamour proxies.

VI. ROBUSTNESS CHECKS

December Year-End Firms

The analyses in this study use firms with all fiscal year-ends to conserve sample size. However, to facilitate implementation of trading strategies, some researchers prefer to restrict the sample to firms with December 31 year-ends (e.g., Sloan 1996; LSV). We repeat all analyses in the paper after restricting the sample to December year-end firms (untabulated) and find that our inferences remain unaltered. Panel A of Table 10 provides a snapshot of the key results obtained after this data filter. As before, the *CFO/P* variable subsumes mispricing due to traditional value-glamour proxies and accruals.

Largest Firms

Another concern with trading strategies is that the abnormal returns are usually concentrated among small firms. In untabulated results, we repeat the analyses presented in Tables 2–7 using only the largest 50 percent of the firms in terms of market value of equity. All the reported inferences remain unchanged in such analyses. In Panel B of Table 10, the reported results are robust even we examine the largest 50 percent of the sample firms.[20]

NYSE/Amex Firms

Both LSV and Sloan (1996) examine only NYSE/Amex firms while we consider NASDAQ firms as well. Panel C of Table 10 confirms that *CFO/P* continues to be a dominant variable even after deleting NASDAQ firms.

Negative *E/P* and *CFO/P*

To examine the impact of including negative *E/P* and negative *CFO/P* firms in the sample, we include a dummy variable *DE/P* (*DCFO/P*) that takes on the value of 1 if earnings (*CFO*) are negative, 0 otherwise.[21] The results of the modified regression are reported in Panel D of Table 10. We find that the coefficients on *DE/P* and *DCFO/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 *CFO/P* firm-years. In untabulated results, we also confirm that the major inferences drawn in the paper are unaffected by the deletion of negative *E/P* or negative *CFO /P* observations.

SFAS No. 95-Based Definition of Accruals

Hribar and Collins (2002) argue that deriving accruals from changes in current assets and liabilities using the balance sheet method adopted here introduces measurement error in the accruals measure. Instead, they recommend using cash flow from operations as determined under SFAS No. 95 to derive accruals. To examine whether our results are

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[20] When we consider a sample consisting of the largest 50 percent December 31 year-end firms we find that *CFO/P* is marginally significant in a regression of abnormal returns on accruals and the traditional value-glamour proxies.

[21] We retain negative *E/P* firms in the original analyses for two reasons. First, about 20 percent of the sample firm-years report negative earnings or *CFO*. Second, prior literature (e.g., LSV; Sloan 1996) does not eliminate such observations.

TABLE 10
Sensitivity Analyses

Panel A: Regression Results—Using Only Firms with Fiscal Year Ending on December 31

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.039		−0.032	0.011	0.022	0.085**	−0.011
t-statistic	(−1.28)		(−2.03)	(0.41)	(0.68)	(4.14)	(−0.61)
Mean	−0.003	−0.060**	−0.033	0.024	0.077**		−0.008
t-statistic	(−0.08)	(−4.12)	(−1.99)	(0.86)	(2.53)		(−0.43)
Mean	−0.037	−0.005	−0.027	0.012		0.096*	−0.008
t-statistic	(−0.92)	(−0.22)	(−1.57)	(0.44)		(2.93)	(−0.42)

Panel B: Regression Results—Using Only Largest Firms (Firms above the Median Level of Size)

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.079*		−0.014	−0.018	0.015	0.130**	0.021
t-statistic	(−2.51)		−0.87	−0.83	0.45	(6.78)	1.03
Mean	−0.020	−0.095**	−0.012	0.000	0.100**		0.023
t-statistic	−0.63	(−7.64)	−0.74	0.01	(3.30)		1.13
Mean	−0.058	−0.031	−0.006	−0.011		0.120**	0.023
t-statistic	−1.47	−1.43	−0.33	−0.50		(3.60)	1.12

Panel C: Regression Results—NYSE/Amex Firms Only

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.013		−0.022	−0.034	0.022	0.105**	−0.031
t-statistic	(−0.55)		(−1.60)	(−1.38)	(0.95)	(8.39)	(−1.73)
Mean	0.037	−0.077**	−0.021	−0.020	0.87**		−0.029
t-statistic	(1.54)	(−7.12)	(−1.52)	(−0.76)	(4.18)		(−1.62)
Mean	−0.012	−0.004	−0.014	−0.032		0.114**	−0.027
t-statistic	(−0.39)	(−0.024)	(−1.03)	(−1.27)		(5.56)	(−1.51)

Panel D: Regression Results—Sensitivity to Negative *E/P* and *CFO/P* Firms

	Intercept	*Acc*	*E/P*	*DE/P*	*CFO/P*	*DCFO/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 E: Regression Results Using FAS95-Based Operating Cash Flow and Accrual Measures

	Intercept	*Acc*	*SG*	*B/M*	*E/P*	*CFO/P*	Size
Mean	−0.009		−0.022	0.0140	−0.038	0.122**	−0.052
t-statistic	(−0.20)		(−1.45)	(0.35)	(−1.56)	(5.54)	(−2.11)
Mean	0.052	−0.106**	−0.022	0.042	0.031		−0.040
t-statistic	(1.20)	(−7.68)	(−1.42)	(0.99)	(1.11)		(−1.58)
Mean	0.125	−0.051	−0.021	0.021		0.082*	−0.050
t-statistic	(0.23)	(−1.78)	(−1.35)	(0.53)		(2.36)	(−1.99)

(*continued on next page*)

TABLE 10 (continued)

** (*) refers to significance at the 1 percent (5 percent) level, two-tailed.
The sample (70,578 observations) comprises all U.S. 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. In Panel D, *DE/P* (*D CFO/P*) refers to a dummy variable that is set to 1 if *E/P* (*CFO/P*) is negative, and 0 otherwise. *SAR*1 represents one-year-ahead size-adjusted returns. See Table 1 for other variable definitions. *SAR*1 is regressed on scaled decile ranks, ranging from 0 to 1, of the independent variables, each year. Mean coefficients are based on estimates from the 25 yearly regressions. t-statistics and statistical significance are assessed using Fama-Macbeth type averages of returns and coefficients estimated over the 25 years. Because FAS95 cash flow data is not available for all years, for Panel E the number of available observations is 31,266, and Fama-Macbeth mean coefficients are estimated over 11 years (1987–1997).

robust to a more precise measure of accruals, we replicate our regression results from 1987–1997 using the accruals measure based on SFAS No. 95 cash flow disclosures.[22] Note that only 11 years of time-series data are available for Fama-Macbeth t-statistics. Hence, the analyses with SFAS No. 95 data suffer from low statistical power. Despite this, results presented in Panel E reveal that the SFAS No. 95-based accruals variable is not statistically significant in the presence of the *CFO/P* variable.

VII. 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 represent the same phenomenon. 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 show that accruals are related to future returns after controlling for the four traditional value-glamour proxies, namely sales growth, *B/M*, *E/P*, and *C/P* (where *C* is earnings adjusted for depreciation). Furthermore, we find that a new variable, operating cash flows scaled by price (*CFO/P*), subsumes abnormal returns related to both accruals and the four traditional value-glamour proxies as measured in the finance literature (namely *B/M*, *E/P*, and *C/P*). The evidence in the paper is open to two plausible interpretations based on the readers' priors.

If one believes that the value-glamour anomaly can only be operationalized as one of the four variables traditionally used in the finance literature thus far (sales growth, *B/M*, *E/P*, and *C/P*), then our results suggest: (1) that the accruals and the value-glamour anomalies capture distinct sources of mispricing; and (2) *CFO/P* is a *mega* proxy that captures the mispricing attributes of both the accruals and the value-glamour anomalies.

However, if one is willing to accept a broader interpretation of the value-glamour anomaly as the fundamentals-to-price anomaly (consistent with LSV 1994, 1541), then *CFO/P* ratio is an expanded value-glamour measure. This interpretation, in conjunction with the finding that *CFO/P* subsumes the predictive power of accruals, would support Beaver's (2002) conjecture that accruals mispricing is indeed the value-glamour phenomenon in disguise. Given that cash flows are more persistent and less prone to manipulation than accruals in general, and discretionary accruals in particular, such an interpretation raises questions about what exactly does the market misprice—accounting manipulation via accruals or cash flow data or expectations about future growth?

[22] Even though SFAS No. 95 was effective for fiscal years ending in 1988, earlier adoption was encouraged.

An important caveat to our findings is that we do not completely explore the underlying cause of the *CFO/P* anomaly. For example, it is quite possible that the underlying causes of the accruals and the value-glamour anomalies are different although *CFO/P* subsumes the abnormal returns to both anomalies. It is worth noting here that there is no consensus yet in the finance literature about the exact underlying cause of the traditional value-glamour anomaly. Investigation of these unresolved questions represents fertile avenues for future work.

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