When Two Anomalies meet: Post-Earnings-Announcement Drift and Value-Glamour Anomaly

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Abstract

In this paper, we investigate two prominent market anomalies documented in the finance and accounting literature - post earnings announcement drifts and the value-glamour anomaly. Prior studies show that value and glamour stocks react to earnings announcements differently and earnings announcement abnormal returns (EARs) are significantly related to post-earnings-announcement drifts. This paper aims to link the value-glamour anomaly directly to the post-earnings-announcement drifts. We first sort firms into quintiles according to a measure of value. We then allocate firms into six categories in terms of the signs of the quarterly earnings surprise (+/-/0) and the EARs (+/-). We find that glamour stocks are more volatile around earnings announcement dates. The drift patterns of value and glamour stocks are different: glamour stocks exhibit much larger negative drifts following negative earnings surprises and EARs, while value stocks exhibit much larger positive drifts following positive earnings surprises and EARs. A trading strategy of taking a long position in value stocks when both EARs and earnings surprises are positive and a short position in glamour stocks when both are negative can generate 16.6% to18.8% annual returns. This anomaly is mainly a long-side phenomenon. Preventing investors from short selling glamour stocks will not prevent investors from earning a value premium.

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1. Introduction

The post-earnings-announcement drifts and the value-glamour anomaly are two prominent market anomalies that have been intensely studied in the finance and accounting literature. Prior studies show that value and glamour stocks react to earnings announcements differently (Lakonishok et al. (LLSV), 1997) and earnings announcement abnormal returns (EARs) are significantly related to post-earnings-announcement drifts (Brandt et al., 2008). This paper aims to link these two anomalies directly by studying drifts of various value and glamour portfolios; examine the different drift patterns of value and glamour stocks; and design a new trading strategy conditional on the sign of the earnings surprise (+/-/0) and the sign of the earnings-announcement-abnormal return (EAR, +/-).

The post-earnings-announcement drift was first documented by Ball and Brown (1968). It is the tendency for stock prices continue to move in the direction of the earnings surprise up to a year after earnings are announced. That is, if a firm's announced earnings exceed (fall below) the market expectation, the subsequent abnormal returns to its stocks are usually above (below) normal for months. This predictability of stock returns after earnings announcements had attracted substantial research and has been documented consistently in numerous papers over the decades. Rendleman et al. (1982), Foster et al. (1984), Bernard and Thomas (1989) and Livnat and Mendenhall (2006) are among the many who replicate the phenomenon with large scale sample sets. They show that a long position in stocks with unexpected earnings in the highest decile, combined with a short position in stocks in the lowest decile, yields high abnormal returns. There is a sizeable literature attempting to explain the drifts. Investor learning (Chordia and Shivakumar, 2006), disclosures (Shin, 2005), idiosyncratic stock return volatility (Mendenhall, 2004), information uncertainty (Francis et al., 2007), liquidity (Chordia, et al. in press), and so on are provided as explanations for drifts.

The value and glamour anomaly refers to the empirical regularity that future returns of value stocks outperform the glamour stocks (Graham and Dodd, 1934; Lakonishok, Shleifer, and Vishny (LSV), 1994 and Fama and French (FF), 1992). Value stocks are

'out-of-favour' stocks which are perceived to have low growth potential. These stocks usually have low prices relative to earnings, dividends, book value, or other measures of value. On the other hand, glamour stocks are stocks which are perceived to have high growth potential, and are characterized by strong past performance and high prices relative to value. Several explanations have been provided to explain the return differential between value stocks and growth stocks. FF (1992, 1996) argue that value strategies are fundamentally riskier. In their view, the higher average returns of value stocks reflect compensation of risk. LSV (1994) and LLSV (1997), however, attribute the superior future performance of value stocks to the assumption that investors make systematic errors in predicting future growth in earnings of out-of-favour stocks[1]. Finally, Fama (1998) and Kothari, Sabino, and Zach (1999) claim that the return differential may reflect methodological problems with the measurement of long-term abnormal returns.

Several studies try to explain the value-glamour anomaly by investigating the return differential between value and growth stocks around quarterly earnings announcement dates. LLSV (1997) find that size-adjusted EARs are substantially higher for value stocks than for glamour stocks and the return differential accounts for up to about 30 percent of the annual value premium reported in prior studies. Skinner and Sloan (2002) show that growth stocks perform similarly to other stocks in response to positive earnings surprises, but that growth stocks exhibit a much larger negative response to negative earnings surprises. After controlling for the asymmetric response of growth stocks to negative earnings surprises, there is no longer evidence of a stock return differential between growth stocks and other stocks. A few related studies, though do not directly address the value-glamour anomaly, find that the EARs are significantly related to the post-earnings-announcement drifts. By sorting firms on EARs, both Chan et al. (1996) and Brandt et al. (2008) report that the portfolios with higher EARs generate substantially larger drifts than the portfolio with lower EARs.

A natural conclusion drawn from the findings of these studies is: if value stocks react to earnings announcements differently from glamour stocks and if EARs are significantly

[1] Doukas, Kim and Pantzalis (2002) fail to find evidence supporting the extrapolation hypothesis.

related to post-earnings-announcement drifts, then the drift patterns of value stocks must be different from those of glamour stocks. This is the focus of this study. We aim to investigate the drift patterns of various value and glamour portfolios and design a profitable trading strategy that can capture abnormal returns introduced by these two anomalies.

The post-earnings-announcement drifts demonstrate that the information in the earnings has predictive power - if actual earnings differ from expected earnings, the market typically reacts in the same direction. In real life, however, we often observe that the direction of the earnings announcement abnormal return is opposite to that of earnings surprise[2,3]. The existence of other information rather than earnings around earnings announcement dates may lead to this 'wrong' market reaction (Liu and Thomas, 2000; Jegadeesh and Livnat, 2006). This is one of the reasons for the low explanatory power of earnings surprises for drifts (Kinney, Burgstahler, and Martin (2002)).

By exploring the post-earnings-announcement drifts of value and glamour portfolios under six different categories in terms of the signs of the EARs (+/-) and earnings surprises (+/-/0), we can separate groups of observations where earnings surprises and EARs move in the same direction from other groups; and we find post-earnings-announcement drifts of both value and glamour stocks are amplified.

We have a number of new findings in this paper:

1) Glamour stocks are more volatile around earnings announcement dates. When EARs are positive, glamour stocks have higher EARs (more positive) than value stocks. When EARs are negative, glamour stocks have lower EARs (more negative) than value stocks.

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[2] For example, Apple Computer Inc. released quarterly earnings on Jan 17, 2001. Although the earnings were below expectations, analysts were cheered by news that the company had sharply cut inventories of computers on retailers' shelves. Apple's shares, jumped 11 percent the following day. The Wall Street Journal, "*More Questions About Options for Apple*", August 7, 2006.

[3] For another example, on May 4, 2006, Procter & Gamble Co. reported net sales rose 21 percent to $17.25 billion, and earnings rose to 63 cents a share for the quarter ended March 31, which was higher than expected earnings of 61 cents a share. However, analysts surveyed by Thomson Financial had expected higher sales of $17.6 billion. At the end of the day, investors sent P&G shares tumbling, disappointed that sales and the company's outlook fell short of analysts' expectations. www.wsj.com, "*the Evening Wrap*", May 4, 2006.

2) When both EARs and earnings surprises are positive, value stocks have bigger positive drifts than glamour stocks. When both are negative, glamour stocks have bigger negative drifts than value stocks. When EARs and earnings surprises move in different directions, the drift patterns are mixed and smaller in magnitude.
3) A trading strategy of taking a long position in value stocks when both earnings surprises and EARs are positive and a short position in glamour stocks when both are negative can generate almost twice the quarterly abnormal return than the commonly used value and growth strategy which takes a long position in value stocks and a short position in glamour stocks without conditioning on the signs of EARs and earnings surprises.
4) We explore four value-glamour proxies by using book-to-market ratio (BM), earnings-to-price ratio (EP), cash flow-to-price ratio (CP) and past growth in sales (SG). We find consistent of drift patterns for value and glamour stocks.

Our paper contributes to the literature by relating post-earnings-announcement drifts with the value-glamour anomaly, and enhancing the drifts for the value-glamour investing by conditioning on the signs of earnings surprise and EARs. The rest of the paper is organized as follows: Section 2 explains the sample selection and methodology; Section 3 presents the empirical findings; Section 4 conducts the robustness checks; and Section 5 concludes.

2. Sample selection and methodology

The mean analyst forecasts, quarterly earnings per share (EPS), earnings announcement dates and actual realized EPS are taken from the Institutional-Brokers-Estimate-System summary statistics files (I/B/E/S). Our sample period runs from June 1984 to December 2008 and we include all the firms from I/B/E/S during this period. We match the earnings forecasts for each company with stock daily returns. The returns are provided by the Center for Research on Security Prices at the University of Chicago. Care is taken to adjust for dividends, stock splits and stock

dividends so that all current and past returns, earnings figures, and forecasts are expressed on a comparable basis. The BM, EP, CP and SG are computed using data from Compustat annual file tape.

Prior study (FF, 1992) shows the abnormal returns vary according to firm size, to control the firms-size effect; we use value-weighted returns on ten Fama-French stocks formed on size as benchmark returns to compute the abnormal returns. We explicitly avoid using a benchmark which adjusts for the book-to-market effect, because our objective to study the book-to-market effect together with the post-earnings-announcement drifts. All the benchmark returns and breakpoints of each decile are taken from Kenneth French's on-line data library.

2.1 Estimation of EARs, Earnings surprise and post-earnings-announcement drifts

Following LLSV (1997), we measure EARs as the equally-weighted sized adjusted abnormal returns in a 3-day window centered on the earnings announcement date.

$$EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i.t}) - \prod_{t=-1}^{t=+1}(1+R_{b.t})$$

$EAR_{i,q}$ is the EARs for firms i in quarter q recorded over a 3-day window centered on the announcement date. We cumulate returns until one day after the announcement date to account for two reasons. One is for the possibility of firms announcing earnings after the closing bell. The other is for the possibility of delayed stock price reactions to earnings news, particularly since our sample includes NASDAQ issues, which may be less frequently traded (Chan, Jegadeesh and Lakonishok,1996). $R_{i,t}$ is the daily return for firms i in day t. $R_{b,t}$ is the daily value-weighted benchmark return on Fama-French size portfolio to which stock i belongs. The ten Fama-French size stocks are constructed at the end of each June using the June market equity and NYSE breakpoints.

Earnings surprises are measured as the difference between actual and expected EPS divided by the absolute value of expected EPS[4]:

[4] This definition is the same as that used by Zacks Investment Research, www.zacks.com.

$$EarningsSurprise_{i,q} = \frac{Actual_{i,q} - Expected_{i,q}}{abs(Expected_{i,q})}$$

Where, $Actual_{i,q}$ is the actual EPS announced on the earnings announcement date for firms i in quarter q, and $Expected_{i,q}$ is the mean analyst forecast of EPS for firms i in quarter q.

Size adjusted post-earnings-announcement drifts are calculated in a similar manner to the calculation of EARs:

$$Drift_{i,n} = \prod_{t=2}^{t=n}(1 + R_{i.t}) - \prod_{t=2}^{t=n}(1 + R_{b.t})$$

Where $Drift_{i,n}$ is the sized adjusted cumulative abnormal return for firm i from the second day to the n^{th} day after the announcement.

2.2 Computation of BM, EP, CP and SG

Following LSV (1994), we use four empirical proxies to capture the value-glamour effect: BM, EP, CP and SG. We compute the BM as the ratio of the fiscal year-end book value of equity to the market value of equity. EP is the operating income after depreciation scaled by the market value of equity. CP is the cash flow from operations scaled by the market value of equity. We measure the SG as the average of annual growth in sales over the previous three years. Size is the market value at the end of June of each year. Market value of equity is defined as common shares outstanding multiplied by price per share.

Consistent with LSV (1994) and Desai, Rajgopal and Venkatachalam (DRV, 2004), we do not remove firms with negative EP and CP ratios because the number of firms taking one-time charges to earnings has increased substantially in recent years leading to significant negative earnings observations (Collins, Pincus and Xie, 1999). In fact, elimination of negative EP and CP firms would result in losing approximately 20% of the sample. Nevertheless, our results are robust to excluding negative values of EP and CP ratios. We do eliminate firms with negative book-to-market ratios.[5] Our results are not,

[5] Jan and Ou (2008) find that the frequency and the magnitude of negative book value of equity have

however, sensitive to the inclusion of such firms.

2.3 Stocks assignment

We first examine the post-earnings-announcement drifts for the value-glamour portfolios. At the end of each June from 1984 to 2008, 10 portfolios are formed based on four value-glamour proxies in ascending orders. Value stocks refer to stocks ranking highest on BM, EP, CP and ranking lowest on SG. Glamour stocks refer to stocks ranking lowest on BM, EP, CP and ranking highest on SG.

We further implement the value-glamour trading strategy by conditioning on the signs of earnings surprise (+/-/0) and EARs (+/-). At the end of each June from 1984 to 2008, we sort stocks into quintiles based on four value-glamour proxies. After the sorting, each stock has a tag of which quintile it is in. We then allocate each stock into six sub-samples in terms of the signs of earnings surprises(+/-/0) and EARs(+/-): both are positive; both are negative; positive earnings surprises and negative EARs; negative earnings surprises and positive EARs; zero earnings surprises and positive EARs, zero earnings surprises and negative EARs. In this way, the value-glamour stocks are predetermined at the end of each June, no matter what the following earnings surprises and EARs around the earnings announcements are.

We examine the drift patterns in each sub-sample in the subsequent periods, starting from the second day after the earnings annoucement up to 1 month (22 trading days), 3 months (63 trading days), 6 months (126 trading days), 9 months (189 trading days) and 1 year (252 trading days) after the earnings announcement.

For readers interested in an implementable trading strategy, we also look at the drift starting from the second day after current quarter's earnings announcement day and ending on the 2nd day prior to the next quarter's earnings announcement[6]. Since this drift is almost the same as the 3-month (63 trading days) drift, we do not report the related

grown substantially over time. R&D, especially R&D cumulated over time, not only contributes to the increasing trend of negative book value incidences but also plays an important role in the market's valuation of these firms.

[6] That drift is over a roughly 3-month window ($t_q + 2$, $t_{q+1} -2$), where q represents quarter Q and t represents earnings announcement day.

results for the sake of simplicity.

2.4 Summary statistics

Panel A of Table 1 reports summary statistics for key variables for the sample period between June 1984 and December 2008. There are 243,207 firms-quarter observations during the sample period.

To reduce influence of extreme values, all the values are winsorized at 1% and 99%[7]. The mean of EARs is 0.21% and the median is 0.09%, which implies the distribution is positively skewed. Quarterly earnings surprise, on the other hand, is negatively skewed, with the mean of -10.52% and the median of 1.11%. The means of BM, EP, CP, and SG are 0.58, 0.08, 0.13, and 0.38, respectively. Both means and medians of these value measures in our sample are smaller than those in DRV (2004). We believe the differences are largely due to different sample periods and winsorization[8]. The correlation matrix in Panel B suggests several interesting patterns. The correlation between BM and size is large and negative (Pearson correlation is -0.1 and Spearman correlation is -0.25. Both significant at 1% level), the correlation between EP and size is small and positive, while the correlation between CP and size is close to zero (Pearson correlation is 0 and not significant, while Spearman correlation is 0.01 and significant), and the correlation between SG and size is small and negative. This indicates that a small firm may be a value firm in terms of BM, but a growth firm according to its EP or SG. Secondly, EP and CP are highly correlated with each other (Pearson correlation is 0.87 and Spearson correlation is 0.91), which is consistent with the findings of DRV (2004), who claim that CP as measured by the finance literature is essentially EP in disguise.

Table 2 contains the number and frequency of total firms-quarter observations in

[7] One caveat about winsorization: if the distribution of a variable is not symmetric around zero, winsorization will affect the mean and standard deviation of the distribution. For example, in theory, the smallest daily return is -1 and since the benchmark portfolios are much less volatile than a single stock, the smallest daily abnormal return cannot be far below -1. In fact, during our sample period, the smallest daily return for any size portfolio is -19.7%. On the other hand, the largest daily return can be very large. Actually, the largest one day increase in stock price is 1290% during the sample period. Therefore, winsorization makes mean returns smaller.

[8] To our understanding, DRV (2004) didn't winsorize variables for Table 1.

each sub-sample over our sample period. Six sub-samples are formed according to different signs of earnings surprises (+/-/0) and EARs (+/-). Panel A shows the total number of observations in each sub-sample. Panel B shows the frequency of total observations in each category.

In total, about 53.1% of observations have EARs and earnings surprises that move in the same direction; 35.4% of observations have both that move in the opposite direction; and for the rest of observations, the earnings surprises are equal or close to zero (0 or less than 0.001).

14.1% of observations have positive EARs when earnings surprises are negative and 21.3% of observations have negative EARs when earnings surprises are positive. Three possible explanations can be provided for these two types of "anomalies". First, these may be some extraordinary good (bad) information beyond earnings for a stock to have a positive response to the negative (positive) earnings surprise; Second, investors have updated expected earning and prospects for the firm between when analysts are surveyed and when the earnings are announced (stale earnings forecast); Third, the announced earnings may be a flawed measure if it is contaminated by one time items that lack persistence (Johnson and Zhao (2007)).

When earnings surprises and EARs move in the same direction, there are also three possibilities. First, no news but earnings information is announced. Second, some other positive (negative) information, together with positive (negative) earnings surprises, is revealed and reinforces earnings surprises. Lastly, some other positive (negative) information is released, along with negative (positive) earnings information, but it is not strong enough to overturn the impact of earnings surprises.

Table 2 also reveals an interesting result: the number of firms with positive EARs is very close to the number of firms with negative EARs (47.9% vs. 52.1%), while, on the other hand, the number of firms with positive or no earnings surprises is significantly larger than the number of firms with negative earnings surprises (62% vs. 38%). One possible explanation to these asymmetrical earnings surprises is that, faced with intense pressure to meet earnings estimates from analysts and investors, executives may

sometimes mange earnings over accounting periods to achieve or beat the forecast result. Fortunately, the market is not fooled as evidenced by roughly equal number of positive and negative responses to earnings surprises.

3. Empirical Evidence

3.1 post-earnings-announcement drifts for value-glamour stocks

To provide a benchmark and comparison for our analysis in the subsequent sections, we first provide descriptive evidence on the relation between the value-glamour effect and the post-earnings-announcement drifts.

At the end of each June from 1984 to 2008, 10 portfolios are formed based on value-glamour proxies, namely BM, EP, CP, and SG. Value portfolios contain stocks that have highest BM, EP and CP and lowest SG. Glamour portfolios contain stocks that have lowest BM, EP and CP and highest SG. We then calculate the 1-month, 3-month, 6-month, 9-month and 1-year drifts for each decile portfolio.

Panel A of Table 3 reports results on post-earnings-announcement drifts for value and glamour portfolios based on BM classification. First of all, the 3-day, buy-and-hold EARs are higher for the value portfolio than for the glamour portfolio. The average 3-day EARs is 0.08% for the glamour portfolio and 0.23% for the value portfolio. The value portfolio has the largest positive drifts, while the glamour portfolio has the largest negative drifts. For example, the average 3-month drifts increase monotonically from -0.23% for the glamour portfolio to 1.01% for the value portfolio. This spread of 1.24% is significant at 5% level. This finding is consistent with Skinner and Sloan (2002). This monotonic pattern exists in all other holding periods. Furthermore, the magnitude of drifts is asymmetric for value and glamour stocks. The absolute values of the drifts of the value portfolio are significantly greater than the absolute values of those of the glamour portfolio. Thus, the spread between the value and glamour portfolios mainly comes from the abnormal returns of value stocks. This is consistent with Phalippou (2008). For example, the average 3-month drift of 1.01% for the value portfolio accounts for 81% of spread of 1.24%. On average, across all different holding periods, the drifts for the value

portfolio account for 80% of the spreads. Finally, the drifts of glamour stocks cumulate at a slower pace than the value stocks 6 months after the earnings announcements. For example, the 9-month drift for the value portfolio is 4.43% which is 74% higher than the 6-month drift of 2.54%; while the 9-month drift for the glamour portfolio is -1.42% which is 31% lower than the 6-month drift of 1.08%. This shows the price correction for the value stocks is substantially more dramatic even 6 months after earnings announcements than the glamour stocks.

Table 3 Panel B, C, and D report results on post-earnings-announcement drifts for value and glamour portfolios based on EP, CP and SG classifications. The drift patterns are very similar to those in Panel A. We still see clear evidence of the value-glamour effect in drifts. The average drifts increase gradually, though not necessarily monotonically, from glamour portfolios to the value portfolios. The spreads of value and glamour portfolios are all statistically significant. And again, the spreads between the value and glamour portfolios mainly come from the abnormal returns of value stocks; drifts of glamour stocks cumulate at a slower pace than the value stocks 6 months after the earnings announcements.

3.2 Value-glamour drifts conditional on signs of EARs and earnings surprises

Table 4 reports post-earnings-announcement drifts for value-glamour investing based on BM classification. At the end of each June of year *t*, we sort firms into quintiles using the BM ratio. The value stocks are in the highest quintile of the BM ratio and the glamour stocks are in the lowest quintile of the BM ratio. In each quarter (during the period of July of year t to June of year t+1), we allocate each stock into one of the six sub-samples based on the signs of the stock's EARs (+/-) and earnings surprise (+/-/0). For example, a value stock may have positive earnings surprise and positive EAR in one quarter and have negative earnings surprise and positive EAR in another quarter. Our goal is to investigate whether value and glamour stocks have different post-earnings-announcement drifts conditional on the signs of EARs and earnings surprises.

Several interesting results warrant detailed discussion.

First of all, the post-earnings-announcement-drift anomaly is evident in our sample. Most drifts are positive when earnings surprises are positive (Panel A and Panel D) and most drifts are negative when earnings surprises are negative (Panel B and Panel C). It seems that stock prices continue to move in the direction of the earnings surprise for an extended period of time after earnings are announced.

Secondly and more interestingly, glamour stocks are more volatile during the 3-day announcement window than value stocks. When EARs are positive (Panel A, C and E), regardless of the signs of earnings surprises (+/0/-), glamour stocks have higher positive 3-day EARs. On the other hand, when EARs are negative (Panel B, D and F), glamour stocks have more negative 3-day EARs. This finding is different from, though not necessarily inconsistent with, the evidence from LLSV (1997), who find that earnings announcement returns are systematically more positive for value stocks, by pooling all firms together, without considering the signs of EARs and earnings surprises. Our finding reveals that if EARs are positive, glamour stocks have larger positive EARs than value stocks; when EARs are negative, glamour stocks have larger negative EARs than value stocks. This result is rather intuitive. Value stocks are 'out-of-favour' stocks that have low stock prices relative to past growth and fundamentals, while glamour stocks are 'favourable' stocks for investors; thus there are more analysts following glamour stocks than value stocks. In fact, the Pearson correlation between the BM and the number of analysts following is -0.19, which is significant at 1% level. The significant negative correlation shows stocks with low BM (glamour stocks) have more analysts following. Thus, any deviation from the 'analysts' expectation may lead to bigger market responses during the 3-day earnings announcement window.

Thirdly, across all the panels, the value-glamour effect is eminent - the value portfolios always have higher abnormal returns than the glamour portfolios. They either have larger positive drifts or have smaller negative drifts.

In Panel A, when EARs and earnings surprise are positive, value stocks have *lower positive* EARs and *larger positive* subsequent drifts than glamour stocks. Value stocks are 'out-of-favour' stocks followed by fewer analysts than glamour stocks. Thus the

immediate market reactions (EARs) to the earnings surprise are smaller than glamour stocks and may be due to the less attention. Limited attention can cause investors to ignore useful information around earnings announcement dates; therefore, they are unable to instantaneously incorporate the news into prices. This leads to stock price under-reaction. Prices continue to drift in the same direction of the earnings news after the announcements as the information gradually gets impounded into prices (Hirshleifer, 2003; Hou, Peng, and Xiong, 2008; Dellavigna and Pollet, 2008). That is why the subsequent drifts are larger for value stocks than for glamour stocks.

In Panel B, however, the story is totally different. When both EARs and earnings surprise are negative, glamour stocks have *higher negative* EARs and *larger negative* subsequent drifts than value stocks. It seems that 'attention effect' is not a dominant factor any more (at least post earnings announcements) when glamour stocks have negative earnings surprises. Glamour stocks are 'favourable' stocks for investors and are followed by more analysts than value stocks. Any deviation from the analysts' expected may lead to bigger market responses (EARs) during the 3-day earnings announcement window. Furthermore, the fact that missing analysts' forecasts, even by small amounts, causes disproportionately large stock price declines even in the subsequent periods (Skinner and Sloan, 2002). Investors continue to punish miss-the-target glamour stocks up to 1 year after earnings announcements.

Thirdly, we can easily design a profitable trading strategy based upon our findings. When EARs and earnings surprises are both positive (Panel A) value stocks have the largest positive drifts across all panels. When both are negative (Panel B) glamour stocks have the largest negative drifts across all panels. A trading strategy of taking a long position in the value portfolio in Panel A and a short position in the glamour portfolio in Panel B can generate 4.68% quarterly abnormal returns. Thus, by separating stocks where EARs and earnings surprises move in the same direction from other groups, and we find post-earnings-announcement drifts are amplified.

Figure 1 shows the three-month (63 trading days) abnormal returns to a strategy taking a long position in value stocks when both earnings surprises and EARs are positive

and taking a short position in glamour stocks when both are negative. We employ quarterly earnings announcement data in our analysis. That is, we review new information every quarter and construct our hedge portfolios quarterly. The annualized mean return in the sample period is 18.73% before transaction costs. We incur losses in 21.05% of quarters in our sample periods[9]. The hedge portfolio's return mostly comes from the long-side (the value portfolio) and to a lesser degree from the short-side (the glamour portfolio). This is consistent with Phalippou (2008) who finds that the value premium is a long-side anomaly and it is a value premium puzzle, not a growth discount puzzle. Thus, this strategy has relatively less severe constraints in terms of shorting stocks.

When EARs and earnings surprised move in different direction, the results are shown in Panel C and D. we still observe the drifts, but due to the two opposite signals, the magnitude of the drifts are smaller than those in Panel A and B.

Finally, we look at the special groups of the firms with no earnings surprises (Panel E and F). The drifts are normally negative across quintiles, which might indicate that faced with intense pressure to meet earnings estimates from analysts and investors, the executives in these firms may manage earnings over accounting periods to achieve the forecasted result. However, the subsequent negative drifts reflect the firms' true statuses that the firms' operation is not as good as the earnings information shows.

3.3 Post-earnings-announcement drifts using other value proxies

Table 5-7 report post-earnings-announcement drifts for value and glamour stocks based on three other value proxies: EP, CP, and SG. When using SG, we take a special step to exclude stocks with non-positive earnings. An important issue using SG to define value stocks is that firms with the lowest past sales growth ratios may not all be value stocks, some of them may be issued by stagnant firms whose future returns are not promising. To

[9] Two caveat for readers who plan to implement this strategy in their trading. First, since not all firms announce quarterly earnings on the same day, an investor has to dynamically balance his portfolio. Fortunately, since we know whether a stock is a value stock or a glamour or nothing beforehand, as long as the signs of its earnings surprise and EAR are available (both are available at the end of the second day after the earnings announcement), we should be able to know whether to long or short the stock or do nothing. Secondly, 2 out of 95 quarters, this strategy generate rather large negative returns (the loss is greater than 10%). We suggest readers monitor the portfolio closely and put some risk control mechanisms in place.

differentiate these stagnant firms from value firms, we require firms must have positive earnings to be considered as value firms.

Again, we define glamour stocks as stocks ranking highest on EP or CP, and lowest on SG; value stocks as stocks ranking lowest on EP or CP, and highest on SG.

The drift patterns are mostly consistent with our findings in Table 4 when we use BM as a measure of value. Glamour stocks have very large absolute values of EARs and are more volatile during the 3-day announcement window. When EARs and earnings surprises are both positive (Panel A) value stocks have the largest positive drifts across all panels. When both are negative (Panel B) glamour stocks have the largest negative drifts across all panels. By separating stocks where EARs and earnings surprises move in the same direction from other groups, and we again find post-earnings-announcement drifts are amplified, which is illustrated in Figure 2-4. Figure 2 shows the three-month (63 trading days) abnormal returns to a strategy based on EP classification. The annualized mean return is 17.92% before transaction costs. The incidence of losses is 26.32% and the annualized Sharpe ratio is 0.75. Figure 3 and 4 show the annualized mean return is 18.85% or 16.61% when we use CP or SG as a value proxy.

One 'anomaly' we need to point out is that when using SG as a value measure and when both earnings surprises and EARs are positive, the post-earnings-announcement drifts of the value portfolio is slightly smaller than that of the glamour portfolio when time period is longer than 1 month. This is inconsistent with our findings with other value proxies. However, the difference of the drifts between the two portfolios is not significant. Moreover, we suspect that previous sales growth rate alone can capture the real difference between value stocks and glamour stocks. Studies in firm life cycle reveal that firms over lengthy periods often fail to exhibit the common life cycle progression extending from birth to decline (Liu, 2008; Anthony and Ramesh, 1992; and Miller and Friesen, 1984). A mature, less glamour firm, may revive or even grow fast again. This might be the reason for LLSV (1997) to use a CP and GS two-way classification. However, to be consistent with LSV (1994) and to illustrate the differences among commonly used value proxies, we decide to investigate each proxy separately. In an unreported table, we use the same

two-way classification and the results are exactly consistent with those in Table 4.

4. Robustness checks

4.1 Portfolios formed using stocks from different exchanges

Our portfolios formed above include stocks from four different securities exchanges: NYSE, NASDAQ, Alternext, and NYSE Arca. As shown in Table 8, NYSE stocks account for 47% of total observations. The stocks listed in NYSE are significant larger than stocks listed in other exchanges (53% of total observations). In this section, we examine whether the drift patterns are robust in different exchanges.

Table 9 show the portfolio drifts in NYSE and non-NYSE exchanges. The drift patterns are similar to the previous discussion in both exchanges, but the magnitude of drifts is different. There is no consistent evidence to show the spreads between value and glamour stocks are bigger in one exchange over the other. For the spreads based on BM and SG, the difference between the spreads over 1-month holding period in the NYSE and non-NYSE are not statistically different; while the spreads over 3-month, 6-month, 9-month and 1-year in the non-NYSE are significantly higher than the spreads over the same periods in the NYSE. For the spreads based on EP and CP classifications, the difference between the spreads over 1-month, 3-month and 6-month holding periods in the NYSE and non-NYSE again are not statistically different; while the spreads over 9-month and 1-year in non-NYSE are significantly lower than the spreads over the same periods in the NYSE.

4.2 Other robustness checks

We also use 5-day Earnings-announcement-abnormal returns (from day-2 to day+2) instead of 3-day Earnings-announcement-abnormal returns, employ different benchmark - S&P 500 index returns while computing cumulative abnormal returns, form portfolios on the sixth trading day[10] after earnings announcements instead of the second trading day, eliminate negative values of earnings-to-price ratios and cash-flow-to-price ratios. All the

[10] That is to say, we wait for 5 days after earnings announcements to take action.

main results remain the same.

5. Conclusion

We are motivated by two prominent market anomalies documented in finance and accounting literatures: the value-glamour anomaly popularized by LSV (1994) and post-earnings-announcement drifts first documented by Ball and Brown (1968). The goal of this paper is to link these two anomalies directly by studying drifts of various value and glamour portfolios; examine the different drift patterns of two types of stocks; and design a new trading strategy conditional on the signs of earnings surprises and EARs.

We find that glamour stocks are more volatile around earnings announcement dates. Value portfolios almost always have higher post earnings abnormal returns than glamour portfolios regardless of the signs of earnings surprises and EARs. They either have more positive drifts or have less negative drifts. A trading strategy of taking a long position in value stocks when both earnings surprises and EARs are positive and a short position in glamour stocks when both are negative can generate 16.6% to18.8% annual returns before transaction costs. This anomaly is mainly a long-side phenomenon; preventing investors from short selling glamour stocks will not prevent investors from earning a value premium. We further explore different definitions of value and glamour stocks by using BM, EP, CP, and SG, and find drift patterns are consistent.

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Table 1 Summary Statistics

Panel A reports the summary Statistics of key variables for the sample period from June 1984 to December 2008. **Obs**: total number of firms-quarter observations. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$, where $R_{i,t}$ is the daily return for firms i in day t. $R_{b,t}$ is the daily value-weighted benchmark return on Fama-French size portfolio to which stock i belongs. **ES**: earnings surprises are defined as $EarningsSurprise_{i,q} = \frac{Actual_{i,q} - Expected_{i,q}}{abs(Expected_{i,q})}$. **BM**: the ratio of the fiscal year-end book value of equity to the market value of equity. **EP**: the operating income after depreciation scaled by the market value of equity. **CP**: the cash flow from operations scaled by the market value of equity. **SG**: the average of annual growth in sales over the previous three years. In Panel B, lower (upper) diagonal reports Pearson (Spearman) correlations.

Panel A Descriptive statistics

Variable	Obs	Mean	Median	Std	Min	Max
ME	238,002	3,108	409	14,627	14	508,329
EARs	229,304	0.21%	0.09%	7.53%	-23.89%	24.47%
ES	239,432	-10.52%	1.11%	103.46%	-675.00%	292.86%
BM	236,639	0.58	0.5	0.44	0	2.4
EP	236,711	0.08	0.09	0.14	-0.51	0.53
CP	227,067	0.13	0.12	0.16	-0.37	0.79
SG	220,328	0.38	0.13	0.58	-0.24	2.9

Panel B Correlation statistics for overall sample

Variable	ME	BM	EP	CP	SG
ME		-0.25***	0.05***	0.01***	-0.04***
BM	-0.10***		0.39***	0.50***	-0.20***
EP	0.02***	0.19***		0.91***	-0.12***
CP	0.00	0.39***	0.87***		-0.17***
SG	-0.03***	-0.08***	-0.09***	-0.10***	

Note: *** represent statistical significance at the 1% level.

Table 2 Number and frequency of observations in each sub-sample

For every quarter between June 1984 and December 2008, sub-samples are formed according to different signs of earnings surprises and earnings announcement abnormal returns. The numbers presented in the table are the total firms-quarter observations and frequency. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$, where $R_{i,t}$ is the daily return for firms i in day t. $R_{b,t}$ is the daily value-weighted benchmark return on Fama-French size portfolio to which stock i belongs.. **ES**: earnings surprises are defined as $EarningsSurprise_{i,q} = \frac{Actual_{i,q} - Expected_{i,q}}{abs(Expected_{i,q})}$.

Panel A: Number of observations					
	ES >0	**ES <0**	**Sub Total**	**ES =0**	**Total**
EARs>0	69,880	**34,289**	104,169	12,325	116,494
EARs<0	**51,765**	59,328	111,093	15,620	126,713
Sub Total	121,645	93,617	215,262	27,945	243,207
Panel B: Frequency of observations					
EARs>0	28.73%	**14.10%**	42.83%	5.07%	**47.90%**
EARs<0	**21.28%**	24.39%	45.68%	6.42%	**52.10%**
Sub Total	**50.02%**	**38.49%**	88.51%	11.49%	100.00%

Table 3: Post-earnings-announcement drifts – Value-glamour investing

At the end of each June from 1984 to 2008, 10 portfolios are formed based on value-glamour proxies, namely book-to-market ratio (**BM**), earnings-to-price ratio (**EP**), cash-flow-to-price ratio (**CP**) and past growth in sales (**SG**). **BM**: the ratio of the fiscal year-end book value of equity to the market value of equity. **EP**: the operating income after depreciation scaled by the market value of equity. **CP**: the cash flow from operations scaled by the market value of equity. **SG**: the average of annual growth in sales over the previous three years. **Value** stocks are stocks that have high BM, EP, CP and low SG. **Glamour** stocks refer to stocks that have low BM, EP, CP and high SG. **Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$, where $R_{i,t}$ is the daily return for firms i in day t. $R_{b,t}$ is the daily value-weighted benchmark return on Fama-French size portfolio to which stock i belongs. **ES**: earnings surprises are defined as $EarningsSurprise_{i,q} = \frac{Actual_{i,q} - Expected_{i,q}}{abs(Expected_{i,q})}$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

Rank	obs	ME	BM	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
				Panel A:	**Book-to-market**				
Glamour1	245	5017	0.11	**0.08**	**-0.04**	**-0.23**	**-1.08**	**-1.42**	**-1.43**
2	246	4368	0.24	0.10	0.17	-0.21	-0.73	-0.99	-0.82
3	246	3520	0.33	0.19	0.17	-0.17	-0.83	-0.77	-0.40
4	246	2843	0.41	0.19	0.29	0.06	0.17	-0.12	0.39
5	245	2545	0.50	0.26	0.43	0.15	0.46	0.75	1.63
6	246	1981	0.60	0.22	0.34	0.45	1.02	1.40	2.35
7	246	1871	0.70	0.17	0.37	0.18	0.64	1.00	1.78
8	246	1557	0.83	0.23	0.21	0.38	1.30	2.03	3.33
9	246	1337	1.03	0.24	0.25	0.36	1.24	1.91	3.44
Value10	245	937	1.55	**0.23**	**0.46**	**1.01**	**2.54**	**4.43**	**7.83**
Spread				**0.15**	**0.50**	**1.24****	**3.62*****	**5.85*****	**9.26*****

rank	obs	ME	EP	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
				Panel B:	**Earnings-to-price**				
Glamour1	245	335	-0.16	**-0.36**	**-0.31**	**-0.64**	**-1.92**	**-2.08**	**-1.54**
2	246	1089	0.01	-0.06	-0.02	-0.48	-0.61	-0.48	-0.30
3	246	3353	0.05	0.24	0.32	-0.04	-0.63	-0.86	-0.67
4	246	4616	0.07	0.23	0.24	-0.06	-0.20	-0.10	0.02
5	246	3719	0.09	0.34	0.32	0.39	0.45	0.67	1.29
6	246	3413	0.11	0.32	0.39	0.26	0.80	0.97	1.70
7	246	2683	0.13	0.31	0.46	0.65	1.36	1.58	2.21
8	246	2273	0.15	0.18	0.38	0.33	0.80	1.12	2.05
9	246	2255	0.19	0.37	0.45	0.70	1.66	2.43	3.59
Value10	245	2233	0.32	**0.33**	**0.39**	**0.90**	**2.39**	**3.63**	**5.77**
Spread				**0.69***	**0.70***	**1.54****	**4.31*****	**5.71*****	**7.31*****

Table 3-continued

rank	obs	ME	CP	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
				Panel C:	Cash-flow-to-price				
Glamour1	235	349	-0.10	**-0.40**	**-0.35**	**-0.69**	**-1.95**	**-2.26**	**-2.00**
2	236	1849	0.04	-0.09	0.01	-0.55	-1.29	-0.54	-1.31
3	236	4063	0.07	0.23	0.27	-0.44	-0.95	-1.42	-1.35
4	236	4204	0.10	0.33	0.35	0.31	0.22	0.35	0.63
5	236	3264	0.12	0.32	0.34	0.26	0.47	0.79	1.23
6	236	2919	0.15	0.30	0.39	0.43	0.90	1.02	1.65
7	236	2447	0.17	0.29	0.46	0.53	0.92	1.16	1.89
8	236	2424	0.21	0.28	0.41	0.62	1.80	2.34	3.45
9	236	2304	0.26	0.31	0.35	0.75	1.65	2.43	3.84
Value10	235	2191	0.45	**0.34**	**0.36**	**0.95**	**2.45**	**3.94**	**6.70**
Spread				**0.74***	**0.72***	**1.64****	**4.40*****	**6.20*****	**8.70*****

rank	obs	ME	SG	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
				Panel D:	Sales-growth				
Value1	228	1637	-0.10	**0.13**	**0.29**	**0.68**	**1.12**	**1.68**	**3.24**
2	229	3235	0.01	0.16	0.35	0.35	0.79	1.47	2.44
3	229	3287	0.05	0.29	0.37	0.45	1.19	1.80	2.65
4	229	3892	0.08	0.34	0.47	0.64	1.36	1.78	2.70
5	228	3499	0.11	0.33	0.52	0.64	1.46	2.16	3.12
6	229	2976	0.15	0.36	0.48	0.41	1.14	1.46	2.23
7	229	2992	0.20	0.26	0.37	0.41	0.78	1.26	2.39
8	229	2683	0.28	0.28	0.33	0.30	0.53	0.72	1.41
9	229	1919	0.44	0.06	0.19	0.08	-0.02	0.37	1.71
Glamour10	228	1296	2.55	**-0.07**	**0.03**	**-0.13**	**-0.39**	**-0.11**	**-0.07**
Spread				**0.21**	**0.26**	**0.81***	**1.51****	**1.80*****	**3.31*****

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 4: Post Earnings Announcement drifts – book-to-market ratio portfolios

At the end of each June from 1984 to 2008, stocks are sorted into quintiles based on book-to-market ratio **(BM)** which is the ratio of the fiscal year-end book value of equity to the market value of equity. **Value** stocks refer to the stocks ranking highest on BM. **Glamour** stocks refer to the stocks ranking lowest on BM. We then group each quintile into six sub-samples in terms of the signs of earnings surprises (+/-/0) and EARs (+/-). **Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

BM_rank	obs	ME	BM	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
Panel A: Earnings Surprises>0 & EARs>0									
Glamour1	148	4969	0.18	5.99	0.70	1.68	1.97	2.49	2.94
2	147	3247	0.37	5.61	1.06	1.98	2.77	3.67	4.59
3	147	2383	0.55	5.18	1.03	2.26	3.39	4.64	6.03
4	143	1895	0.77	4.81	0.94	2.00	3.18	4.56	6.04
Value5	136	1337	1.27	**5.33**	**1.19**	**2.88**	**5.25**	**7.01**	**9.41**
Panel B: Earnings Surprises <0 & EARs<0									
Glamour1	103	2981	0.17	**-6.60**	**-0.32**	**-1.80**	**-3.43**	**-4.49**	**-4.24**
2	110	2715	0.37	-5.84	-0.25	-1.47	-2.31	-2.72	-2.07
3	118	2111	0.55	-5.15	-0.16	-1.48	-1.65	-1.83	-1.00
4	125	1469	0.77	-4.77	-0.27	-1.20	-1.07	-0.96	-0.30
Value5	138	919	1.31	-5.25	-0.37	-1.12	-1.11	-0.51	1.94
Spread				**11.92*****	**1.51****	**4.68*****	**8.68*****	**11.50*****	**13.65*****
Panel C: Earnings Surprises <0 & EARs >0									
Glamour1	61	3392	0.17	5.37	-0.27	-0.93	-1.68	-1.57	-0.72
2	64	2829	0.37	4.50	-0.27	-0.84	-0.80	-1.49	-0.23
3	69	1994	0.55	4.18	-0.27	-0.48	-0.15	0.62	2.01
4	75	1517	0.77	3.83	-0.44	-0.77	-0.72	-0.44	1.14
Value5	84	991	1.30	4.53	-0.19	-0.37	0.55	1.77	4.36
Panel D: Earnings Surprises >0 & EARs <0									
Glamour1	109	4984	0.17	-4.79	0.17	0.36	-0.18	-0.18	-0.27
2	105	3265	0.37	-4.06	0.44	0.61	0.45	0.23	0.12
3	100	2562	0.55	-3.68	0.66	1.01	2.01	2.22	2.74
4	99	1980	0.77	-3.29	0.85	1.35	2.54	3.70	4.47
Value5	91	1350	1.27	-3.60	0.66	1.53	3.32	5.14	7.43
Panel E: Earnings Surprises =0 & EARs >0									
Glamour1	30	6994	0.18	4.77	0.27	-0.15	-0.82	-2.39	-3.55
2	30	3523	0.37	4.57	0.13	-0.39	-1.34	-1.73	-2.92
3	27	1955	0.55	4.25	0.41	0.16	-0.35	-0.18	-0.67
4	23	1452	0.76	3.99	0.09	-0.84	-0.93	-1.45	-1.34
Value5	20	1148	1.26	4.50	0.49	0.93	2.01	3.81	4.88
Panel F: Earnings Surprises =0 & EARs <0									
Glamour1	39	6031	0.18	-5.40	-0.34	-1.71	-2.46	-4.02	-5.75
2	36	3989	0.37	-4.71	-0.40	-1.58	-2.89	-3.65	-3.93
3	32	2037	0.54	-4.21	0.53	-1.73	-1.10	-2.10	-1.28
4	27	1456	0.75	-3.96	-0.10	-0.13	0.34	-0.88	0.17
Value5	22	1000	1.24	-4.06	0.26	-0.47	1.24	1.30	3.24

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 5: Post Earnings Announcement drifts –Earnings-to-price ratio portfolios

At the end of each June from 1984 to 2008, stocks are sorted into quintiles based on earnings-to-price ratio (**EP)**. **EP**: the operating income after depreciation scaled by the market value of equity. **Value** stocks refer to the stocks ranking highest on EP. **Glamour** stocks refer to the stocks ranking lowest on EP. We then group each quintile into six sub-samples in terms of the signs of earnings surprises (+/-/0) and EARs (+/-). **Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i.t}) - \prod_{t=-1}^{t=+1}(1+R_{b.t})$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i.t}) - \prod_{t=2}^{t=n}(1+R_{b.t})$.

EP_rank	obs	ME	EP	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
Panel A: Earnings Surprises>0 & EARs>0									
Glamour1	119	861	-0.07	6.99	0.42	1.47	1.84	3.20	4.84
2	148	4118	0.06	6.04	0.94	1.80	1.99	2.94	3.67
3	153	3734	0.10	5.06	1.02	1.94	2.90	3.64	4.54
4	150	2483	0.14	4.59	1.18	2.47	3.99	5.01	6.31
Value5	153	2302	0.26	**4.65**	**1.21**	**2.78**	**4.82**	**6.54**	**8.68**
Panel B: Earnings Surprises <0 & EARs<0									
Glamour1	141	535	-0.09	**-6.77**	**-0.46**	**-1.70**	**-2.87**	**-3.55**	**-3.49**
2	107	2862	0.06	-6.08	-0.04	-1.44	-2.60	-3.08	-1.03
3	110	2701	0.10	-5.15	-0.20	-1.19	-1.43	-1.57	-1.10
4	118	2160	0.14	-4.44	-0.23	-1.14	-1.25	-1.58	-1.13
Value5	119	1950	0.26	-4.71	-0.25	-1.01	-0.65	-0.09	1.17
Spread				**11.43*** **	**1.66** **	**4.48*** **	**7.69*** **	**10.09*** **	**12.17*** **
Panel C: Earnings Surprises <0 & EARs >0									
Glamour1	84	592	-0.08	5.98	-0.42	-0.79	-1.04	-0.41	1.85
2	62	3040	0.06	4.71	-0.10	-0.54	-0.83	-0.70	-0.21
3	67	3058	0.10	3.89	-0.19	-0.60	-0.19	-0.33	0.73
4	67	1998	0.14	3.52	-0.32	-0.74	-0.68	-0.44	0.86
Value5	72	1951	0.26	3.85	-0.41	-0.48	0.16	1.08	3.29
Panel D: Earnings Surprises >0 & EARs <0									
Glamour1	101	867	-0.08	-5.25	0.06	0.28	-0.37	0.00	0.64
2	103	4605	0.06	-4.48	0.41	0.38	0.54	0.73	0.75
3	97	3791	0.10	-3.54	0.62	0.97	1.35	1.82	2.44
4	101	2687	0.14	-3.16	0.86	1.38	2.42	2.80	3.19
Value5	104	2603	0.25	-3.08	0.84	1.71	3.46	4.70	6.29
Panel E: Earnings Surprises =0 & EARs >0									
Glamour1	20	843	-0.05	6.02	0.14	-1.28	-3.64	-3.49	-2.70
2	32	4807	0.06	4.85	-0.04	-0.85	-1.24	-1.81	-3.35
3	30	4416	0.10	4.05	0.42	1.03	0.90	0.97	0.82
4	26	2895	0.14	3.91	0.38	0.37	0.05	0.40	-0.63
Value5	21	2212	0.25	3.72	0.39	0.12	1.07	2.37	3.28
Panel F: Earnings Surprises =0 & EARs <0									
Glamour1	28	732	-0.05	-6.23	-0.78	-2.26	-3.15	-4.36	-4.22
2	40	4661	0.06	-5.18	-0.04	-1.27	-1.65	-3.50	-4.50
3	35	4391	0.10	-4.16	0.35	-0.61	-0.68	-0.40	-0.20
4	31	3231	0.14	-3.45	0.31	-1.09	-0.71	-1.01	-0.33
Value5	23	2259	0.25	-3.50	-0.03	-0.47	0.45	-0.51	0.89

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 6: Post Earnings Announcement drifts –Cash-flow-to-price ratio portfolios

At the end of each June from 1984 to 2008, stocks are sorted into quintiles based on cash-flow-to-price ratio (**CP**). **CP**: the cash flow from operations scaled by the market value of equity. **Value** stocks refer to the stocks ranking highest on CP. **Glamour** stocks refer to the stocks ranking lowest on CP. We then group each quintile into six sub-samples in terms of the signs of earnings surprises (+/-/0) and EARs (+/-). **Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

CP_rank	obs	ME	CP	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
Panel A: Earnings Surprises>0 & EARs>0									
Glamour1	119	1347	-0.02	6.97	0.39	1.37	1.19	2.51	3.80
2	145	4281	0.09	5.93	1.00	1.81	2.52	3.18	3.91
3	143	3215	0.13	5.07	1.16	2.31	3.17	3.97	5.13
4	146	2484	0.19	4.67	1.13	2.39	3.95	5.09	6.15
Value5	143	2365	0.36	**5.00**	**1.15**	**2.90**	**5.07**	**6.76**	**9.16**
Panel B: Earnings Surprises <0 & EARs<0									
Glamour1	126	680	-0.04	**-6.95**	**-0.34**	**-1.82**	**-3.58**	**-4.36**	**-2.73**
2	100	2865	0.09	-6.15	0.03	-1.36	-2.51	-2.98	-2.69
3	108	2430	0.13	-5.05	-0.26	-1.30	-1.35	-1.70	-1.37
4	112	2164	0.19	-4.54	-0.24	-1.06	-0.82	-1.12	-0.65
Value5	122	1914	0.36	-5.01	-0.35	-0.96	-0.69	0.20	2.02
Spread				**11.95*** **	**1.50** **	**4.71*** **	**8.65*** **	**11.12*** **	**11.89*** **
Panel C: Earnings Surprises <0 & EARs >0									
Glamour1	74	820	-0.04	6.01	-0.58	-1.00	-1.39	-0.73	1.22
2	58	3251	0.09	4.69	0.02	-0.75	-1.08	-1.40	-0.87
3	64	2455	0.13	4.02	-0.23	-0.60	-0.51	-0.21	0.76
4	66	1936	0.19	3.63	-0.30	-0.37	0.27	0.33	1.84
Value5	73	2002	0.36	4.15	-0.41	-0.50	-0.07	1.10	3.87
Panel D: Earnings Surprises >0 & EARs <0									
Glamour1	101	1346	-0.03	-5.38	0.04	0.07	-0.49	-0.51	-0.60
2	97	4571	0.08	-4.37	0.31	0.43	0.27	0.56	0.92
3	94	3559	0.13	-3.49	0.72	1.16	2.16	2.80	2.92
4	97	2600	0.19	-3.18	0.97	1.44	2.34	2.77	3.91
Value5	94	2699	0.36	-3.28	0.86	1.92	3.83	5.20	7.05
Panel E: Earnings Surprises =0 & EARs >0									
Glamour1	22	1769	-0.01	5.95	0.34	-0.76	-3.66	-3.49	-3.32
2	32	5239	0.08	4.67	-0.02	-0.60	-0.75	-1.70	-3.64
3	29	3181	0.13	4.10	0.01	0.08	-0.38	-0.64	-1.02
4	24	2992	0.19	3.85	0.54	0.50	0.88	1.34	1.09
Value5	19	2262	0.34	4.22	0.45	0.46	1.80	3.09	3.67
Panel F: Earnings Surprises =0 & EARs <0									
Glamour1	30	1271	-0.01	-6.22	-1.02	-2.49	-3.71	-4.80	-5.55
2	39	5029	0.09	-4.96	0.20	-1.46	-2.06	-3.67	-4.82
3	35	3788	0.13	-4.03	0.26	-0.35	-0.15	-0.64	-0.38
4	28	3252	0.19	-3.61	0.38	-0.67	-1.15	-0.42	0.86
Value5	21	2277	0.34	-3.75	0.05	-0.53	0.45	-0.53	2.04

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 7: Post Earnings Announcement drifts –past sales growth portfolios

At the end of each June from 1984 to 2008, stocks are sorted into quintiles based on past sales-growth (**SG)**. **SG**: the average of annual growth in sales over the previous three years. **Value** stocks refer to the stocks ranking lowest on SG. **Glamour** stocks refer to the stocks ranking highest on SG. We then group each quintile into six sub-samples in terms of the signs of earnings surprises (+/-/0) and EARs (+/-). **Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

SG_rank	obs	ME	SG	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
Panel A: Earnings Surprises>0 & EARs>0									
Value1	129	2704	-0.04	**4.97**	**1.17**	**2.28**	**3.35**	**4.66**	**5.73**
2	141	3749	0.06	4.69	1.09	2.19	3.40	4.61	6.00
3	138	3313	0.13	4.98	1.17	2.24	3.68	4.64	5.99
4	135	2992	0.24	5.67	1.13	2.38	3.46	4.45	5.48
Glamour5	126	1854	1.45	6.39	0.79	2.44	3.80	5.29	6.89
Panel B: Earnings Surprises <0 & EARs<0									
Value1	117	1737	-0.05	-5.00	-0.35	-1.04	-1.64	-1.23	0.17
2	109	2558	0.06	-4.53	-0.20	-0.75	-0.20	-0.14	0.58
3	108	2548	0.13	-4.92	-0.15	-0.95	-0.57	-0.37	0.33
4	108	2217	0.24	-5.76	-0.23	-1.24	-1.43	-1.30	0.12
Glamour5	113	1285	1.49	**-6.75**	**-0.18**	**-1.87**	**-3.17**	**-3.85**	**-2.49**
Spread				**11.72*** **	**1.35** **	**4.15**	**6.52*** **	**8.51*** **	**8.22*** **
Panel C: Earnings Surprises <0 & EARs >0									
Value1	68	1733	-0.05	4.29	-0.47	-0.57	0.28	0.71	2.57
2	63	2483	0.06	3.62	-0.23	-0.29	-0.12	0.14	1.29
3	65	2704	0.13	3.88	-0.10	-0.37	0.18	0.63	1.53
4	64	2565	0.24	4.65	0.13	-0.68	-0.64	-0.11	1.47
Glamour5	64	1267	1.50	5.63	-0.27	-0.85	-1.38	-0.32	2.27
Panel D: Earnings Surprises >0 & EARs <0									
Value1	97	3038	-0.05	-3.63	0.69	1.43	2.37	2.96	4.13
2	94	3956	0.06	-3.19	0.83	0.81	1.58	2.00	2.42
3	92	3468	0.13	-3.44	0.86	1.11	2.22	3.08	3.78
4	93	3198	0.24	-3.98	0.50	1.36	1.96	2.30	2.83
Glamour5	99	1871	1.61	-4.96	0.34	0.84	1.33	1.92	2.63
Panel E: Earnings Surprises =0 & EARs >0									
Value1	20	2883	-0.05	3.98	0.17	0.03	-0.35	1.72	1.62
2	23	5122	0.07	3.71	0.47	0.78	1.58	1.63	1.52
3	26	4076	0.13	4.06	0.67	0.74	1.34	1.93	2.99
4	26	3227	0.24	4.65	-0.03	-0.45	-1.24	-1.55	-3.08
Glamour5	24	1809	1.25	5.36	0.22	-0.28	-2.31	-3.57	-3.92
Panel F: Earnings Surprises =0 & EARs <0									
Value1	27	3167	-0.05	-4.07	0.14	-0.86	0.39	-0.81	0.90
2	28	5776	0.06	-3.45	0.14	-0.68	0.03	0.38	0.36
3	29	4599	0.13	-3.97	0.47	-0.66	-0.51	-0.77	-0.74
4	31	2824	0.24	-4.94	-0.12	-1.06	-1.77	-2.84	-3.13
Glamour5	31	1556	1.50	-5.60	-0.27	-1.62	-2.43	-3.26	-3.42

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 8 Market capitalization in different securities exchanges

Our sample covers stocks listed in the following four securities exchanges: NYSE (47% of total observations), NASDAQ (51% of total observations), Alternext (3% of total observations), and NYSE Arca (0.04% of total observations). Table 8 shows the mean and standard deviation of market capitalization for firms listed in different securities exchanges.

Exchange	STAT	Market Capitalization
NYSE	MEAN	5390
46.64%	STD	18961
NASDAQ	MEAN	1120
50.71%	STD	8927
Alternext	MEAN	317
2.61%	STD	1763
NYSE Arca	MEAN	225
0.04%	STD	237

Table 9: Robustness Check –Different exchanges

We split our sample into 2 groups. Stocks listed in NYSE and stocks listed in NASDAQ, Alternext, and NYSE Arca. At the end of each June from 1984 to 2008, stocks are sorted into quintiles based on BM, EP, CP or SG. **BM**: the ratio of the fiscal year-end book value of equity to the market value of equity. **EP**: the operating income after depreciation scaled by the market value of equity. **CP**: the cash flow from operations scaled by the market value of equity. **SG**: the average of annual growth in sales over the previous three years. **Value** stocks are stocks that have high BM, EP, CP and low SG. **Glamour** stocks refer to stocks that have low BM, EP, CP and high SG. We then group each quintile into six sub-samples in terms of the signs of earnings surprises (+/-/0) and EARs (+/-).**Obs**: the average number of firms in a quarter. **ME**: the market value at the end of June of each year, in million dollars. It is defined as common shares outstanding multiplied by price per share. **EARs**: three-day earnings announcement abnormal returns are calculated as $EAR_{i,q} = \prod_{t=-1}^{t=+1}(1+R_{i,t}) - \prod_{t=-1}^{t=+1}(1+R_{b,t})$. **1mth, 3mth, 6mth, 9mth, 1year**: cumulative abnormal returns up to 22, 63, 126, 189, 252 trading days starting from the second day after earnings announcements are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

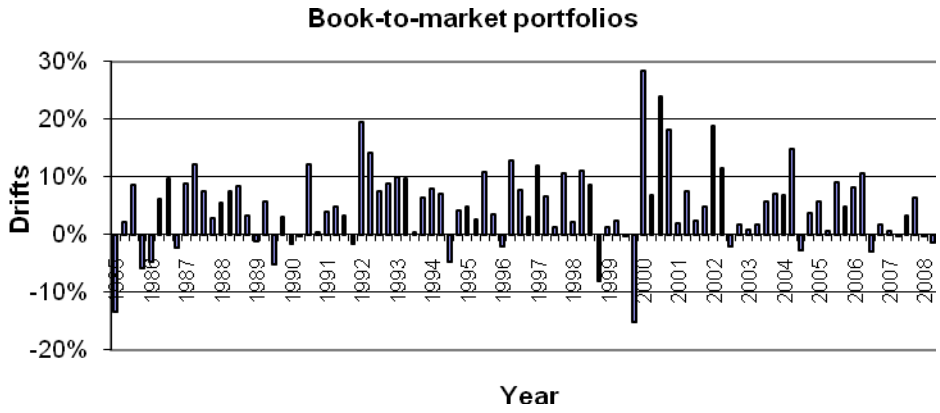
Rank	Obs	ME	Ratio	Group	EARs(%)	1mth(%)	3mth(%)	6mth(%)	9mth(%)	1year(%)
NYSE										
Panel A: Book-to-market ratio										
Value	68	1,982	1.28	ES>0 & EARs>0	4.57	1.23	2.84	5.00	6.69	9.29
Glamour	43	7,111	0.20	ES<0 & EARs<0	-5.25	0.15	-0.79	-1.47	-1.82	-1.14
Spread					**9.82*** **	**1.08***	**3.63*** **	**6.47*** **	**8.51*** **	**10.43*** **
Panel B: Earnings-to-price										
Value	76	3,472	0.28	ES>0 & EARs>0	4.40	**1.15**	**2.67**	**4.80**	**6.83**	**9.36**
Glamour	57	3,714	-0.02	ES<0 & EARs<0	-5.29	-0.51	-1.39	-1.84	-1.92	-0.64
Spread					**9.69*** **	**1.67** **	**4.06*** **	**6.64*** **	**8.75*** **	**10.00*** **
Panel C: Cash-flow-to-price										
Value	69	3,241	0.39	ES>0 & EARs>0	4.62	1.21	2.78	5.25	7.30	10.28
Glamour	48	4,532	0.04	ES<0 & EARs<0	-5.36	-0.24	-1.18	-2.34	-2.34	-1.60
Spread					**9.98*** **	**1.44** **	**3.96*** **	**7.59*** **	**9.64*** **	**11.88*** **
Panel D: Sales-growth										
Value	53	3,483	1.02	ES>0 & EARs>0	-5.29	-0.05	-1.22	-1.42	-0.87	-1.43
Glamour	68	3,813	-0.04	ES<0 & EARs<0	4.41	1.21	2.19	3.14	4.57	5.85
Spread					**9.70*** **	**1.26** **	**3.41*** **	**4.56*** **	**5.45*** **	**7.28*** **
NASDAQ, Alternext, NYSE Arca										
Panel A: Book-to-market ratio										
Value	69	297	1.24	ES>0 & EARs>0	6.29	1.11	2.73	4.79	6.22	8.90
Glamour	58	1,298	0.15	ES<0 & EARs<0	-7.21	-0.44	-2.20	-3.57	-4.98	-4.51
Spread					**13.49*** **	**1.56** **	**4.93*** **	**8.36*** **	**11.20*** **	**13.41*** **
Panel B: Earnings-to-price										
Value	75	324	0.23	ES>0 & EARs>0	5.12	1.51	3.23	4.91	6.22	8.15
Glamour	78	232	-0.13	ES<0 & EARs<0	-7.12	-0.18	-1.09	-1.91	-1.95	-0.54
Spread					**12.24*** **	**1.69** **	**4.32*** **	**6.82*** **	**8.16*** **	**8.70*** **
Panel C: Cash-flow-to-price										
Value	72	293	0.31	ES>0 & EARs>0	5.93	1.30	3.04	4.71	5.52	7.15
Glamour	72	265	-0.09	ES<0 & EARs<0	-7.21	-0.11	-1.21	-2.24	-2.63	-0.78
Spread					**13.14*** **	**1.41** **	**4.24*** **	**6.95*** **	**8.15*** **	**7.94*** **
Panel D: Sales-growth										
Value	61	559	-0.05	ES>0 & EARs>0	6.13	1.23	2.62	4.07	5.39	6.80
Glamour	58	635	2.02	ES<0 & EARs<0	-7.36	-0.10	-2.17	-3.90	-4.73	-3.94
Spread					**13.49*** **	**1.33** **	**4.79*** **	**7.97*** **	**10.12*** **	**10.73*** **

Note: *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Figure 1: Three-month (63 trading days) post-earnings-announcement drifts to a strategy taking a long position in firms in value stocks when both earnings surprises and EARs are positive and taking a short position in glamour stocks when both earnings surprises and EARs are negative.

3-mth post-earnings-announcement drifts are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

Book-to-market ratio is the ratio of the fiscal year-end book value of equity to the market value of equity. **Beta** is the correlation of the portfolio drifts with the S&P500 index returns. **Incidence of loss** is the percentage of quarters where the portfolios incur losses. The **Sharpe Ratio** is the excess portfolio return over risk-free rate divided by the standard deviation.

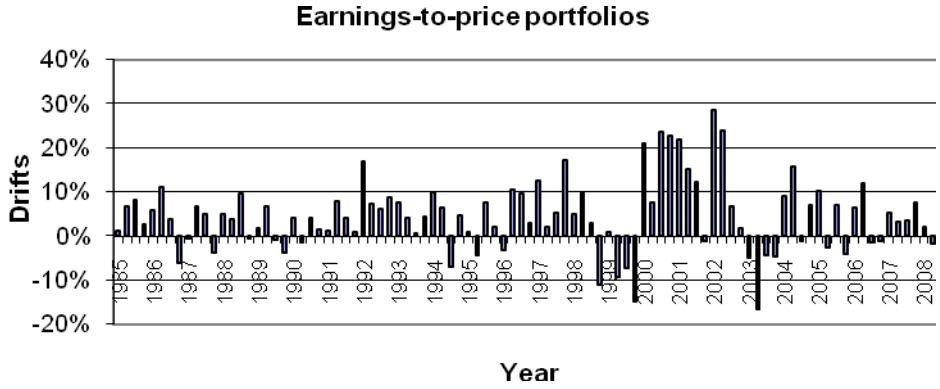


Annualized return	18.73%
Beta	-0.06
Incidence of loss	21.05%
Annualized Sharpe ratio	0.97

Figure 2: Three-month (63 trading days) post-earnings-announcement drifts to a strategy taking a long position in firms in value stocks when both earnings surprises and EARs are positive and taking a short position in glamour stocks when both earnings surprises and EARs are negative.

3-mth post-earnings-announcement drifts are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

Earnings-to-price ratio is the operating income after depreciation scaled by the market value of equity. Beta is the correlation of the portfolio drifts with the S&P500 index returns. Incidence of loss is the percentage of quarters where the portfolios incur losses. The **Sharpe Ratio** is the excess portfolio return over risk-free rate divided by the standard deviation.

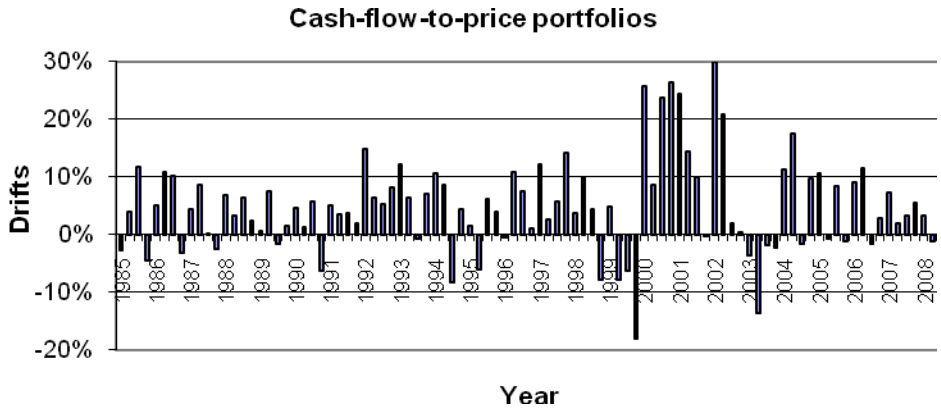


Annualized return	17.92%
Beta	-0.24
Incidence of loss	26.32%
Annualized Sharpe ratio	0.75

Figure 3: Three-month (63 trading days) post-earnings-announcement drifts to a strategy taking a long position in firms in value stocks when both earnings surprises and EARs are positive and taking a short position in glamour stocks when both earnings surprises and EARs are negative.

3-mth post-earnings-announcement drifts are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

Cash-flow-to-price ratio is the cash flow from operations scaled by the market value of equity. **Beta** is the correlation of the portfolio drifts with the S&P500 index returns. **Incidence of loss** is the percentage of quarters where the portfolios incur losses. The **Sharpe Ratio** is the excess portfolio return over risk-free rate divided by the standard deviation.

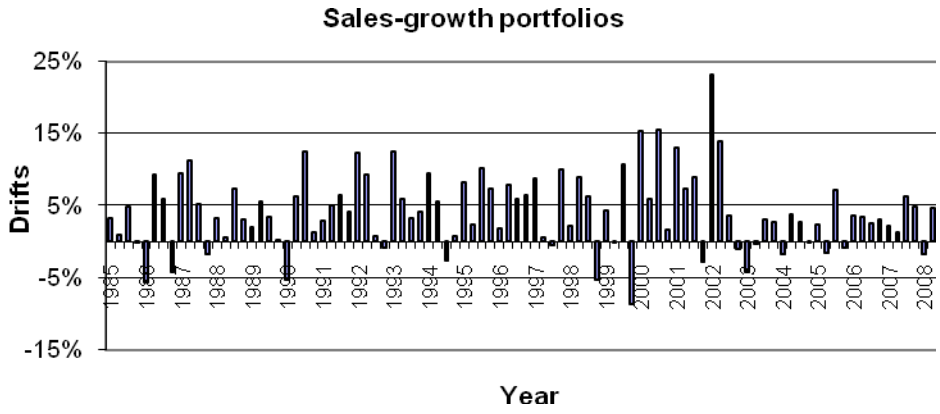


Annualized return	18.85%
Beta	-0.19
Incidence of loss	25.26%
Annualized Sharpe ratio	0.79

Figure 4: Three-month (63 trading days) post-earnings-announcement drifts to a strategy taking a long position in firms in value stocks when both earnings surprises and EARs are positive and taking a short position in glamour stocks when both earnings surprises and EARs are negative.

3-mth post-earnings-announcement drifts are calculated as $Drift_{i,t} = \prod_{t=2}^{t=n}(1+R_{i,t}) - \prod_{t=2}^{t=n}(1+R_{b,t})$.

Sales-growth is the average of annual growth in sales over the previous three years. **Beta** is the correlation of the portfolio drifts with the S&P500 index returns. **Incidence of loss** is the percentage of quarters where the portfolios incur losses. The **Sharpe Ratio** is the excess portfolio return over risk-free rate divided by the standard deviation.



Annualized return	16.61%
Beta	-0.20
Incidence of loss	18.95%
Annualized Sharpe ratio	1.14