# Insider trading in Glamour and Value firms

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## Abstract

This study examines the patterns of, and the long run returns to, directors' trades along the value/glamour continuum. We find that directors consistently trade in what appears to be a contrarian fashion, buying more "value" stocks and selling more "glamour" stocks, and also buying following price falls and selling following price rises. Our results show that directors' trading signals clearly generate significant positive abnormal returns in these value stocks on the "buy" side, and some smaller but still significant negative returns in the glamour stocks on the "sell" side. These abnormal returns persist for up to two-years after the initial directors' trade, and are in excess of size and value/glamour benchmarks, implying that directors use more than a naïve contrarian strategy, in making their trading decisions. We also show that these excess returns remain after controlling for varying definitions of "value" and "glamour", and also that abnormal returns are concentrated in smaller stocks in general, and smaller value stocks in particular.



Keywords: Insider trading; Value Glamour Premium, Contrarian investing
JEL classification: G11, G12

## I Introduction

It is well-known that value stocks have higher returns than glamour stocks (Lakonishok Shleifer and Vishny, 1994), and this paper investigates whether corporate insiders recognise these return differences as mis-pricings and trade on them. Our study examines the patterns of, and the long run returns to, directors' trades along the value/glamour continuum, in order to assess whether directors are able to generate abnormal profits by trading on perceived market mis-valuations.[1]

The premise is that company directors, with their in-depth knowledge of corporate affairs, can form a better assessment of the true long run value of their firm than the market. If so, they should trade in the opposite direction to any perceived market mis-valuations in general, and any mis-valuations along the value/glamour continuum in particular, so generating abnormal returns from their trades if and when such mis-valuations are eventually corrected. If corporate insiders are following a naïve contrarian strategy then we would not expect them to outperform on a risk or style adjusted basis. Jenter (2005) finds that although corporate insiders in the US do act as contrarians, and are more likely to buy value stocks and sell glamour stocks, there are no excess returns to these strategies when appropriate size and value benchmarks are included. He concludes that his results are consistent with Lakonishok and Lee (2001) that in the US there are no abnormal returns to corporate insider trading. However, Lakonishok and Lee have a somewhat different interpretation of their results, claiming that firms with intensive insider buying activity outperform companies with extensive sale activity, although they acknowledge that development of a profitable trading strategy is "not straightforward" given that the differences in returns are concentrated in smaller stocks.

These findings on the weak stock market response to corporate insider transactions in the US are in contrast to the UK where various studies have shown there are significant short run and long-run abnormal returns to directors' trading (Fidrmuc et al., 2006; Gregory et al., 1997). Fidrmuc et al. (2006) explain the greater informativeness of UK

[1] Throughout this paper we use the term directors to refer to both executive and non-executive board members

directors' trades in terms of the regulatory differences between the two markets, in particular because required insider trading dissemination to the market is faster in the UK, and because the essence of US regulation is to require frequent public disclosures of private information. We would expect that these same regulatory differences to also impact on long-run returns, with the implication that directors trades in the UK may be more informative about a company's long-run stock market performance than in the US.

The contribution of this paper is to investigate first whether directors in UK companies act as contrarian investors: buying in value stocks and selling in glamour stocks; and second whether the documented returns to corporate insider trading are related to insiders simply exploiting the value premium, variously defined, or whether there are incremental returns to insider trading implying that corporate insiders are trading on private information. We go considerably further than the extant US studies in investigating whether directors trade in a contrarian fashion, by investigating alternative measures of "value" stocks. Specifically, we extend the work of Lakonishok and Lee (2001) and Jenter (2005) by assessing returns to directors' trading relative to cash-to-price (C/P), earnings-to-price (E/P) and dividend-to-price (D/P) in addition to the book-to-market (B/M) measure of value employed in those papers. We also improve on the computation of long-run returns in an event study framework where the event is the month of the announcement of the trade. Both Lakonishok and Lee (2001) and Jenter (2005) form portfolios based on cumulated past trades over a number of months.

We are able to exploit the documented faster dissemination of insider trades in the UK market (Fidrmuc et al, 2006) to apply an event study framework, which allows us to employ more precise return windows around directors' trades compared to studies which rely on forming portfolios based upon the previous period's insider trading activity. We produce a range of long-run return metrics including cumulative abnormal returns, skewness adjusted buy-and-hold returns, and calendar time returns. In addition to this general contribution to the understanding of directors' trading, this paper is the first to study long run returns to insider trading in value and glamour firms for the UK market, and in doing so fills a gap in the literature, contributing both to the existing literature on insider trading and also to the growing literature on value effects for international markets.

To summarize our results: we find evidence in the pattern of directors' trades that is

consistent with a contrarian view of mis-valuation of value and glamour stocks. We show that corporate insiders in the UK appear to have the ability to generate abnormal returns over and above a simple contrarian strategy of buying value stocks and selling glamour stocks. If managers trade only on the basis of scaled price ratios then we should not see any abnormal performance once these have been controlled for. But, our evidence suggests that corporate insiders in UK firms make use of their private information not reflected in the metrics that are constructed from publicly available information.

In the next section we review the literature on the value premium and its relationship with studies of insider trading, allowing us to develop our hypotheses. In Section III we explain the methodology, and Section IV describes the data set on UK corporate insider trades over the period 1986-2003. We present the results in Section V, and Section VI provides our conclusions.

## II Literature Review and Development of Hypotheses

Contrarian investment as an investment strategy has existed at least for the past 70 years,[2] but confirmation of its existence was in large part due to the work of Fama and French (1992, 1993, 1995) and Lakonishok et al. (1994).[3] Fama and French (1998) show that the value premium is a truly international phenomenon with twelve out of the thirteen countries in their comparative study, exhibiting a positive value-glamour spread. Some authors (Kothari et al., 1995; Black, 1993 and MacKinlay, 1995) have argued that these observed premiums are artefacts of the methodology adopted, due to survivorship bias, beta mis-measurement, data snooping and is sample-specific, However the wealth of international evidence would discount this argument. The "value" effect has been observed in Japan (Chan et al., 1991), in European countries (Capaul et al., 1993 and Brouwer et al., 1997) and in the UK by Levis and Liodakis (1999), Gregory et al. (2001) and Dimson et al. (2003).

[2] Investment strategies which involve buying (selling) value (glamour) stocks with low (high) prices relative to fundamental measures of value like book value, earnings, cash flow, dividends or sales can be traced back to at least (Graham and Dodd, 1934).

[3] These papers elaborated on the ideas and evidence uncovered by previous researchers including Stattman (1980) and Rosenberg et al.(1985) on the relation between cross section of returns and the B/M, and by Basu(1983) on the importance of the E/P in explaining returns.

The interpretation of the value premium is contentious, and there are two commonly accepted, but conflicting, explanations. One is a rational explanation, which is that the value premium is only a compensation for risk (Fama and French, 1998), and since value stocks are fundamentally riskier than glamour stocks (Zhang, 2005), they therefore deliver greater returns as compensation for bearing that risk. The second explanation is based on the irrational behavioural of investors (Lakonishok et al., 1994). The central idea behind this school of thought is that investors systematically overestimate the potential of the growth firms to produce superior returns and these systematic errors are responsible for the superior performance of the value stocks.

There are other reasons to believe that managers may engage in such contrarian strategies. There is evidence from the corporate finance literature on the relationship between market mis-valuations and corporate events like IPOs, mergers, SEOs and share repurchases and managers adopting strategies to take advantage of these mis-valuations[4]. If these events are motivated at least in part by their beliefs on the market's valuation or mis-valuation then it is entirely plausible that they will trade strategically when trading on their own accounts in their companies' stocks[5]. So an analysis of insider trading patterns across value and glamour firms provides interesting *prima facie* evidence on whether or not "value" firms are so priced because they are simply riskier, in which case we would not expect to see directors trading any differently between value and glamour categories, or whether such pricing (at least in the case of the sub-group of firms in which insiders trade) looks like mis-valuation.

If glamour firms genuinely underperform and value firms outperform in the long run, then we might expect corporate insiders with their insider knowledge to trade to take advantage of any perceived mis-valuation: managers would buy shares to take advantage of the future out performance of the value stocks and sell shares to avoid the underperformance of the glamour stocks. However, buying value stocks and selling glamour stocks would be a simple contrarian strategy which one might expect to see

[4] Ritter (1991), (Loughran and Ritter 1995) for SEOs, Ikenberry et al. (1995b) for share repurchases. Dong et al. (2006), Shleifer and Vishny (2003), Ang and Cheng (2006), for mergers. Lowry (2003) , Schultz (2003), Gregory, Guermat and Al Shawawreh (2008) for IPOs.

[5] For example, Jenter 2005 specifically analyses the connection between insider trading, scaled price ratios and secondary equity issue.

taking place in the absence of any information on insider trades. Whether such strategies generate genuine abnormal returns, net of any risk effects, is controversial. The research question that we answer is whether a directors' trading strategy is capable of generating abnormal returns over and above those that might accrue to a simple value-glamour contrarian strategy.

Rozeff and Zaman (1998), Lakonishok and Lee (2001) and Jenter (2005) all find that corporate insiders tend to be net purchasers of value stocks. Rozeff and Zaman (1998) examine open market purchases and sales by insiders in a sample of US companies for the period 1978-1991, defining firms as value or glamour based on the CF/P ratio and the B/M ratio. They find that managers in growth firms tend to sell more equity than managers in value firms, and that insider buy trades are positively related to the CF/P and B/M ratios. These findings are consistent with the overreaction hypothesis, as the insider trading is in the opposite direction to market prices i.e. insider selling glamour stocks and buying more value stocks.

Jenter (2005) extends Rozeff and Zaman (1998) using data for 1993 to 2000 period in two ways. First, by controlling for non-information related trading such as stock and option grants and levels of stockholdings. Second, by examining the relationship between equity issues and insider trading, and the effect of valuation ratios on this relationship. Jenter (2005) documents that managers in low B/M, E/P and CF/P ratios sell off shares "more frequently and aggressively" than managers in firms with high values for these ratios, and concludes that the risk compensation argument is not consistent with his evidence, since it is unlikely that company executives as sophisticated contrarian investors would be loading up on a risk factor.

Lakonishok and Lee (2001) examine short-run, long-run and aggregate effects of insider trading in US stocks for the period 1975-1995. They analyse the characteristics of portfolios formed from previous high net purchases (buys) and low net purchases (typically sells). They find that the high net purchase portfolios have higher B/M ratios, and the relationship between net purchase ratio and firm size is an inverted U-shaped with both the high and low net purchase ratios associated with smaller firms. Lakonishok and Lee (2001 p.109) also conclude from their analysis of corporate insider trading that it unlikely that a risk pricing explanation is correct. They note that "it is hard to imagine that companies with extensive insider purchases are substantially riskier

in the first year following the trading than they are in the second year".

From the discussion above, in relation to the relative quantity of insider trading in value and glamour firms the following hypothesis can be formulated.

***H1. Corporate insiders buy more shares in value firms than in glamour firms, and sell more shares in glamour firms than value firms, irrespective of the valuation ratio used to classify the firm into value and glamour categories.***

Although earlier work on corporate insider transactions by Jaffe (1974), Finnerty (1976) Seyhun (1986) identified a stock price reaction to these trades, more recently Lakonishok and Lee (2001) find little evidence of any announcement effect of insider trading on returns, suggesting that these trades have little information content. They further analyse the relationship between long run returns and firm characteristics by calculating the abnormal returns for nine size and B/M groups, and within each group they examine the difference in returns between a portfolio formed from high net purchases (buys) and low net purchases (typically sells). They note (p.103) "that the largest spread is in the returns of small-glamour stocks. In this segment, which is composed of small-glamour stocks, insiders tend to sell, however when they buy, the abnormal returns are substantial. Insiders seem to know when to buy."

Jenter (2005) also considers the long-run returns to corporate insider trades, but finds that the excess returns, after controlling for size and book-to-market effects, are indistinguishable from zero. However, his return calculations are based on observations of changes in insiders' holdings from the previous fiscal year, and there may be severe delays from the time of the trade to the beginning of the measurement of the returns.

Fidrmuc et al. (2006) find significant short-run stock price reaction to directors' trading in the UK, and suggest that U.K. insider trades are likely to be more informative on the announcement day and trigger larger market reactions than U.S. trades because: (i) the speed of reporting an insider trade and the speed at which the trade is disseminated into the public domain is much faster in the UK than in the US (up to 6 days versus up to 40 days), so that insider trading information is potentially stale in the US market; (ii) the definition of insiders in the US include a much wider group, and may include many non-informed traders; and (iii) the essence of UK regulations is to impose trading bans during price-sensitive periods whereas the essence of US regulations is to

require frequent public disclosures, so that in the US there may be less private information for corporate insiders to trade on.

In addition these regulations also affect the appropriate research design in a study of long-run returns, since the slower dissemination of insider trades in the US cause Lakonishok and Lee (2001) to use aggregated insider trades over the previous six months. In contrast, a conventional "event study" approach is likely to be more revealing than the Lakonishok and Lee (2001) net purchase ratio portfolio approach in a UK context. The dispersion of financial year end dates is more diverse in the UK than the US[6], but given that the presence of proscribed trading periods could result in the clustering of trades, we also calculate calendar time abnormal returns in our study.

Given the evidence from the literature on the value premium one should also see the returns to trades in value firms generating higher abnormal returns in comparison to returns to trades in glamour firms even after size effects and book-to-market effect have been allowed for in the risk pricing models. These observations lead to our second hypothesis:

***H2. If corporate insiders utilise more than a naïve contrarian strategy, then insider buy trades should generate higher positive long-run returns than their value-controlled benchmarks and their sell trades should generate more negative long-run returns than their value-controlled benchmarks.***

**III Methodology**

The objective of this paper is to study the long run returns to insider trades in value and glamour firms. Since the focus is on long run returns, this requires that the methodologies we use to calculate the abnormal returns to the directors trades are robust to the problems of estimation and inference of long-run returns. We follow the recommendation in Lyon et al (1999) and use both event-time and calendar-time methods. In the event-time tests we use both the CAAR and BHAR methodologies to compute abnormal returns. The event date is defined as the month end date based on the

[6] For example, see Agarwal and Taffler (2008), who note that 22% of UK firms have March year ends, with only 37% of firms having December year ends.

value of the directors' net trades for that month. In drawing inference from the event time approach we use both a standardised cross sectional t-test and a skewness adjusted bootstrapped t-test. The choice of benchmarking is very important in long run event studies. In event time use a matching portfolio methodology, where the matching characteristics are both size and value ratios, namely B/M, CF/P, E/P and D/P respectively.

Companies with high dividend yields have been shown to outperform companies with low dividend yields. Levis (1989) show that for the UK there is a strong correlation between D/P and the average monthly return. This result is also corroborated by Morgan and Thomas (1998) and Dimson et al. (2003). In the US similar results are obtained by Dreman (1998) and Arnott (2003). Despite the increased use of share buybacks, most notably in the US, Dimson et al. (2003) note that in the UK the firms that pay dividends account for 95% of the market cap in 2001 and about 75%of all listed companies in the UK still paid dividends in 2001. Hence one might hypothesise that sectional sorts on dividends yield may give rise to a value indicator with expected returns characteristics similar to those for the CF/P and E/P ratios, although dividends cannot take on a negative value. Nonetheless, there is still something of a problem with regard to this zero-yield sub-set of firms. At one level, one might associate zero-dividend stocks with "glamour" firm characteristics. However, Dimson (2003, p.40) note that throughput the period since 1955, the category of non dividend paying stocks has included many small UK companies with value characteristics. The sub-set will also include firms which have cut their dividends to zero. As such, expectations of future returns to this sub-set following directors' purchases are unclear. One approach, that could also be applied to the problem of negative book equity, cash flow, and earnings stocks, would be to follow the recent innovation in Brown et al. (2007) and allocate such firms to portfolios based upon a procedure similar to that used to classify mutual funds. We do not do this here, choosing instead to follow the more conventional approach used widely in the literature, and simply exclude such firms from our analysis. However, we note that directors' trading in such stocks may form an interesting analysis in its own right.

*Benchmark portfolio construction*

We use two benchmark or reference portfolios, and these are respectively, a size

reference portfolio and a size and valuation ratio matched reference portfolio. We use both the benchmarks when considering the B/M ratio but use simply the size and valuation matched portfolios when considering CF/P, E/P and D/P ratios. The benchmark portfolios are formed in the January of each year. In constructing the reference portfolios we only use the companies on the FTSE All Share index. We do not consider Fledgling stocks, AIM stocks and other unlisted securities as in Dimson et al. (2003). Following the usual convention (see, e.g. Michou et al., 2007), the B/M ratio is calculated from the book values which are from a financial year end at least 6 months prior to the portfolio formation date, and form portfolios as at January 1st each year. For example, for a firm which had its financial year between January 1st and 30th June 2000, we use the book values from the 2000 financial year-end in forming the portfolio in January 2001, while, for a company with financial year ending between July 1st and December 31st, we use the book value for the previous fiscal year-end, i.e. 1999, to form the portfolios in January 2001.

*Size control Portfolios:*

For the size control portfolio, we sort the non-event firms each year and form quintiles based on the market capitalisation. The event firms are then allocated to the appropriate size group each year.

*Size and valuation ratio control portfolios:*

We explain the procedure using B/M as a valuation ratio. The procedure for using the other valuation ratios is the same as for the B/M ratio, the only difference being that we use the appropriate valuation ratio instead of the B/M ratio.

We follow Gregory et al. (2001) for the construction of the size and B/M benchmark portfolios. Each year, we first sort the firms on the market capitalisation in January each year. We then use 50th percentile of the market capitalisation of the largest 350 firms to separate the firms into small and large firms. This attempts to follow the spirit of the Fama and French design for the US, whereby break points are formed using NYSE

stocks only.[7] After grouping companies into small and large companies we independently sort the firms on the basis of the B/M ratio and use the 30th and 70th percentile values of the B/M ratio of the largest 350 companies to form three B/M groups. The size and B/M groups are formed by the intersection of these two independent sorts. The event firms are then allocated to the appropriate group each year. This procedure results in six groups of firms. For our analysis, we drop the two middle-value groups and concentrate on the four remaining ones, namely a small-glamour group ($Q_{SG}$), a small-value group ($Q_{SV}$), large-glamour group ($Q_{LG}$), and a large-value group ($Q_{LV}$).

Whilst we follow Gregory et al (2001), there are several methodologies adopted by various researchers to create the size and B/M groups. The methods differ in the definitions of Book value, the date of portfolio formation, the sorting method and the setting of the break points for size and B/M. Gregory et al. (2001), and Liu et al. (1999) use Equity capital plus the reserves as the book value while Dimson et al. (2003) use Equity Capital and Reserves plus any deferred and future taxation to compute the book values. Gregory et al. (2001) and Dimson et al. (2003) use independent sorts on size and B/M while Fletcher and Forbes (2002) use sequential sorts. Sequential sorts results in the same number of stocks within each size group where as independent sort need not necessarily yield similar size groups. However, the most important issue in this regard is the setting of the break points for size and B/M.

Fama and French (1993) use the NYSE break points of 50% of the market capitalisation to set the break points to create the size groups and 30%and 70% of the B/M to set the break points to further create the B/M groups. Miles and Timmermann (1996), Liu et al. (1999) and Fletcher and Forbes (2002) use the median of the market capitalisation to split the stocks into small and large. Given the distribution of the market capitalisations of the firms on the LSE, this is not generally seen as a good method to adopt for the UK market. Both the Dimson et al.(2003) and Gregory et al.(2001) methods take this into account and adjust the break points accordingly, with Dimson et al. (2003) using the 70th percentile of the market capitalisation as the break point for size and the 40th and

[7] For a more detailed discussion of this issue with regard to UK portfolio construction, see Michou et al (2007).

the 60th percentiles as the break points for the fundamental price ratios. In practice, this is not dissimilar to the Gregory et al. (2001) approach of using the medians and the 30th and 70th percentiles of the largest 350 companies to set the break points.[8]

An examination of the Rm-Rf, SMB and HML factors under the two methods for the period 1984-2001 shows that there is a high correlation between the factors created by these methods. The correlation of the Rm-Rf, SMB and HML factors under the two methods are respectively 0.99, 0.70 and 0.48 respectively. The choice of the method then depends on how well the factors are correlated with each other under the two methods. An examination of the correlations between the factors within each method shows that Gregory et al. (2001) results are slightly better in that they record lower correlations between each of the factors[9].

Finally, to establish the robustness of the event time results we also apply the calendar-time approach, and test for abnormal returns in the value-minus-growth portfolios after appropriate risk adjustments. We use both the Fama-French three factor (FF3F) model and the Carhart (1997) four-factor model (the FF3F plus momentum) in conjunction with OLS and WLS procedures to allow for risk adjustments. The momentum factor is based on sorting all the LSPD stocks for which a B/M factor is available on the basis of their previous 12 months return each year. The "winner minus loser" (WML) portfolio is then the return on the portfolio of winners (the highest 30% of returns) minus the portfolio of losers (the lowest 30% of returns).

**IV Data**

We examine directors trading in UK public limited companies for the period 1986-2003[10]. We only consider open market purchases and sales of common stock. We

[8] The logic of the largest 350 is to mimic the structure of the FTSE 350 index, which many larger UK fund managers view as the limit of the tradable universe in the UK. Because the index only commenced in 1992, the largest 350 firms is employed as a proxy for that index back to 1986.

[9] The dataset used in the Dimson et al. (2003) is available at http://faculty-gsb.stanford.edu/nagel/. The factor source book for the Gregory et al. (2001) study is from Gregory, Harris and Michou (2001) updated in Gregory and Michou (2007)

[10] Because we consider a 6 month pre-event and a two year post event window, we are only able to use the insider trading data from 1986-2003. This is to allow for a two year period after the last month of insider trading and one year of pre event window before the first trade.

eliminate trivial trades by removing trades where the absolute value of the net shares traded per month is less than £20,000[11]. We also exclude investment in AIM stocks and other unlisted securities from the analysis. We also do not consider directors trades in investment trusts, property firms, insurance companies and banks, which is consistent with Gregory et al. (2001) and Dimson et al. (2003). The directors' trading data which includes the trades of both executive and non-executive directors, is from Hemmington Scott for periods post 1995, but before that are from the Gregory et al. (1997) dataset. Accounting data is from Hemmington Scott, supplemented with data from Datastream. All stock return data and market capitalisation data is from the LSPD. We cross check all the data when merging across different data sources to ensure consistency in the calculation of the relevant variables.

One unique feature of this data set is that it includes firms that have become void during the period 1985-2006, thereby eliminating survivorship bias. The effect of survivorship bias is that it results in higher returns and better performance because only firms that are successful enough to survive are included. Nagel (2001) notes that this is important to mitigate this survivorship bias by including void companies because portfolios constructed on the basis of accounting data with inherent ex post selection bias do not represent trading strategies that are replicable ex ante. We source the FTSE All Share index returns and Treasury Bill return data from the London Business School Share Price Database (LSPD). We use the LSPD number, together with the Stock Exchange Daily Official List SEDOL numbers for identifying companies when merging the data across these different sources. These returns are all adjusted for dividends and capital structure changes.

Over the sample period there are 16,848 directors' transactions (defined as monthly net purchases or sales), 54% of those being directors' buys and 46% being directors' sales in terms on the number of transactions (see Table 1). However, in terms of both the

[11] There are several methods adopted to eliminate trivial trades, these are, based on the number of shares traded (Lakonishok and Lee 2001); the value of shares trades; value of shares traded as a percentage of market capitalisation (Fidrmuc et al. 2006) etc. Fidrmuc et al. (2006) uses a cut-off of net trade value > 0.1% of market capitalisation to identify large trades. However, the Fidmuc et al. (2006) method has the serious problem of biasing the sample towards smaller companies by eliminating many of the larger companies.

number and value of shared traded, directors' sales account for a higher percentage than directors' purchases. For the B/M value indicator, we initially investigate trading patterns and returns by simply classifying firms on the basis of B/M quintiles. Table 2 shows the means and medians of the various insider trading measures by these B/M quintile. We can see that there is a clear pattern, in the value of the net trades as we move from glamour ($Q_{1G}$) to value ($Q_{5V}$) groups, with negative net trades (sales) in the glamour portfolio, and positive net trades (purchases) in the value group. This is due to both increase in the value of buys and decrease in the value of sells as we move from glamour to value group. For example, directors' in the extreme glamour group are net sellers with an average trade value of £533,000, while they are net buyers in the extreme value group with an average trade value of £104,000. Other measures of directors' trading like the net purchase ratio (npr), net number ratio (npn) and net value ratio (npv) all exhibit this same pattern. This is consistent with the hypothesis that directors take a contrarian view on the value of their own firm. What is particularly striking is that whichever measure of trading activity we employ, net purchase activity increases monotonically as we move through the glamour to value continuum.

**V Results**

Table 3 reports the CAARS to the directors trades based on value weighted size control benchmark returns. It shows that the directors' contrarian view is borne out by the subsequent returns to their trades. In general, the six months pre-event returns are negative, implying that directors buy after a fall in prices. We then observe positive returns for all horizons post-trade, with abnormal returns being positive for all horizons and all value groups, with the returns being statistically significant for all except the extreme glamour quintile ($Q_{1G}$). These abnormal returns increase steadily as we progress from $Q_2$ (glamour) to $Q_{5V}$ (value). For the extreme value group, the 24 month post trade return is a significant 18.98%, with more than 67% of the transactions showing positive abnormal returns. The table also shows that sell trades are always executed after a significant rise in prices, with the increases being larger for the glamour portfolios than the value portfolios (12.27% in the six months pre trade for $Q_{1G}$, compared to 7.95% for $Q_{5V}$). The post-trade returns for the sell trades are only significant for the extreme glamour portfolio ($Q_{1G}$) at longer horizons, with returns being -4.62% after 18 months and -6.92% after 24 months. For the extreme value group

returns show a marginally significant positive return. However one must also note that only roughly half of these trades show positive abnormal returns.

Similar broad conclusions can be drawn from Table 4, which reports the buy and hold abnormal returns based on value weighted size control benchmark returns. For the "buy" portfolios, the extreme glamour group shows an insignificant return of 2.66% percent after 24 months, though with only some 42% of trades producing positive returns. By contrast, the extreme value group shows significant returns of 7.92% after 6 months, 13.42% after 12 months, 18.66% after 18 months, and 24.14% after 24 months. Also, for the extreme value group the percentage of transactions with positive abnormal returns shows a significant increase from 47.25% for the 6 month pre trade window to 60.71% for the 24 month post trade window. As with the CAARs, all quintiles apart from the extreme glamour group record positive and significant abnormal returns, and as before, these increase as we move from glamour to value quintiles. Sell trades for the glamour portfolio are again significantly negative for the extreme glamour portfolio, with returns being -3.76% after 24 months. Furthermore, only 37.9% of these yield positive returns. For the extreme value portfolio, abnormal returns are a significant +4.87% after 24 months, although less than half of these abnormal returns are positive.

So far, our results are consistent with those from other studies, in that generally positive returns accrue to directors' trades in the longer run, and that directors' purchasing and selling patterns seem to be contrarian in nature. Directors sell more glamour stocks than value stocks and buy more value stocks, with net trades showing a clear pattern of contrarian trading, and they tend to sell following prices rises and buy following price falls. However, our results are also consistent with existing evidence on "value" investing. It could be that we observe higher returns to directors' trades in value stocks simply because of pre-established value-glamour return differences. Our first cut of the data that involves controlling for the book to market effect in addition to the size effect involves the use of the Fama-French factors in a calendar time model. Calendar time regressions have the advantage of controlling for any problems caused by event-time clustering, but can suffer from heteroskedasticity caused by variations in the number of firms in the calendar time portfolios (Mitchell and Stafford, 2000). We control for this by reported heteroskedasticity-consistent t-statistic using the White (1980) correction. Table 5 presents the results of the calendar-time portfolio regressions from the Fama-French model. The first column shows the monthly abnormal return from the

regression (i.e. the regression alpha) whilst the second column shows the monthly alpha as an annualised rate. We see that for all horizons buy trades in the two glamour quintiles are insignificant, but buy trades in the value quintiles ($Q_4$ and $Q_{5V}$) generate significant positive returns, equivalent to an annualised return of 11.48% and 12.15% after 12 months, and 8.99% p.a. and 10.43% p.a. after 24 months respectively. On a calendar-time basis, none of the sell trades seem to be generating significant abnormal returns with the exception of the extreme glamour portfolio after 24 months, which has a marginally significant abnormal return of -3.77% p.a. As a further check, we run the calendar time returns using the 4-factor Carhart model, in order to test for whether the results can be explained by a momentum factor. Adding such a factor makes little difference in either qualitative or quantitative terms[12].

The results suggest that based on size benchmark portfolio returns or the Fama-French and Carhart models in calendar time, directors' buy transactions in value firms produce significant positive abnormal returns, which is robust to the methodology adopted to measure it. The various measures of directors' trading seem to suggest that managers actively take contrarian positions and thereby generate abnormal returns from their trades. We now extend our analysis to firms partitioned on the basis of *both* size and book-to-market ratios,

*Size and B/M benchmark portfolios*

Table 6 reports the directors' trade statistics for the different size and value-glamour portfolios. We see that value of the net trades increase as we move from the glamour to value categories and the other measures of insider trading also show the contrarian nature of the directors' trades. As one moves from the small-glamour to the small-value portfolios, we see a change consistent with the contrarian nature of the directors trading in that insiders become less likely to be net sellers. The median value of the trades show that insiders go from being net sellers (£34,000) to being net buyers (£23,500). We see a similar pattern for the large group of companies. Based on the median values insiders go from being net sellers (£12,200) in large-glamour firms to net buyers (£19,500) in large-value firms. The npn, npr and npv measures present a similar picture.

[12] For space reasons these results are not reported, but are available from the authors upon request.

Again, the crucial question is whether this apparently contrarian trading behaviour is borne out by the future returns to these trades. Table 7 shows the CAARS to buy trades based on value weighted returns of the size and B/M benchmark portfolios. We emphasise that by construction, these event time portfolios have been cleaned of any simple "value-glamour" effects, and so there returns can be viewed as net of any style or risk effects. In all instances directors buy after negative abnormal returns which are followed by reversals in the post-trade period. In every case they generate significant positive abnormal returns in excess of any pure "value-glamour" effect. However for the small firm group there is much larger difference in the returns between the value and glamour sub-groups. In the 24-month post-trade window, insiders generate a significant return of 6.70% compared to 13.7% for small-value firms. The corresponding figures for large firms are 6.56% and 5.58%. For the sell trades we do not find any consistent pattern of underperformance for any of the groups based on the CAARS for the glamour firms. For the value firms there seems to be some evidence of underperformance in the (0, 24) holding period for large-value stocks only. The results shows that sell trades follow large abnormal returns, with larger returns for glamour firms than value firms. For example, on value weighted basis for the small-glamour firms the 6 month pre trade mean returns are 13.65% compared to 8.11% for small-value firms. In the 24 month post trade period the returns fall to and insignificant -1.65% and -0.78% for small-glamour and small-value firms respectively. For the large firms returns of 10.31% and 3.81% in the 6 month pre-trade period for glamour and value firms respectively are followed by 24 month post trade period CAARS of 0.47% for glamour firms and to a significant -2.71% for value firms.

The buy and hold abnormal returns for buy trades in Table 8 show a big differential between the abnormal returns generated by value and glamour firms within both the small and large categories. On a value weighted basis we find that directors' buy trades generate abnormal returns of 12.65% and 20.01% for small-glamour and small-value firms after 24 months, compared to 3.74% and 6.29% for large-glamour and large-value firms. With respect to the sell trades in large-value firms we observe that the BHAR is -8.47%, which, similar to the CAARs is significantly different from zero. In addition, there is a significant -4.06% on the (0, +18) month holding period. It is also worthwhile noting that the proportion of positive return events go from 54% to 39.4% as we go

from the (-6,0) to the (0,24) window.

However, the calendar-time portfolio regressions reported in Table 9 show that only buy trades in small-value firms generate consistently significant positive abnormal returns. The abnormal returns observed with the glamour firms when using the event-time approaches seem to disappear entirely in calendar-time. Last, the abnormal returns to large-value stocks are of marginal statistical significance at the 6 and 24 month horizons, and are of modest economic proportions compared to the returns on small-value stocks. The calendar time returns also suggest that directors' sales in the small-glamour category generate marginally significant negative returns after 24 months, a result that stands in marked contrast to the event-time results.

The difference in returns using the event time and calendar-time approaches has implications for pseudo market timing. Chan et al. (2007, p.2675) note that to the extent that any post announcement abnormal returns are observed, the critical distinguishing inference of pseudo market timing is that one continues to observe abnormal performance in event time but not under calendar-time. Our results with regard to small value stocks are supportive of the notion that directors seem to have genuine (as opposed to pseudo) market timing ability. This is consistent with the evidence on UK IPOs reported in Gregory et al (2008).[13]

In summary, we see that when B/M ratio is used as an indicator of value, on a size adjusted basis value firms in which directors buy consistently outperform their benchmark firms. On a size and B/M adjusted basis, we find that the really robust result holds only for buy trades in small-value companies. This suggests that insiders in such firms use more than a naïve contrarian strategy at least with respect to their buy trades.

[13] Chan et al. (2007 p. 2685) notes that the difference in the intercepts between WLS and OLS regressions provides an estimate of the explanatory power of pseudo market timing. Given this, we run WLS regressions, although in general we do not report these results given the criticism of WLS as a technique in Mitchell and Stafford (2000). The results are interesting. For example with the FF3F model we find that the difference in the intercepts is 1.87% (on an annualised basis) for 24 months post trade period. None of the sell trade abnormal returns are significant. However, the buy trades in small-value category generates much higher abnormal returns than the large-value category.

On the sell side there seems to be some significant underperformance of the sell trades in large firms.

*Other measures of Over/Undervaluation*

As discussed earlier several other accounting-based variables have been suggested as alternatives to B/M for identifying value stocks. Earnings yield (E/P), Cash flow yield (CF/P), and Dividend yield (D/P) have received the most attention in empirical studies. One argument is that these variables, along with B/M, are all highly correlated with one another, and they produce a similar dispersion in average returns. However, several studies have shown that this is not always the case. In the Appendix, we also report the correlations between the various valuation ratios to check this. Although the correlations are significant, they clearly indicate considerable variation between value categories, hence justifying a concern with alternative specifications of value classification.

We consider each of the valuation ratios in turn starting with the CF/P ratio. Table 10 reports trade characteristics for four size and CF/P groups. Here we see that, as we move within the small group of companies, the percentage of buys and sells change from 43% and 57% to 62% and 37% respectively. Within the large group of large companies we see a similar pattern. The percentage of buys and sells change from 47% and 53% to 62% and 38% respectively. Alternatively, if we consider measures relating to the number of shares traded and the value of the shares traded we find that as we move from $Q_{SG}$ to $Q_{SV}$ the median value of the net shares traded changes from £25,200 (net sales) to 20,800 (net purchases), while within the group of large companies the corresponding values change from £15,268 (net sales) to £20,240 (net purchases). Thus, as in the case of the B/M ratio, we observe that directors adopt a contrarian approach when trading in their own firms.

Next we consider the returns to the trading strategies. Table 11 reports the CAARs to these trades after controlling for size and value, defined this time on the basis of the CF/P ratio. Within the small firms group, we see positive returns to both glamour and value stock trades, but very little difference between them (7.48% for glamour stocks versus 8.17% for value stocks). However, unlike the glamour stocks, the value stocks have experienced significant pre-trade declines. For large stocks, neither value nor glamour categories produce significant abnormal returns, although both groups

exhibit significant pre-trade negative abnormal returns, more so in the case of large-value stocks. So for purchases in large firms, the directors' trading signal adds nothing significant to a simple value-glamour trading strategy based on CF/P.

For directors' sell trades, we see no significant post trade returns for small firms, although significant pre-trade price rises are found in both sub-categories, with the effect being particularly pronounced in the small-glamour category. Both portfolios exhibit significant run-up performance, particularly in the case of glamour firms In the case of large firms, significant negative post trade returns are found for both large-value and large-glamour firms, the returns being -5.6% and -4.74% respectively after 24 months. Table 12 reports the BHAR based on value weighted benchmark returns and we find that the small-glamour firms make a return of 11.50% over the (0,24) month holding period compared to that of small-value firms which generate a 13.33% abnormal return over the similar size and CF/P firm benchmark. Just as it did in the case of the B/M ratio, this suggests that directors use more than just a naïve contrarian strategy in that they generate excess returns when compared to firms that are similarly valued by the market. However, the abnormal returns to both large-value and large-glamour stocks are simply insignificant in the case of directors' share purchases. For directors' sales the large-glamour firms underperform by -5.49% over the (0,24) post trade event window whilst the large-value firms show a greater underperformance of -10.23%. However, the small value group records modest positive abnormal returns, although these are far less than those observed following purchases by directors in this group.

When we consider the calendar-time approach (Table 13), under the OLS method with the FF3F, again on the buy side, the really robust result is that of the out performance of the small-value firms. Note though, that there is an implicit benchmark difference between the FF3F model (which controls for "value" effects using HML, based on book-to-market ratios) and the event time method (which controls for value using CF/P portfolios). Consistent with the longer horizon evidence, there is some underperformance on the sell side for large-glamour firms, which is significant at the 10% level only, but the results contradict the findings from the event time methodology with regard to large value stocks, which actually show evidence of being marginally significantly positive at the 12 month horizon. In summary, considering both the

calendar-time and event-time approaches, the consistent result is the outperformance of the small-value companies.

Next we consider the results based on E/P ratio as the measure of value. Table 14 reports the characteristics for the trades partitioned on the basis of size and E/P. We find that within the group of small companies the percentage of directors' purchases and sales change from 43% and 57% to 49% and 56%, as we move from the glamour to the value groups. For the large firms this changes to 49% and 56% and 43% respectively. Again, we find that insiders are contrarian in that they buy more in value firms and sell more in glamour firms. The table shows that as we move from $Q_{SG}$ (small-glamour) to $Q_{SV}$ (small-value), the value of the net shares traded changes from a median of £13,825 net sales to £18,774 net purchases. For the large firms this changes from £11,405 net sales to £4,000 net purchases. The CAARs reported in Table 15 reveal a pattern similar to that found under the CF/P definition of value, in that both small-value and small-glamour stocks exhibit outperformance relative to an E/P and size benchmark. Once again, there is little difference between the value and glamour groupings, although the latter have a slightly higher performance. Note, though, that significant pre-trade underperformance is not shown by the small-glamour stock group, but is seen in all other groups. For sell trades only the large-value group of stocks have significant negative post-trade abnormal returns, but all categories show significant positive pre-trade returns. The CAAR results are broadly confirmed by the BHARs reported in Table 16. Again, we observe that the small-glamour firms have the most outperformance when we use E/P as a valuation ratio, although the difference between this group and the small-value stocks, which also outperform, is marginal (15.05% versus 13.97%). As before, large firms do not have returns significantly different from zero. On the sell side we again observe that the large-value firms underperform relative to their benchmark, showing a return of -8.41% in the (0, 24) month period. However, somewhat puzzlingly the sell trades in both small-glamour and small-value categories have significantly positive returns, although the fact that only 45% of these trades have positive abnormal returns suggest that these results are heavily skewed.

Once again, the calendar-time abnormal returns in Table 17 show that it is the purchases in the small-value firms that exhibit consistent outperformance. On the sell side with the calendar-time portfolio regressions we do not see any underperformance of the value

firms and indeed there appears to be significant outperformance at short horizons. However, there is no evidence of any abnormal performance for any sub-group at longer horizons.

Having discussed the E/P ratio we can now move on to the results using D/P or the dividend yield as a measure of value. Table 18 reports various directors' trade related statistics for the six groups. For the number of transactions we observe 40% and 60% buys and sells in the small-glamour group, which changes to 65% and 34% for the small-value group. For the large group we find that the corresponding numbers are 41% and 59% and changing to 67% and 32%. So again there seems to be a strong contrarian trend with respect to the number of transactions. In terms of the values of the net shares traded we observe that the median value changes from £33,126(net sales) to £ 22,500 (net purchases) as we move from glamour to value within the small category and from £26,093 (net sales) to £24,514 (net purchases). Therefore, the pattern for D/P is similar to that which we have seen for all the other value to price ratios. The CAARs reported in Table 19 reveal significant positive abnormal returns for both small-glamour and small-value groups, with the latter having larger abnormal returns (9.38% compared to 6.02% for the small-glamour group after 24 months). However, this ordering is reversed in the abnormal returns to the larger stocks, where large-glamour stocks have a higher performance than large-value stocks. Intriguingly, this is the only group for which pre-bid performance is not significantly negative. On the sell side, only trades in large-value stocks have significantly negative abnormal returns, but for all groups sales follow a period of significant out-performance. Considering the buy and hold abnormal returns using value weighted returns (Table 20) confirms that the small-value firms outperform the small-glamour firms. Small-value firms generate 13.18% while small-glamour firms generate 10.98% positive abnormal returns compared to their benchmarks. Again, on the sell side we see that the negative returns are a -9.13% for large-value firms over (0, 24) month period. The glamour firms do not however generate any returns significantly different from zero. Finally, the calendar time returns reported in Table 21 confirm that significant abnormal positive returns are found only within the small value firms' category.

## VI Conclusions

Our first results confirm that, similar to the US findings of Jenter (2005) and Lakonishok and Lee (2001), UK directors trade as contrarians. We then go on to show that on a size controlled basis UK directors' purchases generate long run abnormal returns for all but the extreme glamour portfolio. These returns increase monotonically as we move along the glamour-value continuum. The particular contribution of this paper is to analyse specifically what directors' trades add to a "naïve" value-glamour strategy. We do this by controlling for different definitions of "value" in our benchmark portfolios, so that directors' trades are evaluated net of the value-glamour effect. Having considered various ratios as candidates for defining "value" stocks, we find the consistent result from both event time and calendar time methods, no matter how "value" is defined, is that directors' purchases in small-value firms generate significant abnormal returns, after allowing for size and alternative value/glamour effects in the benchmarks. These abnormal returns persist for over two-years after the initial directors' trade. Small-glamour firms also show superior performance in event time, a result that was obtained by Lakonishok and Lee (2001) for the US, although results here are not consistent in calendar time. Given that in all cases these returns are those in excess of the returns on a size and valuation ratio matched benchmark portfolio, these returns reflect the fact that directors indeed use more than a naïve contrarian strategy when trading in their companies' stock. We also find that it is directors' sales in large-value firms that appear to show significant underperformance. This is consistent with an explanation that these might be sales in distressed firms, although this result does not appear to be robust using the calendar-time methodology.

Our largest abnormal returns in event time appear to be generated relative to a size and book-to-market benchmark, where directors' purchases generate buy and hold returns of 20% over 24 months, with a similar return being found in calendar time. On a book-to-market basis, purchases in large-value stocks also appear to generate significant but smaller abnormal returns over a two-year horizon, a result that also has marginal significance in calendar time. The event time abnormal returns for each value measure records the excess returns over and above a simple contrarian approach of buying stocks using the relevant value indicator (B/M, E/P. C/P or D/P) and size as the benchmark return. By contrast, the calendar time returns measure outperformance relative to the Fama-French factors, which explicitly assume that book-to-market and size are proxies

for risk. On this basis, the abnormal returns to small value stocks are similar and always highly significant across differing "value" categories. Six month annual percentage rates (APRs) are always highest, ranging between 14.03% for the E/P basis to 17.74% on a D/P one, with a 12 month APR ranging from 11.75% (C/P) to 13.62% (D/P) and a 24 month abnormal return varying between 8.6% (C/P) and 9.9% (B/M). Whilst trading costs clearly vary between small and large firms, there is no reason to suppose that such costs vary between value and glamour firms within a particular size category. Our evidence for these small value stocks backs up the Lakonishok and Lee (2001) interpretation that insiders who buy such stocks "know what they are doing".

Taken as a whole, our results confirm those from previous research in that directors' trading signals clearly generate significant positive abnormal returns on the "buy" side, and some smaller but still significant negative returns on the "sell" side. The important results in this paper are to first to show that these returns remain even after controlling for varying definitions of "value" and "glamour", but also to provide corroborating evidence from outside the US that abnormal returns are concentrated in smaller value stocks in particular.

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## Table 1: Summary Statistics of the Directors Trades 1986-2003 based on Monthly Data

This Table reports the number of trades, the number of shares traded and the value of shares traded for the 1986-2003 period. In panel A the number of trades is the after aggregating the buys and sells and then reclassifying the transactions for each firm for each month. The Grand Total row shows the total number of trades, the total number of shares traded and the total value of shares traded for Buys and Sells together. The Percent row shows the number of trades, no of shares traded or the value of shares traded, as a percentage of the grand total.

| Year | Buys | | | Sells | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. of Trades | No. of Shares ('000s) | Value of trades (£ '000s) | No. of Trades | No. of Shares ('000s) | Value of trades (£ '000s) | Total No. of Trades | No of Cos | Avg. Trade/Co |
| 1986 | 142 | 23,970.41 | 37,927.53 | 365 | 90,372.23 | 197,796.58 | 507 | 295 | 1.72 |
| 1987 | 225 | 31,104.60 | 49,132.90 | 510 | 118,439.22 | 292,178.59 | 735 | 399 | 1.84 |
| 1988 | 271 | 34,442.40 | 56,713.22 | 440 | 80,649.82 | 165,200.03 | 711 | 401 | 1.77 |
| 1989 | 346 | 57,920.05 | 72,342.18 | 560 | 113,717.15 | 213,044.97 | 906 | 495 | 1.83 |
| 1990 | 430 | 64,078.21 | 58,778.36 | 421 | 96,598.23 | 147,750.11 | 851 | 504 | 1.69 |
| 1991 | 252 | 58,326.01 | 36,040.17 | 511 | 117,821.57 | 199,614.89 | 763 | 453 | 1.68 |
| 1992 | 259 | 35,273.79 | 24,986.97 | 323 | 57,407.03 | 145,359.63 | 582 | 341 | 1.71 |
| 1993 | 221 | 20,383.67 | 24,199.21 | 442 | 87,485.27 | 190,479.92 | 663 | 383 | 1.73 |
| 1994 | 508 | 56,207.88 | 60,880.52 | 445 | 105,179.44 | 239,589.05 | 953 | 518 | 1.84 |
| 1995 | 483 | 68,559.28 | 53,441.47 | 546 | 133,129.66 | 343,140.50 | 1029 | 600 | 1.72 |
| 1996 | 591 | 80,968.29 | 72,444.59 | 591 | 149,551.23 | 418,356.78 | 1182 | 674 | 1.75 |
| 1997 | 785 | 90,693.95 | 120,381.75 | 544 | 148,221.61 | 373,862.19 | 1329 | 742 | 1.79 |
| 1998 | 934 | 123,590.63 | 112,326.88 | 407 | 122,811.49 | 437,454.22 | 1341 | 737 | 1.82 |
| 1999 | 805 | 108,026.05 | 124,338.13 | 369 | 103,098.13 | 408,269.34 | 1174 | 609 | 1.93 |
| 2000 | 710 | 106,314.52 | 194,944.67 | 376 | 130,317.07 | 705,907.75 | 1086 | 576 | 1.89 |
| 2001 | 676 | 111,831.45 | 155,673.91 | 344 | 82,818.13 | 238,751.13 | 1020 | 573 | 1.78 |
| 2002 | 790 | 173,380.92 | 167,788.67 | 271 | 81,717.54 | 193,399.22 | 1061 | 598 | 1.77 |
| 2003 | 608 | 111,128.77 | 114,964.09 | 347 | 133,454.13 | 315,450.28 | 955 | 524 | 1.82 |
| **Percent** | 0.54 | 0.41 | 0.23 | 0.46 | 0.59 | 0.77 | | | |
| **Grand Total** | 16,848 | 3,308,989.82 | 6,762,910.40 | | | | | | |

## Table 2: Directors Trade related Statistics for the B/M groups.

This table reports the means and median for various directors' trading related measures for the different groups formed on the basis of their B/M ratios. $Q_{1G}$ and $Q_2$ are the glamour groups, $Q_4$ and $Q_{5V}$ are the value groups. npr, npn and npv are net purchase ratio, net number ratio, and the net value ratio. npr is calculated as (no. of Purchases – no. of Sales)/(no. of Purchases+ no. of Sales), npn and npv are calculated similarly, but using number of shares traded and the value of shares traded. Nonet is the net number of shares traded. Valnet is the net value of the shares traded. Freqnet is the net number of transactions.

| Group | Statistic | Freqnet | Nonet | Valnet | npr | npn | npv |
|---|---|---|---|---|---|---|---|
| $Q_{1G}$ | **Mean** | 0.10 | -113,434.00 | -533,924.00 | -0.07 | -0.11 | -0.11 |
| | **Median** | -1.00 | -8,021.00 | -25,000.00 | -0.33 | -0.99 | -0.99 |
| $Q_2$ | **Mean** | 0.47 | -58,082.14 | -219,969.10 | 0.04 | -0.01 | -0.01 |
| | **Median** | 1.00 | -2,757.50 | -12,727.50 | 0.20 | -0.38 | -0.40 |
| $Q_3$ | **Mean** | 0.67 | -16,584.36 | -133,597.10 | 0.15 | 0.12 | 0.12 |
| | **Median** | 1.00 | 6,000.00 | 17,868.12 | 1.00 | 1.00 | 1.00 |
| $Q_4$ | **Mean** | 0.91 | 26,857.99 | 7,967.48 | 0.28 | 0.25 | 0.25 |
| | **Median** | 1.00 | 10,528.50 | 20,720.78 | 1.00 | 1.00 | 1.00 |
| $Q_{5V}$ | **Mean** | 1.17 | 72,260.99 | 53,909.70 | 0.40 | 0.37 | 0.37 |
| | **Median** | 1.00 | 20,000.00 | 22,805.90 | 1.00 | 1.00 | 1.00 |

## Table 3: Cumulative Abnormal Returns based on Value Weighted returns of Size Matched Benchmark Portfolio

This table reports the mean Cummulative Average Abnormal returns for directors buy trades and sell trades, using value weighted size matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. t is the standardised cross sectional t-statistic. $Q_{1G}$ and $Q_2$ are the glamour groups, $Q_4$ and $Q_{5V}$ are the value groups formed on the basis of their B/M ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Interval** | **Mean (%)** | **% Pos** | **t** | **p-value** | **Mean (%)** | **% Pos** | **t** | **p-value** |
| $Q_{1G}$ | **(-6,0)** | -6.34 | 43.34 | -8.61 | <.0001 | 12.27 | 68.69 | 20.57 | <.0001 |
| | **(0,+6)** | -0.37 | 50.36 | -0.51 | 0.6100 | 0.73 | 52.43 | 1.27 | 0.2000 |
| | **(0,+12)** | 1.02 | 53.33 | 1.02 | 0.3100 | -1.56 | 49.33 | -1.87 | 0.0600 |
| | **(0,+18)** | 0.36 | 53.17 | 0.29 | 0.7700 | -4.62 | 47.11 | -4.42 | <.0001 |
| | **(0,+24)** | 0.72 | 52.65 | 0.52 | 0.6000 | -6.92 | 45.77 | -5.81 | <.0001 |
| $Q_2$ | **(-6,0)** | -4.41 | 42.98 | -6.63 | <.0001 | 9.89 | 66.55 | 18.52 | <.0001 |
| | **(0,+6)** | 2.02 | 53.93 | 3.13 | 0.0000 | -0.08 | 50.77 | -0.14 | 0.8900 |
| | **(0,+12)** | 3.69 | 55.29 | 4.05 | <.0001 | 0.20 | 51.97 | 0.25 | 0.8000 |
| | **(0,+18)** | 3.69 | 55.24 | 3.40 | 0.0000 | -1.55 | 50.48 | -1.52 | 0.1300 |
| | **(0,+24)** | 5.01 | 56.13 | 4.16 | <.0001 | -0.85 | 51.44 | -0.73 | 0.4700 |
| $Q_4$ | **(-6,0)** | -0.59 | 48.85 | -0.82 | 0.4100 | 8.78 | 66.15 | 11.68 | <.0001 |
| | **(0,+6)** | 6.60 | 58.99 | 9.84 | <.0001 | 0.49 | 50.22 | 0.68 | 0.5000 |
| | **(0,+12)** | 10.24 | 63.00 | 10.62 | <.0001 | 0.64 | 50.77 | 0.62 | 0.5400 |
| | **(0,+18)** | 13.06 | 61.75 | 11.02 | <.0001 | -0.25 | 50.88 | -0.19 | 0.8500 |
| | **(0,+24)** | 14.99 | 65.04 | 11.05 | <.0001 | 0.12 | 51.98 | 0.08 | 0.9400 |
| $Q_{5V}$ | **(-6,0)** | 0.90 | 51.39 | 1.16 | 0.2500 | 7.95 | 64.04 | 9.12 | <.0001 |
| | **(0,+6)** | 7.30 | 61.25 | 9.42 | <.0001 | 2.19 | 53.49 | 2.75 | 0.0100 |
| | **(0,+12)** | 11.76 | 64.38 | 10.89 | <.0001 | 2.30 | 55.42 | 1.91 | 0.0600 |
| | **(0,+18)** | 15.27 | 65.67 | 11.7 | <.0001 | 3.61 | 54.53 | 2.42 | 0.0200 |
| | **(0,+24)** | 18.98 | 67.03 | 12.82 | <.0001 | 3.35 | 52.60 | 1.94 | 0.0500 |

## Table 4: Buy and Hold Abnormal Returns based on Value Weighted returns of Size matched Benchmark Portfolio

This table reports the mean Buy and Hold Abnormal returns for directors buy trades and sell trades, using value weighted size matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. Boot-t is the skewness adjusted t-statistics and is based on the Hall (1992) adjustment for skewness. $Q_{1G}$ and $Q_2$ are the glamour groups, $Q_4$ and $Q_{5V}$ are the value groups formed on the basis of their B/M ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | % Pos | Boot-t | p-value | Mean (%) | % Pos | Boot-t | p-value |
| $Q_{1G}$ | (-6,0) | -5.72 | 38.14 | -7.11 | 0.0020 | 14.54 | 64.92 | 25.47 | <.0001 |
| | (0,+6) | -0.54 | 45.37 | -0.72 | 0.5315 | 1.26 | 47.69 | 1.99 | 0.0300 |
| | (0,+12) | 1.83 | 45.01 | 1.56 | 0.1419 | 0.16 | 44.05 | 0.17 | 0.8631 |
| | (0,+18) | 2.75 | 43.44 | 1.74 | 0.0799 | -1.89 | 40.82 | -1.48 | 0.1518 |
| | (0,+24) | 2.66 | 41.88 | 1.47 | 0.1439 | -3.76 | 37.89 | -2.47 | 0.0260 |
| $Q_2$ | (-6,0) | -3.83 | 39.12 | -5.10 | 0.0020 | 11.05 | 63.67 | 21.91 | <.0001 |
| | (0,+6) | 2.09 | 48.89 | 2.96 | <.0001 | 0.23 | 47.59 | 0.38 | 0.6553 |
| | (0,+12) | 4.59 | 48.86 | 4.17 | <.0001 | 1.11 | 47.45 | 1.22 | 0.2178 |
| | (0,+18) | 4.08 | 47.03 | 2.93 | 0.0020 | 0.96 | 45.33 | 0.77 | 0.4056 |
| | (0,+24) | 5.10 | 46.44 | 3.19 | 0.0020 | 2.15 | 45.62 | 1.46 | 0.1319 |
| $Q_4$ | (-6,0) | -0.45 | 45.36 | -0.58 | 0.5774 | 9.47 | 62.42 | 12.43 | <.0001 |
| | (0,+6) | 6.73 | 55.69 | 9.86 | <.0001 | -0.09 | 45.49 | -0.11 | 0.9191 |
| | (0,+12) | 12.09 | 57.34 | 11.69 | <.0001 | 0.66 | 46.70 | 0.55 | 0.5914 |
| | (0,+18) | 16.94 | 54.97 | 12.34 | <.0001 | 0.25 | 44.73 | 0.16 | 0.8551 |
| | (0,+24) | 20.49 | 56.95 | 12.38 | <.0001 | 0.95 | 43.41 | 0.50 | 0.6134 |
| $Q_{5V}$ | (-6,0) | 0.98 | 47.25 | 1.17 | 0.2458 | 8.24 | 62.26 | 9.12 | <.0001 |
| | (0,+6) | 7.92 | 57.04 | 9.94 | <.0001 | 1.85 | 51.11 | 2.19 | 0.0220 |
| | (0,+12) | 13.42 | 58.26 | 10.27 | <.0001 | 2.66 | 51.26 | 2.09 | 0.0460 |
| | (0,+18) | 18.66 | 60.37 | 12.04 | <.0001 | 4.36 | 51.26 | 2.69 | 0.0120 |
| | (0,+24) | 24.14 | 60.71 | 13.97 | <.0001 | 4.87 | 47.25 | 2.45 | 0.0180 |

## Table 5: Alphas from the Fama-French Three factor Calendar Time Portfolio Regressions

This table reports the calendar-time abnormal returns (in decimals) using OLS regression for 6month, 12 months, 18 months and 24 months holding periods. APR is the equivalent annual percentage rate of the monthly abnormal returns. The abnormal returns are the $\alpha s$ from the regression $R_{Pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$. The SMB is the returns to a small minus big factor mimicking portfolio, the HML is the returns to high B/M minus low B/M factor mimicking portfolio. The OLS-t is a heteroskedasticity corrected (using white's procedure) t-statistic. $Q_{1G}$ and $Q_2$ are the glamour groups, $Q_4$ and $Q_{5V}$ are the value groups. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% and levels, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

| Interval | Buys | | | | Sells | | |
|---|---|---|---|---|---|---|---|
| | Group | AR (%) | APR (%) | OLS-t | AR (%) | APR (%) | OLS-t |
| 6-Month | $Q_{1G}$ | -0.01 | -0.12 | -0.06 | 0.11 | 1.33 | 0.60 |
| | $Q_2$ | 0.15 | 1.81 | 0.88 | 0.03 | 0.36 | 0.19 |
| | $Q_4$ | 1.12 | 14.30 | 5.67*** | 0.21 | 2.55 | 1.17 |
| | $Q_{5V}$ | 1.14 | 14.57 | 4.80*** | 0.31 | 3.78 | 1.53 |
| 12-Month | $Q_{1G}$ | -0.02 | -0.24 | -0.14 | -0.10 | -1.19 | -0.53 |
| | $Q_2$ | 0.14 | 1.69 | 0.90 | 0.06 | 0.72 | 0.42 |
| | $Q_4$ | 0.91 | 11.48 | 5.39*** | 0.18 | 2.18 | 1.12 |
| | $Q_{5V}$ | 0.96 | 12.15 | 4.46*** | 0.26 | 3.17 | 1.40 |
| 18-Month | $Q_{1G}$ | -0.09 | -1.07 | -0.54 | -0.26 | -3.08 | -1.50 |
| | $Q_2$ | 0.03 | 0.36 | 0.24 | -0.11 | -1.31 | -0.83 |
| | $Q_4$ | 0.79 | 9.90 | 5.02*** | 0.15 | 1.81 | 1.04 |
| | $Q_{5V}$ | 0.85 | 10.69 | 4.17*** | 0.30 | 3.66 | 1.79* |
| 24-Month | $Q_{1G}$ | -0.10 | -1.19 | -0.60 | -0.32 | -3.77 | -1.95* |
| | $Q_2$ | 0.06 | 0.72 | 0.42 | -0.06 | -0.72 | -0.54 |
| | $Q_4$ | 0.72 | 8.99 | 4.69*** | 0.20 | 2.43 | 1.35 |
| | $Q_{5V}$ | 0.83 | 10.43 | 4.22*** | 0.24 | 2.92 | 1.52 |

## Table 6: Directors Trade related Statistics for the Size and B/M groups.

This table reports the means and median for various directors' trading related measures for the different groups formed on the basis of size and the B/M ratio. $Q_{SG}$ are small glamour firms, $Q_{SV}$ are small value firms, $Q_{LG}$ are large glamour firms and $Q_{LV}$ are large value firms. npr, npn and npv are net purchase ratio, net number ratio, and the net value ratio. npr is calculated as (no. of Purchases – no. of Sales)/(no. of Purchases+ no. of Sales), npn and npv are calculated similarly, but using number of shares traded and the value of shares traded. Nonet is the net number of shares traded. Valnet is the net value of the shares traded. Freqnet is the net number of transactions.

| Group | Statistic | freqnet | nonet | valnet | npr | npn | npv |
|---|---|---|---|---|---|---|---|
| $Q_{SG}$ | Mean | -0.17 | -128,955.20 | -491,576.40 | -0.15 | -0.18 | -0.19 |
| | Median | -1.00 | -15,000.00 | -34,000.00 | -1.00 | -1.00 | -1.00 |
| $Q_{SV}$ | Mean | 1.07 | 53,210.52 | -10,021.71 | 0.38 | 0.36 | 0.36 |
| | Median | 1.00 | 20,000.00 | 23,500.00 | 1.00 | 1.00 | 1.00 |
| $Q_{LG}$ | Mean | 0.62 | -74,307.02 | -517,688.40 | 0.05 | -0.01 | -0.01 |
| | Median | 1.00 | -2,000.00 | -12,200.00 | 0.33 | -0.28 | -0.35 |
| $Q_{LV}$ | Mean | 1.16 | 36,670.28 | 154,351.10 | 0.25 | 0.21 | 0.21 |
| | Median | 1.00 | 6,300.00 | 19,500.00 | 1.00 | 1.00 | 1.00 |

## Table 7: Cumulative Abnormal Returns based on Value Weighted returns of Size and B/M matched Benchmark Portfolio.

This table reports the mean Cumulative Average Abnormal returns for directors buy trades and sell trades, using value-weighted size and B/M matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. t is the standardised cross sectional t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the B/M ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | % Pos | t | p-value | Mean (%) | % Pos | t | p-value |
| $Q_{SG}$ | (-6,0) | -3.97 | 45.70 | -4.50 | <.0001 | 13.65 | 71.63 | 22.97 | <.0001 |
| | (0,+6) | 2.64 | 55.89 | 2.98 | 0.0029 | 1.60 | 53.27 | 2.56 | 0.0105 |
| | (0,+12) | 5.32 | 55.48 | 4.22 | <.0001 | 1.07 | 52.36 | 1.18 | 0.2394 |
| | (0,+18) | 5.37 | 55.83 | 3.34 | 0.0008 | -0.79 | 50.41 | -0.68 | 0.4949 |
| | (0,+24) | 6.70 | 54.30 | 3.73 | 0.0002 | -1.65 | 49.36 | -1.25 | 0.2133 |
| $Q_{SV}$ | (-6,0) | -0.40 | 48.14 | -0.71 | 0.4786 | 8.11 | 63.77 | 12.47 | <.0001 |
| | (0,+6) | 6.52 | 58.65 | 11.89 | <.0001 | 0.69 | 49.93 | 1.08 | 0.2819 |
| | (0,+12) | 9.84 | 60.94 | 12.82 | <.0001 | -0.12 | 48.67 | -0.13 | 0.8994 |
| | (0,+18) | 12.09 | 61.39 | 13.13 | <.0001 | -0.36 | 50.37 | -0.31 | 0.7564 |
| | (0,+24) | 13.84 | 63.08 | 13.23 | <.0001 | -0.78 | 49.85 | -0.60 | 0.5465 |
| $Q_{LG}$ | (-6,0) | -2.44 | 48.71 | -2.51 | 0.0122 | 10.31 | 66.19 | 11.23 | <.0001 |
| | (0,+6) | -0.20 | 51.69 | -0.22 | 0.8287 | 2.27 | 53.84 | 2.68 | 0.0073 |
| | (0,+12) | 2.18 | 55.89 | 1.70 | 0.0886 | 2.26 | 54.62 | 1.88 | 0.0599 |
| | (0,+18) | 3.22 | 58.05 | 2.04 | 0.0418 | 1.25 | 55.14 | 0.81 | 0.4174 |
| | (0,+24) | 6.56 | 60.76 | 3.74 | 0.0002 | 0.47 | 55.01 | 0.27 | 0.7857 |
| $Q_{LV}$ | (-6,0) | -4.32 | 41.24 | -4.64 | <.0001 | 3.81 | 57.04 | 4.73 | <.0001 |
| | (0,+6) | 1.41 | 49.43 | 1.58 | 0.114 | -0.50 | 49.25 | -0.63 | 0.5296 |
| | (0,+12) | 2.27 | 52.86 | 1.88 | 0.0609 | -0.10 | 53.02 | -0.08 | 0.9367 |
| | (0,+18) | 4.00 | 56.79 | 2.79 | 0.0052 | -2.15 | 49.75 | -1.45 | 0.1473 |
| | (0,+24) | 5.58 | 55.81 | 3.54 | 0.0004 | -2.71 | 44.72 | -3.41 | 0.0007 |

## Table 8: Buy and Hold Abnormal Returns based on Value Weighted returns of Size and B/M matched Benchmark Portfolio.

This table reports the mean Buy and Hold Abnormal returns for directors buy trades and sell trades, using value-weighted size and B/M matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. Boot-t is the skewness adjusted t-statistics and is based on the Hall (1992) adjustment for skewness. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the B/M ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | % Pos | t | p-value | Mean (%) | % Pos | t | p-value |
| $Q_{SG}$ | (-6,0) | -3.39 | 41.54 | -3.74 | 0.0040 | 15.87 | 68.57 | 28.44 | <.0001 |
| | (0,+6) | 2.69 | 51.04 | 2.92 | 0.0040 | 2.39 | 50.17 | 3.60 | <.0001 |
| | (0,+12) | 6.96 | 48.89 | 4.81 | <.0001 | 3.15 | 48.02 | 3.06 | 0.0020 |
| | (0,+18) | 9.82 | 47.78 | 5.01 | <.0001 | 3.53 | 44.40 | 2.54 | 0.0160 |
| | (0,+24) | 12.65 | 45.63 | 5.44 | <.0001 | 3.66 | 42.78 | 2.23 | 0.0300 |
| $Q_{SV}$ | (-6,0) | -0.15 | 44.09 | -0.25 | 0.7672 | 8.76 | 60.16 | 13.01 | <.0001 |
| | (0,+6) | 7.05 | 54.71 | 12.37 | <.0001 | 0.62 | 46.69 | 0.90 | 0.3157 |
| | (0,+12) | 12.26 | 54.75 | 14.24 | <.0001 | 0.82 | 44.92 | 0.76 | 0.4056 |
| | (0,+18) | 16.50 | 54.54 | 15.17 | <.0001 | 1.19 | 44.55 | 0.88 | 0.3337 |
| | (0,+24) | 20.01 | 54.92 | 15.30 | <.0001 | 1.29 | 42.49 | 0.77 | 0.4156 |
| $Q_{LG}$ | (-6,0) | -2.34 | 44.25 | -2.11 | 0.0739 | 11.80 | 62.81 | 13.64 | <.0001 |
| | (0,+6) | -1.10 | 45.47 | -1.21 | 0.2278 | 2.37 | 50.98 | 2.71 | 0.0040 |
| | (0,+12) | 1.12 | 49.26 | 0.86 | 0.3716 | 2.71 | 49.41 | 2.15 | 0.0340 |
| | (0,+18) | 1.38 | 47.50 | 0.87 | 0.3716 | 2.00 | 50.98 | 1.18 | 0.2697 |
| | (0,+24) | 3.74 | 49.53 | 2.01 | 0.0480 | 0.99 | 47.46 | 0.51 | 0.6094 |
| $Q_{LV}$ | (-6,0) | -4.32 | 38.79 | -4.24 | 0.0020 | 3.31 | 54.27 | 3.71 | <.0001 |
| | (0,+6) | 1.23 | 46.32 | 1.28 | 0.1758 | -1.45 | 45.73 | -1.75 | 0.0959 |
| | (0,+12) | 2.21 | 47.14 | 1.67 | 0.0959 | -1.62 | 49.25 | -1.38 | 0.1578 |
| | (0,+18) | 4.56 | 50.41 | 2.79 | 0.0060 | -4.06 | 44.22 | -2.71 | 0.0120 |
| | (0,+24) | 6.29 | 48.61 | 3.37 | <.0001 | -8.47 | 39.45 | -4.63 | 0.0020 |

## Table 9: Alphas from the Fama-French Three factor Calendar Time Portfolio Regressions for the value-glamour categories defined by B/M.

This table reports the calendar-time abnormal returns (in decimals) using OLS regression for 6month, 12 months, 18 months and 24 months holding periods. APR is the equivalent annual percentage rate of the monthly abnormal returns. The abnormal returns are the $\alpha s$ from the regression $R_{Pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$. The SMB is the returns to a small minus big factor mimicking portfolio, the HML is the returns to high B/M minus low B/M factor mimicking portfolio. The OLS-t is a heteroskedasticity corrected (using white's procedure) t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the B/M ratios. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% and levels, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

| Interval | | Buys | | | Sells | | |
|---|---|---|---|---|---|---|---|
| | Group | AR (%) | APR (%) | OLS-t | AR (%) | APR (%) | OLS-t |
| 6-Month | $Q_{SG}$ | 0.40 | 4.91 | 1.42 | 0.03 | 0.36 | 0.14 |
| | $Q_{SV}$ | 1.23 | 15.80 | 6.43*** | 0.22 | 2.67 | 1.31 |
| | $Q_{LG}$ | -0.34 | -4.00 | -1.78* | 0.18 | 2.18 | 0.91 |
| | $Q_{LV}$ | 0.20 | 2.43 | 0.99 | 0.03 | 0.36 | 0.14 |
| 12-Month | $Q_{SG}$ | 0.37 | 4.53 | 1.42 | -0.11 | -1.31 | -0.52 |
| | $Q_{SV}$ | 1.00 | 12.68 | 5.94*** | 0.17 | 2.06 | 1.06 |
| | $Q_{LG}$ | -0.26 | -3.08 | -1.59 | -0.01 | -0.12 | -0.06 |
| | $Q_{LV}$ | 0.19 | 2.30 | 1.09 | 0.12 | 1.45 | 0.67 |
| 18-Month | $Q_{SG}$ | 0.22 | 2.67 | 0.89 | -0.28 | -3.31 | -1.38 |
| | $Q_{SV}$ | 0.85 | 10.69 | 5.27*** | 0.18 | 2.18 | 1.20 |
| | $Q_{LG}$ | -0.25 | -2.96 | -1.62 | -0.15 | -1.79 | -0.81 |
| | $Q_{LV}$ | 0.23 | 2.80 | 1.47 | 0.08 | 0.96 | 0.45 |
| 24-Month | $Q_{SG}$ | 0.16 | 1.94 | 0.66 | -0.34 | -4.00 | -1.83* |
| | $Q_{SV}$ | 0.79 | 9.90 | 5.00*** | 0.18 | 2.18 | 1.25 |
| | $Q_{LG}$ | -0.17 | -2.02 | -1.18 | -0.19 | -2.26 | -1.13 |
| | $Q_{LV}$ | 0.25 | 3.04 | 1.70* | 0.02 | 0.24 | 0.12 |

## Table 10: Directors Trade related Statistics for the Size and CF/P groups.

This table reports the means and median for various directors' trading related measures for the different groups formed on the basis of size and the CF/P ratio. $Q_{SG}$ are small glamour firms, $Q_{SV}$ are small value firms, $Q_{LG}$ are large glamour firms and $Q_{LV}$ are large value firms. npr, npn and npv are net purchase ratio, net number ratio, and the net value ratio. npr is calculated as (no. of Purchases – no. of Sales)/(no. of Purchases+ no. of Sales), npn and npv are calculated similarly, but using number of shares traded and the value of shares traded. Nonet is the net number of shares traded. Valnet is the net value of the shares traded. Freqnet is the net number of transactions.

| Group | Statistic | freqnet | nonet | valnet | npr | npv | npn |
|---|---|---|---|---|---|---|---|
| $Q_{SG}$ | Mean | -0.06 | -127,052.30 | -484,508.10 | -0.10 | -0.14 | -0.14 |
| | Median | -1.00 | -10,000.00 | -25,200.00 | -1.00 | -1.00 | -1.00 |
| $Q_{SV}$ | Mean | 0.87 | 15,515.20 | -74,591.81 | 0.27 | 0.25 | 0.25 |
| | Median | 1.00 | 15,000.00 | 20,800.50 | 1.00 | 1.00 | 1.00 |
| $Q_{LG}$ | Mean | 0.60 | -66,870.50 | -529,953.10 | 0.01 | -0.04 | -0.05 |
| | Median | 0.00 | -3,000.00 | -15,268.84 | 0.00 | -0.66 | -0.67 |
| $Q_{LV}$ | Mean | 1.18 | -2,854.13 | -20,612.60 | 0.27 | 0.22 | 0.22 |
| | Median | 1.00 | 6,000.50 | 20,240.50 | 1.00 | 1.00 | 1.00 |

## Table 11: Cumulative Abnormal Returns based on Value Weighted returns of Size and CF/P matched Benchmark Portfolio.

This table reports the mean Cumulative Average Abnormal returns for directors buy trades and sell trades, using value-weighted size and CF/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. t is the standardised cross sectional t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the CF/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | %pos | t | p-value | Mean (%) | %pos | t | p-value |
| | (-6,0) | 0.11 | 48.92 | 0.12 | 0.9051 | 13.99 | 71.33 | 19.72 | <.0001 |
| $Q_{SG}$ | (0,+6) | 3.96 | 55.41 | 4.22 | <.0001 | 1.95 | 54.13 | 2.75 | 0.0060 |
| | (0,+12) | 6.48 | 57.75 | 4.95 | <.0001 | 1.23 | 51.54 | 1.17 | 0.2429 |
| | (0,+18) | 5.98 | 55.41 | 3.68 | 0.0002 | -0.17 | 49.35 | -0.14 | 0.8927 |
| | (0,+24) | 7.48 | 56.49 | 4.24 | <.0001 | -0.40 | 48.74 | -0.27 | 0.7884 |
| $Q_{SV}$ | (-6,0) | -3.17 | 45.55 | -5.25 | <.0001 | 9.24 | 65.41 | 14.38 | <.0001 |
| | (0,+6) | 5.45 | 58.64 | 9.22 | <.0001 | 0.45 | 52.26 | 0.69 | 0.4877 |
| | (0,+12) | 7.73 | 60.08 | 9.27 | <.0001 | 0.44 | 50.27 | 0.45 | 0.6499 |
| | (0,+18) | 7.91 | 59.22 | 7.79 | <.0001 | 0.05 | 50.34 | 0.04 | 0.9703 |
| | (0,+24) | 8.17 | 59.39 | 7.00 | <.0001 | -0.15 | 50.62 | -0.11 | 0.9128 |
| $Q_{LG}$ | (-6,0) | -3.83 | 46.57 | -3.29 | 0.0010 | 8.71 | 65.61 | 8.46 | <.0001 |
| | (0,+6) | -0.73 | 46.98 | -0.69 | 0.4915 | 0.60 | 50.53 | 0.61 | 0.5449 |
| | (0,+12) | 0.65 | 49.80 | 0.40 | 0.6893 | -1.58 | 49.47 | -1.11 | 0.2678 |
| | (0,+18) | 0.87 | 53.83 | 0.42 | 0.6732 | -3.82 | 48.95 | -2.12 | 0.0342 |
| | (0,+24) | 2.89 | 56.45 | 1.22 | 0.2218 | -4.74 | 46.49 | -2.32 | 0.0204 |
| $Q_{LV}$ | (-6,0) | -6.30 | 37.29 | -7.37 | <.0001 | 4.60 | 64.18 | 5.99 | <.0001 |
| | (0,+6) | 1.21 | 53.42 | 1.45 | 0.1482 | 0.31 | 49.28 | 0.40 | 0.6930 |
| | (0,+12) | 1.50 | 59.06 | 1.30 | 0.1949 | -0.43 | 53.61 | -0.36 | 0.7159 |
| | (0,+18) | 0.83 | 56.62 | 0.59 | 0.5576 | -3.20 | 50.48 | -2.08 | 0.0378 |
| | (0,+24) | 1.98 | 56.01 | 1.33 | 0.1833 | -5.60 | 48.56 | -3.34 | 0.0009 |

## Table 12: Buy and Hold Abnormal Returns based on Value Weighted returns of Size and CF/P matched Benchmark Portfolio.

This table reports the mean Buy and Hold Abnormal returns for directors buy trades and sell trades, using value-weighted size and CF/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. Boot-t is the skewness adjusted t-statistics and is based on the Hall (1992) adjustment for skewness. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the CF/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | %pos | Boot-t | p-value | Mean (%) | %pos | Boot-t | p-value |
| $Q_{SG}$ | (-6,0) | 0.44 | 44.95 | 0.447 | 0.6713 | 16.50 | 68.67 | 24.16 | <.0001 |
| | (0,+6) | 3.97 | 50.72 | 4.119 | <.0001 | 2.26 | 50.65 | 2.992 | 0.0020 |
| | (0,+12) | 8.26 | 50.00 | 5.354 | <.0001 | 2.93 | 46.62 | 2.415 | 0.0100 |
| | (0,+18) | 9.91 | 48.29 | 4.692 | <.0001 | 2.37 | 43.14 | 1.547 | 0.1159 |
| | (0,+24) | 11.51 | 46.13 | 4.857 | <.0001 | 2.69 | 40.89 | 1.436 | 0.1319 |
| $Q_{SV}$ | (-6,0) | -2.96 | 41.14 | -4.571 | <.0001 | 10.63 | 61.85 | 15.563 | <.0001 |
| | (0,+6) | 5.31 | 53.94 | 8.457 | <.0001 | 0.65 | 49.18 | 0.934 | 0.3956 |
| | (0,+12) | 9.71 | 53.43 | 10.231 | <.0001 | 2.42 | 46.78 | 2.108 | 0.0559 |
| | (0,+18) | 11.43 | 52.08 | 9.276 | <.0001 | 3.44 | 45.00 | 2.341 | 0.0360 |
| | (0,+24) | 13.33 | 50.86 | 8.872 | <.0001 | 4.81 | 44.52 | 2.588 | 0.0160 |
| $Q_{LG}$ | (-6,0) | -3.65 | 42.74 | -2.671 | 0.1598 | 10.23 | 61.75 | 10.226 | <.0001 |
| | (0,+6) | -1.62 | 43.15 | -1.464 | 0.7752 | 0.50 | 47.02 | 0.468 | 0.6254 |
| | (0,+12) | 0.55 | 45.36 | 0.317 | 0.7592 | -1.36 | 44.91 | -0.901 | 0.3856 |
| | (0,+18) | 0.68 | 46.17 | 0.317 | 0.3716 | -3.98 | 42.63 | -2.065 | 0.0480 |
| | (0,+24) | 2.10 | 46.57 | 0.86 | 0.8252 | -5.49 | 39.82 | -2.305 | 0.0400 |
| $Q_{LV}$ | (-6,0) | -6.71 | 35.01 | -6.913 | 0.5435 | 4.28 | 59.86 | 5.016 | <.0001 |
| | (0,+6) | 0.52 | 48.86 | 0.573 | 0.7473 | -0.84 | 46.15 | -0.992 | 0.3117 |
| | (0,+12) | 0.33 | 52.21 | 0.243 | 0.6713 | -2.00 | 46.88 | -1.498 | 0.1698 |
| | (0,+18) | -0.76 | 49.32 | -0.44 | 0.7952 | -5.25 | 44.23 | -2.367 | 0.0400 |
| | (0,+24) | -0.61 | 47.18 | -0.305 | 0.9750 | -10.23 | 41.59 | -5.244 | 0.0020 |

## Table 13: Alphas from the Fama-French Three factor Calendar Time Portfolio Regressions for the value-glamour categories defined by CF/P.

This table reports the calendar-time abnormal returns (in decimals) using OLS regression for 6month, 12 months, 18 months and 24 months holding periods. APR is the equivalent annual percentage rate of the monthly abnormal returns. The abnormal returns are the $\alpha s$ from the regression $R_{Pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$. The SMB is the returns to a small minus big factor mimicking portfolio, the HML is the returns to high B/M minus low B/M factor mimicking portfolio. The OLS-t is a heteroskedasticity corrected (using white's procedure) t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the CF/P ratios. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% and levels, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

| Interval | | Buys | | | Sells | | |
|---|---|---|---|---|---|---|---|
| | Group | AR (%) | APR (%) | Ols-t | AR (%) | APR (%) | Ols-t |
| 6-Month | $Q_{SG}$ | 0.22 | 2.67 | 0.84 | 0.12 | 1.45 | 0.45 |
| | $Q_{SV}$ | 1.15 | 14.71 | 5.73*** | 0.23 | 2.80 | 1.12 |
| | $Q_{LG}$ | -0.20 | -2.37 | -0.84 | 0.01 | 0.12 | 0.05 |
| | $Q_{LV}$ | 0.18 | 2.18 | 0.82 | 0.41 | 5.03 | 1.64 |
| 12-Month | $Q_{SG}$ | 0.17 | 2.06 | 0.75 | -0.11 | -1.31 | -0.45 |
| | $Q_{SV}$ | 0.93 | 11.75 | 4.93*** | 0.24 | 2.92 | 1.30 |
| | $Q_{LG}$ | -0.29 | -3.43 | -1.41 | -0.39 | -4.58 | -1.50 |
| | $Q_{LV}$ | 0.20 | 2.43 | 1.11 | 0.34 | 4.16 | 1.67* |
| 18-Month | $Q_{SG}$ | 0.02 | 0.24 | 0.12 | -0.27 | -3.19 | -1.16 |
| | $Q_{SV}$ | 0.74 | 9.25 | 4.04*** | 0.20 | 2.43 | 1.10 |
| | $Q_{LG}$ | -0.30 | -3.54 | -1.55 | -0.45 | -5.27 | -1.96** |
| | $Q_{LV}$ | 0.21 | 2.55 | 1.19 | 0.20 | 2.43 | 1.06 |
| 24-Month | $Q_{SG}$ | -0.05 | -0.60 | -0.27 | -0.30 | -3.54 | -1.43 |
| | $Q_{SV}$ | 0.69 | 8.60 | 3.95*** | 0.20 | 2.43 | 1.13 |
| | $Q_{LG}$ | -0.27 | -3.19 | -1.54 | -0.39 | -4.58 | -1.80* |
| | $Q_{LV}$ | 0.26 | 3.17 | 1.61 | 0.17 | 2.06 | 1.00 |

## Table 14: Directors Trade related Statistics for the Size and E/P groups.

This table reports the means and median for various directors' trading related measures for the different groups formed on the basis of size and the E/P ratio. $Q_{SG}$ are small glamour firms, $Q_{SV}$ are small value firms, $Q_{LG}$ are large glamour firms and $Q_{LV}$ are large value firms. npr, npn and npv are net purchase ratio, net number ratio, and the net value ratio. npr is calculated as (no. of Purchases – no. of Sales)/(no. of Purchases+ no. of Sales), npn and npv are calculated similarly, but using number of shares traded and the value of shares traded. Nonet is the net number of shares traded. Valnet is the net value of the shares traded. Freqnet is the net number of transactions.

| Group | Statistic | freqnet | nonet | valnet | npr | npv | npn |
|---|---|---|---|---|---|---|---|
| $Q_{SG}$ | **Mean** | 0.12 | -86,526.04 | -375,099.20 | 0.00 | -0.03 | -0.03 |
| | **Median** | 0.00 | -5,000.00 | -13,825.00 | 0.00 | -0.68 | -0.67 |
| $Q_{SV}$ | **Mean** | 0.66 | -15,033.32 | -110,487.60 | 0.18 | 0.15 | 0.15 |
| | **Median** | 1.00 | 10,000.00 | 18,774.57 | 1.00 | 1.00 | 1.00 |
| $Q_{LG}$ | **Mean** | 0.54 | -53,650.26 | -469,004.20 | 0.05 | -0.01 | -0.01 |
| | **Median** | 1.00 | -1,501.50 | -11,405.00 | 0.26 | -0.35 | -0.33 |
| $Q_{LV}$ | **Mean** | 1.02 | -20,909.36 | -85,663.50 | 0.20 | 0.13 | 0.13 |
| | **Median** | 1.00 | 4,000.00 | 17,987.29 | 1.00 | 1.00 | 1.00 |

## Table 15: Cumulative Abnormal Returns based on Value Weighted returns of Size and E/P matched Benchmark Portfolio.

This table reports the mean Cumulative Average Abnormal returns for directors buy trades and sell trades, using value-weighted size and E/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. t is the standardised cross sectional t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the E/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Interval** | **Mean (%)** | **% Pos** | **t** | **p-value** | **Mean (%)** | **% Pos** | **t** | **p-value** |
| $Q_{SG}$ | **(-6,0)** | -1.29 | 48.50 | -1.46 | 0.1434 | 13.24 | 70.62 | 16.36 | <.0001 |
| | **(0,+6)** | 3.89 | 57.32 | 4.45 | <.0001 | 1.69 | 54.74 | 2.20 | 0.0281 |
| | **(0,+12)** | 6.21 | 58.55 | 4.99 | <.0001 | 2.12 | 54.14 | 1.83 | 0.0675 |
| | **(0,+18)** | 6.73 | 58.55 | 4.31 | <.0001 | 1.37 | 52.35 | 0.94 | 0.3489 |
| | **(0,+24)** | 8.69 | 57.67 | 5.10 | <.0001 | 1.65 | 52.01 | 0.98 | 0.3260 |
| $Q_{SV}$ | **(-6,0)** | -4.44 | 43.65 | -7.66 | <.0001 | 8.72 | 64.91 | 15.56 | <.0001 |
| | **(0,+6)** | 4.37 | 56.77 | 7.53 | <.0001 | 0.84 | 52.42 | 1.37 | 0.1703 |
| | **(0,+12)** | 7.18 | 60.40 | 8.63 | <.0001 | -0.10 | 51.76 | -0.12 | 0.9076 |
| | **(0,+18)** | 7.81 | 59.12 | 7.60 | <.0001 | -0.68 | 51.10 | -0.61 | 0.5390 |
| | **(0,+24)** | 7.80 | 58.96 | 6.62 | <.0001 | -0.93 | 50.83 | -0.74 | 0.4593 |
| $Q_{LG}$ | **(-6,0)** | -5.00 | 42.03 | -4.26 | <.0001 | 8.89 | 67.90 | 7.75 | <.0001 |
| | **(0,+6)** | -0.89 | 47.34 | -0.76 | 0.4487 | 1.44 | 51.04 | 1.29 | 0.1976 |
| | **(0,+12)** | -0.55 | 47.83 | -0.35 | 0.7271 | -0.34 | 50.58 | -0.21 | 0.8332 |
| | **(0,+18)** | 0.02 | 51.21 | 0.01 | 0.9931 | -1.81 | 50.12 | -0.90 | 0.3667 |
| | **(0,+24)** | 3.15 | 53.38 | 1.37 | 0.1711 | -3.18 | 50.12 | -1.36 | 0.1730 |
| $Q_{LV}$ | **(-6,0)** | -6.38 | 39.36 | -7.43 | <.0001 | 4.14 | 61.76 | 5.54 | <.0001 |
| | **(0,+6)** | 0.38 | 54.72 | 0.46 | 0.6453 | 0.92 | 52.97 | 1.22 | 0.2241 |
| | **(0,+12)** | 0.21 | 54.24 | 0.19 | 0.8536 | 0.81 | 51.94 | 0.75 | 0.4514 |
| | **(0,+18)** | 0.73 | 55.04 | 0.53 | 0.5976 | -1.79 | 50.51 | -1.32 | 0.1862 |
| | **(0,+24)** | 0.07 | 51.20 | 0.05 | 0.9613 | -4.74 | 48.26 | -3.19 | 0.0014 |

## Table 16: Buy and Hold Abnormal Returns based on Value Weighted returns of Size and E/P matched Benchmark Portfolio.

This table reports the mean Buy and Hold Abnormal returns for directors buy trades and sell trades, using value-weighted size and E/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. Boot-t is the skewness adjusted t-statistics and is based on the Hall (1992) adjustment for skewness. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the E/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | % Pos | Boot-t | p-value | Mean (%) | % Pos | Boot-t | p-value |
| $Q_{SG}$ | (-6,0) | -0.37 | 44.62 | -0.39 | 0.7233 | 15.85 | 67.21 | 20.19 | <.0001 |
| | (0,+6) | 4.20 | 52.91 | 4.65 | <.0001 | 1.90 | 50.98 | 2.34 | 0.0200 |
| | (0,+12) | 8.54 | 53.79 | 5.89 | <.0001 | 3.88 | 47.91 | 3.03 | 0.0040 |
| | (0,+18) | 11.77 | 51.41 | 5.92 | <.0001 | 5.05 | 46.20 | 2.99 | <.0001 |
| | (0,+24) | 15.05 | 51.06 | 6.44 | <.0001 | 6.56 | 45.35 | 3.27 | <.0001 |
| $Q_{SV}$ | (-6,0) | -4.18 | 39.40 | -6.76 | 0.0020 | 9.94 | 61.33 | 16.71 | <.0001 |
| | (0,+6) | 4.33 | 52.07 | 6.95 | <.0001 | 1.36 | 49.67 | 2.04 | 0.0410 |
| | (0,+12) | 9.34 | 53.82 | 9.84 | <.0001 | 2.07 | 47.25 | 2.01 | 0.0446 |
| | (0,+18) | 12.08 | 51.61 | 9.66 | <.0001 | 2.82 | 45.65 | 2.14 | 0.0324 |
| | (0,+24) | 13.97 | 50.64 | 9.05 | <.0001 | 4.19 | 44.83 | 2.53 | 0.0113 |
| $Q_{LG}$ | (-6,0) | -4.31 | 40.34 | -2.83 | 0.0240 | 10.23 | 64.67 | 9.31 | <.0001 |
| | (0,+6) | -1.38 | 43.48 | -1.18 | 0.2498 | 1.51 | 47.11 | 1.26 | 0.2093 |
| | (0,+12) | -1.63 | 43.96 | -1.02 | 0.3077 | 0.28 | 47.81 | 0.17 | 0.8682 |
| | (0,+18) | -1.45 | 42.03 | -0.68 | 0.4755 | -1.52 | 43.65 | -0.74 | 0.4568 |
| | (0,+24) | 1.09 | 47.34 | 0.46 | 0.6374 | -2.96 | 45.03 | -1.15 | 0.2523 |
| $Q_{LV}$ | (-6,0) | -6.73 | 36.80 | -7.15 | <.0001 | 3.71 | 58.28 | 4.54 | <.0001 |
| | (0,+6) | -0.31 | 49.92 | -0.34 | 0.7379 | 0.21 | 48.47 | 0.26 | 0.7957 |
| | (0,+12) | -0.95 | 48.48 | -0.72 | 0.4730 | -0.32 | 47.85 | -0.26 | 0.7949 |
| | (0,+18) | -0.97 | 47.20 | -0.56 | 0.5731 | -3.61 | 43.97 | -1.92 | 0.0548 |
| | (0,+24) | -2.52 | 43.04 | -1.16 | 0.2479 | -8.41 | 40.29 | -4.58 | <.0001 |

## Table 17: Alphas from the Fama-French Three factor Calendar Time Portfolio Regressions for the value-glamour categories defined by E/P.

This table reports the calendar-time abnormal returns (in decimals) using OLS regression for 6month, 12 months, 18 months and 24 months holding periods. APR is the equivalent annual percentage rate of the monthly abnormal returns. The abnormal returns are the $\alpha s$ from the regression $R_{Pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$. The SMB is the returns to a small minus big factor mimicking portfolio, the HML is the returns to high B/M minus low B/M factor mimicking portfolio. The OLS-t is a heteroskedasticity corrected (using white's procedure) t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the CF/P ratios. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% and levels, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

| Interval | | Buys | | | Sells | | |
|---|---|---|---|---|---|---|---|
| | Group | AR (%) | APR (%) | OLS-t | AR (%) | APR (%) | OLS-t |
| 6-month | $Q_{SG}$ | 0.38 | 4.66 | 1.58 | 0.10 | 1.21 | 0.34 |
| | $Q_{SV}$ | 1.10 | 14.03 | 6.10*** | 0.37 | 4.53 | 2.10** |
| | $Q_{LG}$ | -0.19 | -2.26 | -0.72 | 0.34 | 4.16 | 1.19 |
| | $Q_{LV}$ | 0.12 | 1.45 | 0.55 | 0.55 | 6.80 | 2.75*** |
| 12-month | $Q_{SG}$ | 0.28 | 3.41 | 1.39 | -0.10 | -1.19 | -0.36 |
| | $Q_{SV}$ | 0.95 | 12.02 | 5.47*** | 0.29 | 3.54 | 1.83* |
| | $Q_{LG}$ | -0.35 | -4.12 | -1.54 | -0.13 | -1.55 | -0.45 |
| | $Q_{LV}$ | 0.11 | 1.33 | 0.63 | 0.52 | 6.42 | 2.88*** |
| 18-month | $Q_{SG}$ | 0.14 | 1.69 | 0.75 | -0.19 | -2.26 | -0.80 |
| | $Q_{SV}$ | 0.81 | 10.17 | 4.84*** | 0.23 | 2.80 | 1.53 |
| | $Q_{LG}$ | -0.26 | -3.08 | -1.22 | -0.13 | -1.55 | -0.51 |
| | $Q_{LV}$ | 0.19 | 2.30 | 1.16 | 0.27 | 3.29 | 1.64 |
| 24-month | $Q_{SG}$ | 0.13 | 1.57 | 0.74 | -0.13 | -1.55 | -0.64 |
| | $Q_{SV}$ | 0.72 | 8.99 | 4.40*** | 0.21 | 2.55 | 1.45 |
| | $Q_{LG}$ | -0.13 | -1.55 | -0.65 | -0.10 | -1.19 | -0.43 |
| | $Q_{LV}$ | 0.18 | 2.18 | 1.20 | 0.17 | 2.06 | 1.08 |

## Table 18: Directors Trade related Statistics for the Size and D/P groups.

This table reports the means and median for various directors' trading related measures for the different groups formed on the basis of size and the D/P ratio. $Q_{SG}$ are small glamour firms, $Q_{SV}$ are small value firms, $Q_{LG}$ are large glamour firms and $Q_{LV}$ are large value firms. npr, npn and npv are net purchase ratio, net number ratio, and the net value ratio. npr is calculated as (no. of Purchases – no. of Sales)/(no. of Purchases+ no. of Sales), npn and npv are calculated similarly, but using number of shares traded and the value of shares traded. Nonet is the net number of shares traded. Valnet is the net value of the shares traded. Freqnet is the net number of transactions.

| Group | Statistic | freqnet | nonet | valnet | npr | npv | npn |
|---|---|---|---|---|---|---|---|
| $Q_{SG}$ | Mean | -0.18 | -136,643.80 | -507,240.30 | -0.17 | -0.20 | -0.20 |
| | Median | -1.00 | -11,144.50 | -33,126.46 | -1.00 | -1.00 | -1.00 |
| $Q_{SV}$ | Mean | 1.04 | 19,561.84 | -42,369.85 | 0.32 | 0.31 | 0.30 |
| | Median | 1.00 | 16,554.00 | 22,500.00 | 1.00 | 1.00 | 1.00 |
| $Q_{LG}$ | Mean | 0.07 | -92,897.33 | -617,816.30 | -0.12 | -0.17 | -0.17 |
| | Median | -1.00 | -6,602.00 | -26,093.92 | -0.50 | -1.00 | -1.00 |
| $Q_{LV}$ | Mean | 1.53 | 33,965.18 | 132,937.40 | 0.38 | 0.34 | 0.34 |
| | Median | 1.00 | 9,251.00 | 24,518.75 | 1.00 | 1.00 | 1.00 |

## Table 19: Cumulative Abnormal Returns based on Value Weighted returns of Size and D/P matched Benchmark Portfolio.

This table reports the mean Cumulative Average Abnormal returns for directors buy trades and sell trades, using value-weighted size and D/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. t is the standardised cross sectional t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the D/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | %pos | t | p-value | Mean (%) | %pos | t | p-value |
| $Q_{SG}$ | (-6,0) | -2.66 | 44.84 | -2.87 | 0.0041 | 12.43 | 70.80 | 20.43 | <.0001 |
| | (0,+6) | 2.42 | 55.25 | 2.62 | 0.0088 | 1.37 | 53.37 | 2.09 | 0.0371 |
| | (0,+12) | 4.93 | 55.68 | 3.85 | 0.0001 | 2.12 | 53.93 | 2.23 | 0.0255 |
| | (0,+18) | 4.63 | 53.70 | 2.90 | 0.0037 | 1.24 | 52.01 | 1.04 | 0.3003 |
| | (0,+24) | 6.02 | 54.30 | 3.41 | 0.0007 | 1.60 | 51.78 | 1.17 | 0.2430 |
| $Q_{SV}$ | (-6,0) | -3.42 | 45.55 | -5.33 | <.0001 | 8.48 | 64.85 | 12.42 | <.0001 |
| | (0,+6) | 5.64 | 60.08 | 9.17 | <.0001 | -0.10 | 49.28 | -0.15 | 0.8818 |
| | (0,+12) | 8.27 | 62.06 | 9.56 | <.0001 | -0.80 | 48.66 | -0.80 | 0.4238 |
| | (0,+18) | 8.90 | 61.12 | 8.49 | <.0001 | -0.66 | 50.09 | -0.52 | 0.6032 |
| | (0,+24) | 9.38 | 61.31 | 7.92 | <.0001 | 0.11 | 52.33 | 0.08 | 0.9360 |
| $Q_{LG}$ | (-6,0) | -1.67 | 51.02 | -1.32 | 0.1863 | 8.11 | 67.89 | 8.71 | <.0001 |
| | (0,+6) | -1.46 | 52.28 | -1.14 | 0.2538 | 2.20 | 55.44 | 2.31 | 0.0211 |
| | (0,+12) | 1.44 | 54.06 | 0.86 | 0.3905 | 2.22 | 55.26 | 1.66 | 0.0974 |
| | (0,+18) | 4.20 | 58.63 | 1.95 | 0.0517 | 1.22 | 53.33 | 0.69 | 0.4896 |
| | (0,+24) | 6.29 | 59.64 | 2.53 | 0.0113 | 0.89 | 53.68 | 0.44 | 0.6635 |
| $Q_{LV}$ | (-6,0) | -7.11 | 38.68 | -8.27 | <.0001 | 3.25 | 55.91 | 3.90 | <.0001 |
| | (0,+6) | 0.56 | 51.97 | 0.67 | 0.5050 | -0.60 | 47.85 | -0.75 | 0.4562 |
| | (0,+12) | 0.91 | 55.00 | 0.80 | 0.4249 | -1.62 | 51.34 | -1.29 | 0.1982 |
| | (0,+18) | 1.21 | 55.26 | 0.92 | 0.3580 | -3.59 | 49.73 | -2.33 | 0.0200 |
| | (0,+24) | 3.24 | 56.71 | 2.37 | 0.0177 | -5.00 | 45.97 | -3.08 | 0.0021 |

## Table 20: Buy and Hold Abnormal Returns based on Value Weighted returns of Size and D/P matched Benchmark Portfolio.

This table reports the mean Buy and Hold Abnormal returns for directors buy trades and sell trades, using value-weighted size and D/P matched benchmark portfolio returns. % pos show the proportion of firms with positive abnormal returns. Boot-t is the skewness adjusted t-statistics and is based on the Hall (1992) adjustment for skewness. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the D/P ratios.

| Group | | Buys | | | | Sells | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Interval | Mean (%) | %pos | Boot-t | p-value | Mean (%) | %pos | Boot-t | p-value |
| $Q_{SG}$ | (-6,0) | -1.62 | 41.74 | -1.63 | 0.1399 | 14.28 | 68.14 | 24.12 | <.0001 |
| | (0,+6) | 2.81 | 50.60 | 2.83 | 0.0040 | 2.22 | 51.22 | 3.12 | 0.0020 |
| | (0,+12) | 6.30 | 48.45 | 4.22 | <.0001 | 4.57 | 49.24 | 4.23 | <.0001 |
| | (0,+18) | 8.43 | 47.68 | 4.02 | <.0001 | 5.67 | 46.41 | 3.97 | <.0001 |
| | (0,+24) | 10.98 | 46.13 | 4.57 | <.0001 | 6.99 | 45.22 | 4.05 | <.0001 |
| $Q_{SV}$ | (-6,0) | -3.23 | 40.40 | -4.65 | <.0001 | 9.42 | 61.00 | 13.25 | <.0001 |
| | (0,+6) | 5.59 | 54.97 | 8.58 | <.0001 | -0.23 | 46.78 | -0.31 | 0.7588 |
| | (0,+12) | 9.91 | 54.92 | 10.47 | <.0001 | -0.08 | 44.90 | -0.07 | 0.9430 |
| | (0,+18) | 11.91 | 53.36 | 9.92 | <.0001 | 1.05 | 44.36 | 0.72 | 0.4697 |
| | (0,+24) | 13.18 | 51.70 | 8.90 | <.0001 | 2.24 | 45.17 | 1.23 | 0.2172 |
| $Q_{LG}$ | (-6,0) | -1.15 | 47.97 | -0.82 | 0.4145 | 9.02 | 63.33 | 9.82 | <.0001 |
| | (0,+6) | -1.82 | 47.72 | -1.49 | 0.1354 | 2.25 | 51.23 | 2.24 | 0.0250 |
| | (0,+12) | 0.07 | 48.98 | 0.04 | 0.9675 | 2.10 | 49.82 | 1.47 | 0.1408 |
| | (0,+18) | 2.23 | 51.78 | 1.03 | 0.3021 | 0.93 | 49.30 | 0.51 | 0.6098 |
| | (0,+24) | 3.02 | 52.79 | 1.19 | 0.2332 | 0.70 | 47.89 | 0.31 | 0.7594 |
| $Q_{LV}$ | (-6,0) | -7.39 | 34.74 | -7.85 | <.0001 | 2.93 | 53.76 | 3.16 | 0.0016 |
| | (0,+6) | -0.06 | 46.97 | -0.07 | 0.9475 | -1.73 | 44.62 | -1.99 | 0.0471 |
| | (0,+12) | -0.11 | 49.47 | -0.08 | 0.9347 | -3.13 | 46.24 | -2.42 | 0.0156 |
| | (0,+18) | -0.54 | 47.11 | -0.33 | 0.7389 | -5.77 | 43.28 | -3.57 | 0.0004 |
| | (0,+24) | 0.39 | 48.16 | 0.21 | 0.8314 | -9.13 | 40.05 | -4.92 | <.0001 |

## Table 21: Alphas from the Fama-French Three factor Calendar Time Portfolio Regressions for the value-glamour categories defined by D/P.

This table reports the calendar-time abnormal returns (in decimals) using OLS regression for 6month, 12 months, 18 months and 24 months holding periods. APR is the equivalent annual percentage rate of the monthly abnormal returns. The abnormal returns are the $\alpha s$ from the regression $R_{Pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$. The SMB is the returns to a small minus big factor mimicking portfolio, the HML is the returns to high B/M minus low B/M factor mimicking portfolio. The OLS-t is a heteroskedasticity corrected (using white's procedure) t-statistic. $Q_{SG}$ is the small glamour group, $Q_{SV}$ is the small value group, $Q_{LG}$ is the large glamour group and $Q_{LV}$ is the large value group formed on the basis of their size and the CF/P ratios. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% and levels, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

| Interval | | Buy | | | Sell | | |
|---|---|---|---|---|---|---|---|
| | Group | AR (%) | APR (%) | OLS-t | AR (%) | APR (%) | OLS-t |
| 6 Month | $Q_{SG}$ | 0.43 | 5.28 | 1.57 | 0.18 | 2.18 | 0.72 |
| | $Q_{SV}$ | 1.37 | 17.74 | 7.16*** | 0.28 | 3.41 | 1.42 |
| | $Q_{LG}$ | -0.24 | -2.84 | -1.02 | 0.30 | 3.66 | 1.18 |
| | $Q_{LV}$ | -0.02 | -0.24 | -0.09 | 0.17 | 2.06 | 0.71 |
| 12-Month | $Q_{SG}$ | 0.31 | 3.78 | 1.38 | 0.20 | 2.43 | 0.86 |
| | $Q_{SV}$ | 1.07 | 13.62 | 5.98*** | 0.28 | 3.41 | 1.54 |
| | $Q_{LG}$ | -0.30 | -3.54 | -1.53 | 0.02 | 0.24 | 0.07 |
| | $Q_{LV}$ | 0.01 | 0.12 | 0.04 | 0.23 | 2.80 | 1.09 |
| 18-Month | $Q_{SG}$ | 0.12 | 1.45 | 0.61 | -0.02 | -0.24 | -0.08 |
| | $Q_{SV}$ | 0.88 | 11.09 | 5.04*** | 0.27 | 3.29 | 1.58 |
| | $Q_{LG}$ | -0.26 | -3.08 | -1.46 | -0.16 | -1.90 | -0.78 |
| | $Q_{LV}$ | 0.09 | 1.09 | 0.51 | 0.17 | 2.06 | 0.96 |
| 24-Month | $Q_{SG}$ | 0.09 | 1.09 | 0.45 | -0.03 | -0.36 | -0.13 |
| | $Q_{SV}$ | 0.78 | 9.77 | 4.66*** | 0.30 | 3.66 | 1.87* |
| | $Q_{LG}$ | -0.26 | -3.08 | -1.48 | -0.21 | -2.49 | -1.17 |
| | $Q_{LV}$ | 0.17 | 2.06 | 0.99 | 0.21 | 2.55 | 1.24 |

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# Appendix

## Correlations between the Mcap, B/M, CF/P, D/P and E/P

This table reports the correlation coefficients between the Mcap. , B/M, CF/P, D/P and E/P. These correlations are the averages of the yearly correlations over the eighteen years from 1986-2003. Mcap is the Market Capitalisation, B/M is the Book to Market ratio, CF/P is the Cash Flow to Price ratio, D/P is the Dividend to Price ratio and E/P is the Earnings to Price ratio.

| Variables | Mcap | B/M | CF/P | D/P | E/P |
|---|---|---|---|---|---|
| **Mcap** | 1.00 | . | . | . | . |
| **B/M** | -0.07 | 1.00 | . | . | . |
| **CF/P** | 0.00 | 0.33 | 1.00 | . | . |
| **D/P** | 0.02 | 0.43 | 0.42 | 1.00 | . |
| **E/P** | 0.02 | 0.23 | 0.68 | 0.31 | 1.00 |