THE INCONGRUENT VALUE-GROWTH STRATEGY IN THE SPANISH MARKET

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ABSTRACT

The Asset-Pricing Model of Sharpe (1964), Lintner (1965), and Black (1972) –also known as the CAPM– has long shaped the way that academic research and investment practice think about average returns and risk. Nonetheless, since then, many works have presented evidence suggesting that the CAPM is misspecified, due to the achievement of abnormal returns through different value measures (e.g., Price-to-Earnings, Book-to-Market or Price-to-Cash Flow). However, interpreting these superior returns has been more controversial: are they only a compensation for common risk or are we facing a mispricing story? The evidence presented by Piotroski and So (2012) clearly goes against the idea, supported by Fama and French (1992), that the superior returns of the value strategy represent compensation for risk. They demonstrate that, for a given set of high book-to-market firms, fundamentally riskier stocks perform worse than healthier stocks. We find that Piotrosky and So's (2012) results are not exclusive to the US market but are also observed in the Spanish market. This out-of-sample evidence reduces the possibility of the Piotrosky and So (2012) evidence being spurious or the result of data-mining. Another contribution of this paper is to extend the testable hypothesis of Piotrosty and So (2012) with the momentum phenomenon of Jegadeesh and Titman (1993).

Keywords: value-glamour stocks, mispricing, rational pricing, momentum

JEL classification: G14, G11, M41

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1. INTRODUCTION

There is extensive U.S. evidence that the market beta is not able to fully capture the cross-sectional differences in average stock returns in the way the CAPM model predicts. However, the average stock returns seem to be highly related to some stock characteristics such as size and fundamental/market ratios. Concretely, small stocks outperform big stocks and high-fundamental/market stocks (value stocks) outperform low-fundamental/market stocks (growth or glamour stocks). Fama and French (1992, 1993) show that size and book-to-market (hereafter BM) characteristics play a dominant role in capturing the cross-section of stock returns and suggest an extension of the CAPM that includes two additional factors: a small-minus-big (SMB) zero-cost portfolio, which is based on firm size, and a high-minus-low (HML) zero-cost portfolio based on the BM value of the stock. Fama and French (1993) demonstrate that this three-factor model (hereafter the FF model) explains the average returns of U.S. stocks better than the CAPM. The good performance of this model has been confirmed in subsequent works (Fama and French, 1996; Lawrence et al., 2007).

However, the correct interpretation of the results obtained with the FF model depends on whether the SMB and HML factors are actually proxying for some underlying risk factors and therefore are capturing the rational reward for supporting this risk. There is a major controversy in the finance literature about whether the FF factors are proxying for some risk factors or whether, on the contrary, the good performance of this model is spurious or the effect of a mispricing story, with irrational investors driving stock prices.

Fama and French (1993, 1995) argue a rational-pricing story (that is, a risk -based explanation) of their SMB and HML factors. In the context of a multifactorial version of the Intertemporal Asset Pricing Model, ICAPM (Merton, 1973), or the Arbitrage Pricing Theory, APT (Ross, 1976), they state that the SMB and HML factors proxy for sensitivity to common risk factors in returns like default risk and the relative prospects of firms.

A related literature offers evidence to support this conjecture. Fama and French (1995) find that high BM firms tend to be persistently distressed and low BM firms are associated with sustained profitability, and small stocks tend to be less profitable than large stocks.[1] Liew and Vassalou (2000) show that the SMB and HML portfolio returns contain significant information about future growth in GDP in several countries. Vassalou

[1] De Peña, Forner and Lopez-Espinosa (2010) find similar results for the Spanish stock market.

and Xing (2004) conclude that size and BM effects are related to default risk and can be viewed as default effects. In the same line, Hahn and Lee (2006) find that changes in term and default yield spreads capture most of the systematic risks proxied by size and BM effects. Kelly (2003) presents evidence from 18 countries that HML and SMB portfolios are correlated with future innovations in inflation and real economic growth. Brennan et al. (2001) find, using U.S. stock returns, that these portfolios do indeed have predictive power for both the real interest rate and the Sharpe ratio. Simpson and Ramchander (2008) show the ability of the FF three-factor model to capture information related to a number of macroeconomic variables, such as personal consumption and the consumer price index. Santos and Veronesi (2010) and Campbell, Polk and Vuolteenaho (2010) show that value and growth firms covary differently with macroeconomic risks in the economy. All these results support the hypothesis that SMB and HML act as state variables of the ICAPM.

Conversely, Lakonishok et al. (1994) suggest a mispricing story. As with FF (1995), Lakonishok et al. (1994) find that high fundamental/market stocks (including BM) tend to be distressed firms with persistently low earnings, and low fundamental/price stocks tend to be strong (growth) firms with persistently high earnings. However, in contrast to FF (1995), Lakonishok et al. (1994) argue that the BM premium comes from the fact that investors are overly pessimistic about distressed stocks and overly optimistic about growth stocks; thus they over-extrapolate this performance to the future, underpricing (overpricing) distressed (growth) stocks. The posterior price adjustment will justify the BM premium. Consistent with this argument Lakonishok et al. (1994) document that BM ratios are positivly related to future earnings, cash flows and revenue growth. This story is also supported in Japan (Cai, 1997; and Chang et al., 1995) and the UK (Gregory et al., 2003). In this line, La Porta, Lakonishok, Shleifer and Vishny (1997) study stock price reactions around earnings announcements for value and glamour stocks over a 5-year period after portfolio formation and find that a significant portion of the return difference between value and glamour stocks is attributable to earnings surprises that are systematically more positive for value stocks.

Therefore, the true story behind the SMB and HML factors is an open question that carries a lot of controversy in the asset-pricing literature and one which is far from being resolved. This drawback is also more important in non U.S. markets, where there is little or no evidence around the real origin of the Fama and French factors.

In order to advance in disentangling this controversy, Piotroski and So (2012) propose an alternative testable hypothesis. High (low) BM firms are firms with strong (weak) expectations. According to the Lakonishok et al. (1994) mispricing argument, investors are overly pessimistic (optimistic) about these stocks, that is, their expectations

about these stocks are systematically lower (higher) than they should be. That is, the investors make systematic "expectational errors" in these extreme BM firms. In this context we can test if these supposed expectational errors are concentrated among firms with ex ante identifiable expectation errors using historical financial statement-based metrics related with the strength of firms' fundamentals. More concretely, we can expect these expectational errors to be concentrated especially in incongruent stocks, that is, stocks with strong market expectations (low-BM) but weak fundamentals or stocks with weak market expectation (high-BM) but strong fundamentals.

Firms with low BM (strong expectations) but low strength in their fundamentals could reflect: (i) investors quickly reacting to new good information that is still not reflected in the financial statements of the last fiscal year (the rational-pricing story) or on the contrary (ii) an "expectation error" with investors under-reacting to new public information in the financial statements of the last fiscal year that contradicts their beliefs about firms' growth prospects.[2] Firms with high BM (weak expectations) but high strength in their fundamentals could reflect: (i) investors quickly reacting to new bad information that is still not reflected in the financial statements of the last fiscal year (rational-pricing story) or, conversely (ii) an "expectation error" with investors not incorporating new public information probably because these stocks are neglected by investors.

Therefore, according to the mispricing story the pricing errors will be greater when BM ratios are incongruent with the strength of firm fundamentals. Conversely, the risk-based hypothesis predicts that separating extreme BM firms based on fundamental strength will have no predictive ability for returns. In accordance with the mispricing hypothesis, Piotrosky and So (2012) found that the value-glamour abnormal returns are concentrated in the incongruent stocks. [3]

We advance the literature in different ways. First, we present out-of-sample evidence of Piotrosky and So (2012) by analyzing this hypothesis in the Spanish stock market. The considerable controversy regarding the interpretation of the HML Fama-French factor as risk factors highlights the need to accumulate out-of-sample evidence. The FF model needs further empirical verification before it can be accepted as a credible (ideally) theory-based model to replace the CAPM. Second, according to Loughran (1997), the value premium is limited to small-cap stocks. We check this hypothesis eliminating the small cap stocks. Third, we analyse the return persistence of incongruent

[2] According to behavioural finance, several psychological biases such as optimism, anchoring, overconfidence and representativeness can induce investors to underweight contrarian information.
[3] Vogel (2012) analyzes 9 different metrics for financial strength besides the one used by Piotrosky and So (2012) and suggests that the returns to value stocks are likely due to unobservable risk factors and not mispricing, while anomalous growth returns are explained by mispricing effects.

stocks. We should observe different performance in the return persistence depending on what is the source of the incongruent returns: risk level or mispricing.

In addition to the previously mentioned adjustments, another contribution of this paper is to extend the testable hypothesis of Piotrosty and So (2012) with the momentum phenomenon of Jegadeesh and Titman (1993). Under the mispricing hypothesis the incongruent stocks yield abnormal returns because investors finally realize their mistake and correct the prices of these misvalued stocks. But when do the investors realize their mistake? Moreover, the mispricing hypothesis suggests that investors suffer from some behavioural biases that make them reluctant to change their expectations and the price adjustment can take some time (momentum). If we take incongruent stocks with a positive or negative trend in their past short term returns (momentum) we are selecting mispricing stocks that the market has started to correct. Therefore, under the mispricing hypothesis we should expect "high BM strong fundamentals" stocks to yield higher abnormal positive returns among stocks with higher past short-term returns and "low BM weak fundamentals" stocks to yield higher abnormal negative returns among stocks with lower past short-term returns.

The study has the following structure. In the second section we present the data, how financial strength is measured, and the methodology. The third section analyses the returns yielded by portfolios ranked by BM ratio and financial strength, as well as for portfolios ranked simultaneously by both measures. The fourth section analyzes the return persistence of incongruent stocks. The fifth section checks the robustness to small-cap firms. The sixth section analyses the incongruent strategy augmented by momentum. Finally, we present the conclusions.

2 DATA AND METHODOLOGY

2.1 Data

The data has been collected from Compustat. Firms with current Primary Global Industry Classification Standard (GICS) code equal to 4010, 4020 and 4030 (i.e., financial firms) or not available GICS code have been eliminated. The final total number of firms used for this study comprises 214 non-financial firms quoted on the Spanish capital market from January 1994 to December 2013. When there are different issues for the same firm we take the primary issue. The data used is the following (Panel A of Table 1 presents descriptive statistics of these variables):

- Monthly stock close prices and dividends per share ex-date. Using these data, we calculate: (i) monthly stock returns adjusted by dividends, seasoned equity offerings and splits, (ii) monthly value-weighted market returns, computed as the capitalization weighted average of the available stock returns in each month, and (iii) monthly dividend yield, calculated as the ratio between the sum of the dividends over the last twelve months and the stock price at the end of the month.
- Annual data of book value of firm's equity at the end of the fiscal year. We have deleted all negative data.
- Monthly stock market capitalization, calculated as the number of common shares outstanding at the end of the last fiscal year multiplied by the stock close price of that month.
- The book-to-market ratio (BM) for each month has been calculated as the book value of a firm's equity at the end of the previous fiscal year divided by the aforementioned market capitalization.
- We use monthly data of one-month government bonds repo rates as a proxy of the return on the risk-free asset, and monthly data of the Internal Rates of Return of 10-year government bonds (securities), as proxy of the long-term interest rate. This is collected from the historical series of the "Central de Anotaciones de la Deuda Española" published by the Bank of Spain on its website.

2.2 Measurement of the strength of financial performance: the F_Score

As our goal is to identify firms that, in spite of not having received the favour of the market, could be considered as "good" or "improving" firms, we rely on a set of financial metrics in order to run the task. Following Piotroski (2000) and Piotrosky and So (2012), we identify nine financial signals that may illustrate firm performance in three crucial areas: profitability, financial health and operating. (Panel B of Table 1 presents descriptive statistics of these variables)

Profitability

Current profitability provides information about the firm's ability to generate funds internally. It is clear that a firm that is able to generate profits or positive cash flow from its operations could face a negative scenario better than a loss firm. We calculate the following financial signals or factors regarding profitability:

ROA (Return on Assets), defined as net income before extraordinary items scaled by beginning-of-the-year total assets. CFO, defined as cash flow from operations scaled by beginning-of-the-year total assets. ΔROA, defined as the current year's ROA minus the

prior year's ROA. The higher the ROA, CFO and ΔROA, the higher the strength in its fundamentals.

ACCRUAL=ROA-CFO, defined as the difference between net income before extraordinary items and cash flow from operations, scaled by beginning-of-the-year total assets. Following Sloan (1996), when the earnings figure is driven by positive accrual adjustments, that is, when accounting profits are greater than cash flow from operations, we understand that this could be a bad signal about future profitability. Therefore, the higher the ACCRUAL, the lower the strength in its fundamentals.

Financial Health

As in Piotroski (2000), we select three variables related to the firm's financial health:

ΔLEVER, defined as the change in the ratio of total long-term debt to average total assets (leverage ratio). An increase in this ratio could be viewed as a bad signal because of the firm's inability to generate sufficient internal funds –Myers and Majluf (1984) and Miller and Rock (1985). Therefore, the higher the ΔLEVER, the lower the strength in its fundamentals.

ΔLIQUID, defined as the change in the ratio of current assets to current liabilities (current ratio). Any improvement in the firm's liquidity is considered as a good signal about the firm's capability to meet its current obligations. The higher the ΔLIQUID, the higher the strength in its fundamentals.

ΔEQUITY, defined as the funds received by the firm either when it issues new stocks or when it sells its own treasury stock, scaled by beginning-of-the-year total assets. As in the case of an increase in the leverage ratio, this could be viewed as a bad signal because of the firm's inability to generate sufficient internal funds. Moreover, as Piotroski (2000) points out, the fact that a firm is willing to raise capital irrespective of a depressed stock price –remember we are considering firms with high book-to-market– highlights its poor financial condition. Therefore, the higher the ΔEQUITY, the lower the strength in its fundamentals.

Operating Efficiency

We use two popular variables to measure the operating efficiency of a firm:

ΔMARGIN, defined as the change in the ratio of gross margin to total sales (gross margin ratio). An increase in the gross margin ratio means that the firm is able to either reduce its costs or to raise the price of its products, at a given level of sales. ΔTURN, defined as the change in the ratio of total sales to the beginning-of-the-year total assets

(turnover ratio). This is a measure of assets productivity. The higher the ΔMARGIN and ΔTURN, the higher the strength in its fundamentals.

Each year, the individual signal realizations positively related with financial health (ROA, CFO, ΔROA, ΔLIQUID, ΔMARGIN, ΔTURN) are independently ranked between zero and one (zero for the lowest signal and one for the highest). The individual signal realizations negatively related with financial health (ACCRUALS, ΔLEVER) are independently ranked between one and zero (one for the lowest signal and zero for the highest). Given the distribution of the ΔEQUITY signal, with most of realizations equal to zero, if ΔEQUITY>0 we define the indicator variable equal to zero, one otherwise. F_score equals the sum of the firm's ranked realizations.[4] [5]

$$F\_Score = Rank^{+}_{[0:1]}ROA + Rank^{+}_{[0:1]}CFO + Rank^{+}_{[0:1]}\Delta ROA + Rank^{+}_{[0:1]}\Delta LIQUID + Rank^{+}_{[0:1]}\Delta MARGIN + Rank^{+}_{[0:1]}\Delta TURN + Rank^{-}_{[1:0]}ACCRUAL + Rank^{-}_{[1:0]}\Delta LEVER + [0^{\Delta EQUITY>0}; 1^{\Delta EQUITY\leq 0}] \quad [1]$$

Panel B of Table 1 shows the descriptive statistics of F_Score. The correlation between F_score and BM ratio is -0.02.

2.3 Portfolio formation and the measurement of portfolio returns

We construct the portfolios as follows. First, at the beginning of June[6] (i.e., the formation date) of each year t, we select all stocks with Market Value and BM data available in the previous month of May, and F_Score data for the previous fiscal year. Next, we construct three BM equally weighted portfolios using the 30% and 70% cut-offs determined by the prior June's BM distribution; and independently and simultaneously we construct three F_Score equally weighted portfolios using the 30% and 70% cut-offs determined by the prior fiscal year's distribution. Portfolio Low-BM (i.e. "glamour" or "strong expectations" firms) contains stocks ranked in the bottom 30%, and portfolio high-BM (i.e. "Value" or "weak expectations" firms) contains stocks ranked in the top 30%. Portfolio low-F_Score (i.e. "weak fundamentals" firms) contains stocks ranked in the

[4] Piotroski (2000) and Piotrosky and So (2012) constructed the F_score measure assigning zeros and ones to all the signals, although Piotroski (2000) checked the robustness of his results using a rank version of the F_score for the nine variables.

[5] Most of the financial variables included in F_score could be affected by the firm sector. For example, the leverage ratio could be significantly different among industries. But as far as F_score is constructed with increments and not levels we think it is not necessary to make any industry adjustment.

[6] In the sample there are no fiscal years ends in April or May (the latest fiscal year end is in March) so forming the portfolios on the first of June we ensure the accounting information is available for all the firms in the sample.

bottom 30%, and portfolio high-F_Score (i.e. "strong fundamentals" firms) contains stocks ranked in the top 30%.

We also construct nine portfolios from the intersections of the above BM and F_Score portfolios. For example, portfolio low-BM x low-F_Score comprises stocks that belong simultaneously to portfolios low-BM and low-F_Score.

To study the behaviour of each portfolio, we analyse its buy-and-hold size adjusted return over the 12, 24 and 36 months after its formation date (holding period). This method allows us to obtain the actual return an investor would make in excess of the size reference portfolio by investing in the portfolio and keeping it for the entire holding period without making any adjustments[7]:

$$CR_{P,h} = \frac{\sum_{i=1}^{n_P}\left[\prod_{z=1}^{h}(1+R_{i,z}) - \frac{\sum_{j=1}^{n_{RP(i)}}\left[\prod_{z=1}^{h}(1+R_{ji,z})\right]}{n_{RP(i)}}\right]}{n_P}; \quad h = 12,\ 24 \text{ and } 36 \text{ months} \qquad [2]$$

where $CR_{P,\lambda}$ is the cumulative return of portfolio P over the *h* first months of the holding period, n_P is the number of stocks that form the portfolio, $n_{RP(i)}$ is the number of stocks in the size reference portfolio of stock *i*, $R_{i,z}$ is the return of stock *i* in month *z* of the holding period and $R_{ji,z}$ is the return of stock *j in the size reference portfolio of stock i* in month *z* of the holding period. [8] We use quintile size reference portfolios constructed annually at the beginning of June according to the market value in the prior month (May) and assign to each stock the reference portfolio to which the stock belongs. Note that for values of

[7] Two alternative procedures exist for calculating a portfolio return over an investment period: the additive and the rebalancing. The former does not exactly measure the portfolio whole return throughout the analysed period, but its average monthly return. The latter implicitly involves an investment strategy that changes the composition of the portfolio month by month in order to keep the portfolio equally weighted throughout the holding period. In any case, for various reasons, the buy-and-hold procedure is mainly used in the financial literature. Among these reasons, the price spread bias seems to have less impact on the buy-and-hold procedure and the rebalancing procedure looks less attractive in terms of transaction costs and, perhaps, less fitted for a medium/long investment horizon (Blume and Stambaugh, 1983; Barber and Lyon, 1997; Lyon, Barber and Tsai, 1999; and Liu and Strong, 2008).

[8] Note that for the last formation dates it is not possible to calculate all cumulative returns. Thus, for the portfolios formed on the last formation date, corresponding to the beginning of June 2013, we will only be able to calculate the cumulative return of the first seven months of the holding period. And for those formed at the beginning of June 2012 we will only be able to calculate the cumulative return of the first nineteen months…

h>12 these cumulative return series have an autocorrelation problem due to their construction that is taken into account when conducting the subsequent statistical tests using Newey-West adjusted t-statistics.

Along with this first approach, which allows us to determine how, on average, the portfolio performs in the months following the formation date, we also apply a second approach. This approach consists in calculating for every calendar month the return that an investor would make by investing in the portfolios and holding these positions for *h* = 12, 24 and 36 months. We calculate this return as the average return for all stocks within the strategy for that month. It is important to understand that when h=24 (h=36), in calendar month *t* the portfolio is based on the stocks invested in over the last *2* (3) formation dates. Therefore, for every calendar month, we will have *2* (3) portfolios, reviewing *1/2* (1/3) of their stocks at the beginning of each month. For example, in calendar month *t*, the low-BM portfolio will be based on the low-BM portfolios constructed at the beginning of the previous two (three) Junes. At the beginning of the next calendar June, the position held by the low-BM portfolio constructed in the month *June 2 (3) years before* will be eliminated and replaced by the new portfolios.

Following this procedure, we obtain a return for each calendar month and for each portfolio:

$$\left\{R_{p,t};\quad t = 06/97, 06/97, ..., 12/13\right\} \qquad [3]$$

where $R_{p,t}$ is the return for calendar month *t* of portfolio *p*.

According to Lyon, Barbet and Tsai (1999) these two methodological approaches (equations 2 and 3) satisfy the condition that the method yields well-specified test statistics in random samples. Though both offer advantages and disadvantages, a pragmatic solution for a researcher who is analyzing long-run abnormal returns would be to use both.

The return for each calendar month *t* can be calculated as an equally weighted average of the portfolio stocks' returns for that month. In this case, we would assume that throughout the holding period the portfolios rebalance their composition each month to keep their initial equal weight (i.e. rebalancing portfolios). Another alternative is maintaining the portfolios throughout the holding period without any readjustments (i.e. buy-and-hold portfolios). Because, in this case, the portfolios lose their initial equal weight as their stocks draw different returns, it would first be necessary to obtain, for each calendar month, the weight of each stock in each portfolios (see Liu and Strong, 2008,

page 2249, equation 4). Therefore, as in the previous approach, we opt to use buy-and-hold portfolios over rebalancing portfolios because of their advantages, which include lower transaction costs and the ability to avoid the biases associated with rebalancing portfolios.

Finally, it is important to consider what happens when a stock is de-listed during the holding period. We decided to replace the de-listed stock return with the average return of the stocks remaining in the portfolio. We reason that if the momentum effect indeed exists, then the most logical strategy would be to invest the amount obtained by liquidating the de-listed stock in the portfolio's remaining titles.[9]

3 EMPIRICAL RESULTS

3.1 Value-Glamour strategy

Table 2 shows the size-adjusted buy-and-hold returns for the 12, 24 and 36 months after the formation date (see equation [2]) for the BM portfolios, as well as for the Value-Glamour strategy. We provide the corresponding standard p-values in brackets. For the 24 and 36 month holding periods the corresponding Newey-West autocorrelation-consistent p-values have been used. The results show a positive relation between returns and BM ratio for all holding periods. However, the difference between high-BM portfolio returns and low-BM portfolio returns (i.e. the Value minus Glamour strategy) only yields statistically significant positive returns for the 24- and 36-month holding periods with size adjusted returns of 16.18% and 31.66% respectively (7.79% and 7.67% annual).

The last three rows of Table 2 show the F_Score, Size and BM characteristics of each BM portfolio at the beginning of the holding period. We observe a negative relation between BM portfolios and both the F_Score and Size characteristics. So Value firms are smaller and have less financial strength than the average and Glamour firms are bigger and have more financial strength than the average.

Table 3 shows the average monthly raw returns an investor would have made by implementing the Value-Glamour strategy's sequence of annual purchases and sales with holding periods of 12 and 24 months (see equation [3]). The Table also shows the results

[9] Lyon, Barber and Tsai (1999) observe that similar results are achieved using different alternatives.

of running the CAPM. More precisely, we adjust the ex-post CAPM version running a time-series regression on monthly returns:

$$\left\{(R_{Value,t} - R_{Glamour,t}) = \alpha + \beta(R_{M,t} - r_t) + \varepsilon_t,\ \text{t} = 06/97, 07/97, ..., 12/13\right\} \quad [4]$$

where r_t is risk-free asset return on calendar month t, $R_{M,t}$ is the value-weighted[10] market portfolio return on month t, β is market risk of portfolio, and α is Jensen's alpha, which gauges the abnormal return.

We also report the results obtained when we adjust the ex-post version of the Fama-French three factor model (1993) (hereafter F&F) to the time-series of monthly returns running the next time-series regression:

$$\left\{(R_{Value,t} - R_{Glamour,t}) = \alpha + \beta(R_{M,t} - r_t) + sSMB_t + hHML_t + \varepsilon_t, \quad t = 06/97, 07/97, ..., 12/13\right\} \quad [5]$$

where the SMB and HML factors are calculated following Fama and French (1993).

The results show that the CAPM cannot explain the returns of the Value-Glamour strategy for 36-month holding periods, with statistically significant monthly alphas of 0.59% (7.31% annual). The strategy also yields significant alphas, although only at the 10% significance level, with CAPM and 24-months and with the F&F model and 36 months. The F&F model does better in explaining the returns of this strategy since this model includes the HML factor.

The results for the Value-Glamour strategy in the Spanish stock market are weaker and more delayed than those observed in the US market by Piotrosky and So (2012) (12-month holding-period size adjusted buy-and-hold returns of 11.81%). Under the irrational story, it seems that the Spanish market takes longer to realize its expectational errors.

3.2 F_Score portfolios

Table 4 shows the size-adjusted buy-and-hold returns for 12, 24 and 36 months after the formation date (see equation [2]) for the F_Score portfolios, as well as for the High-Low F_Score strategy. The results show a positive relation between returns and F_Score for all holding periods. However, the difference between high-F_Score portfolio returns and low-F_Score portfolio returns only yields statistically significant positive returns for the 24 and 36-month holding period with size adjusted returns of 10.79% and 15.22% respectively (5.26% and 4.84% annual). Notwithstanding, the abnormal returns of

[10] The results are robust to the use of an equally weighted market portfolio instead of the value-weighted portfolio. These results are available to any interested parties.

the high-Low F_Score strategy in the Spanish market are also lower than those observed by Piotrosky and So (2012) in the US market: 10.03% annual for a 12-month holding period.

We observe a positive relation between F_Score portfolios and Size characteristics: high F_Score firms are bigger than the average and Low F_Score firms are smaller than the average. Regarding the BM, both high and low F_Score firms have lower BM ratios than the average.

Table 5 shows the average monthly returns an investor would have made by implementing the High-Low F_Score strategy's sequence of annual purchases and sales with holding periods of 12, 24 and 36 months (see equation [3]). The Table shows the results of running the CAPM and the F&F models. The results show that the CAPM cannot explain the returns of this strategy for all holding periods, with statistically significant monthly alphas of 0.56%, 0.62% and 0.55%. Neither can the F&F model explain the returns of the strategy, with even higher abnormal returns given its significant negative slopes to the market, SMB and HML factors.

3.3 The incongruent Value/Glamour strategy

Table 6 shows the size-adjusted buy-and-hold returns for the twelve (PANEL A) twenty-four (PANEL B) and thirty-six months (PANEL C) after the formation date (see equation [2]) for the nine portfolios resulting from the intersection of the previous BM and F_Score portfolios. The last rows of each panel show the abnormal returns for the incongruent and congruent strategy. The incongruent strategy buys the high-BM x high-F_Score portfolio and shorts-sells the low-BM x low-F_Score portfolio, that is, it buys value firms (weak expectations) with strong fundamentals and shorts-sells glamour firms (strong expectations) with weak fundamentals. The congruent strategy buys the high-BM x low-F_Score portfolio and shorts-sells the low-BM x high-F_Score portfolio. We provide the corresponding standard p-values in brackets. For the 24 and 36-month holding period the corresponding autocorrelation-consistent p-values have been used.

The results are impressive. Despite the isolate BM and F_Score strategies in the Spanish market yielding weaker and more delay abnormal returns than in the US market, when we construct a strategy that combines both measures in an incongruent way, the strategy yields important abnormal returns in all holding periods: 15.85%, 44.93% and 66.37% respectively (20.39% and 18.49% annual). These results are quite similar to those

observed by Piotrosky and So (2012) in the US market (22.64% and 37.66% for 12- and 24- month periods respectively), although we still observe that the Spanish stock market takes more time to adjust prices to possible mispricing. As with Piotrosky and So (2012), we do not observe abnormal returns for the congruent strategy.

The evidence in the Spanish market further highlights the importance of selecting potentially underpriced Value stocks, using fundamental health proxies of the firm like the F_Score. The same applies to selecting potentially overpriced Growth stocks. A market like the Spanish market, with a weaker Value-Glamour effect (even non-existent for 12-month holding periods) does not necessary mean the market does better in pricing these extreme BM stocks, but that we are not correctly selecting the potentially mispriced stocks using an incongruent criteria.

Figure 1 shows 24-month-ahead size adjusted returns for each formation date from first of June 1997 to first of June 2011 for the Value-Glamour strategy, the congruent strategy and the incongruent strategy. The incongruent strategy generates positive returns in 14 out of 15 formation dates versus 11 out of 15 for the traditional Value-Glamour strategy. Moreover, the incongruent strategy outperforms the Value-Glamour strategy in all but two formation dates. Conversely, the congruent strategy shows bad performance with negative returns in 7 out of 15 formation dates and it underperforms the standard V-G strategy in 9 formation dates.

Table 7 shows the average monthly raw returns an investor would have made by implementing the incongruent strategy's sequence of annual purchases and sales (see equation [3]). The Table also shows the results of running the CAPM and the F&F models. The results show that, only the returns for the 12-month holding period can be explained by the F&F model. We also find that neither market premium nor HML premium have a significant role in explaining returns from the incongruent strategy.

3.4 Bootstrap robustness

We check the robustness of the equation [2] results using a bootstrap analysis to compute the p-values. Concretely, we use the procedure proposed by Lyon, Barber, and Tsai (1999), who apply the bootstrap method to the t-statistic adjusted for asymmetry developed by Johnson (1978). We apply this methodology using 10,000 repetitions with replacement and bootstrap samples of the same size as the original sample, that is, 31 observations. Lyon, Barber, and Tsai (1999) showed that this bootstrap procedure for the buy-and-hold returns adjusted with Size-BTM reference portfolios yields well specified test

statistics in random samples. Here we only use size reference portfolios given that we are analyzing BM portfolios.

This bootstrap procedure is only valid for independent data. However, as noted above, the buy-and-hold return series overlap each other for the 24-month holding period and therefore present an autocorrelation problem. Accordingly, instead of applying the usual bootstrap, we have applied a moving block bootstrap (Efron and Tibshirani, 1993). Since the 24 month buy-and-hold return series exhibit 2 order autocorrelation, the blocks are formed with 2 observations.

All the p-values showed in Tables 2, 4 and 6 are robust to this bootstrap procedure. These results are available upon request.

4. PERSISTENCE OF INCONGRUENT PROFITS

In this section we analyse the evolution of the strategies' profitability in the post-holding period. If profits are the reward for some type of risk, the strategy should stay profitable during the post-holding period. Conversely, if the source of the strategy returns is a mispricing we should observe a different performance. For example, if the mispricing is caused by an adjustment of a previous overreaction to bad (good) news that makes the value (glamour) stocks underpriced (overpriced) we should expect to observe that once the adjustment is completed and market prices reach their fair value the strategy will stop giving abnormal returns. The same if the mispricing is caused by an infra-reaction to the new information incorporated in the last year fundamentals. Moreover, the behavioural finance theories also propose the possibility that an initial infra-reaction ends in a posterior over-reaction caused by psychological biases such as herding. In this case investors exceed in the price adjustment and we should observe some reversion in the strategy profits.

Figure 2 shows the evolution of the size-adjusted buy-and-hold return calculated using the equation [2] over the five years after the formation date[11]. In Panel A we can observe how the High-BM portfolio continues giving higher size-adjusted returns than the Low-BM portfolios during the five years after the formation date. This evidence is consistent with Value firms being riskier than Glamour firms, and therefore being compensated with higher average returns. Panel B shows that the High-F_Score portfolio

[11] I.e., returns are calculated as in equation [2] but with h=1,2,…,60 month holding periods.

yields higher returns than the Low-F_Score portfolio until three years after formation date and then this effect stops and in the fifth year a slight reversion can be observed. These results are consistent with an infra-reaction to extreme firm fundamentals that eventually could finish in a delayer overreaction. Although Table 4 shows that the size adjusted returns of the High-Low F_Score strategy are statistically significant in month 24 after formation date, the economic relevance of these returns is small compared with the other strategies.

The results in Panel C for the incongruent strategy are impressive. The combination of both measures (BM and F_Score) seems to do especially well in selecting value (glamour) stocks that are effectively underpriced (overpriced): the strong fundamentals value firms continue giving higher size-adjusted returns than the weak fundamentals glamour firms until the third year after formation in an economically relevant magnitude (more than 60% cumulative excess return). After this point, differences in returns between both portfolios stop and we do not observe any reversion. So this evidence is consistent either with a correction of a previous overreaction or with an infra-reaction to new information or with a combination of both a previous overreaction and a subsequent infra-reaction.

Therefore, the behaviour detected in the incongruent strategy during the post-holding period, instead of being consistent with a risk-based explanation, seems to be close to the “inefficient market” explanations.

5. IS THE INCONGRUENT V/G STRATEGY CONCENTRATED IN SMALL STOCKS?

According to Loughran (1997), the value premium is limited to small-cap stocks. We check the robustness of the incongruent strategy profits eliminating the small cap stocks. To do so, for every formation date we form portfolios to a triple independent ranking: 30% and 70% percentile BM ratio and F_Score and 20% percentile Size. Then we construct the incongruent strategy eliminating the smallest 20% of the firms (Table 8). Moreover, we construct a value-weighted incongruent strategy (Table 9). The results show that avoiding small stock does not reduce the incongruent returns and that returns even increase. However a value-weighted incongruent strategy does not yield abnormal returns, indicating that big stocks do not suffer from this anomaly. So, although the incongruent effect is not present in big stocks, they are not exclusive to small and illiquid stocks.

6 TIMING THE INCONGRUENT STRATEGY

In addition to the previously mentioned adjustments, another contribution of this paper is to extend the testable hypothesis of Piotrosty and So (2012) with the momentum phenomenon of Jegadeesh and Titman (1993).[12] Under the mispricing hypothesis, the incongruent stocks yield abnormal returns because investors finally realize their mistake and correct the prices of these mispriced stocks. The results observed for the Spanish market in the previous sections seem to be consistent with this mispricing story. But when do the investors realize their mistake? Moreover, the mispricing hypothesis suggests that investors are reluctant to change their expectations (for example, anchoring and overconfident psychological biases) and the price adjustment can take some time (momentum). The results of Panel C of Figure 1 show that investors take about three years on average to adjust this mispricing.

If we take incongruent stocks with a positive or negative trend in their past short-term returns (momentum) we are selecting mispricing stocks that the market has started to correct. Therefore, under the mispricing hypothesis we should expect "high BM strong fundamentals" stocks to yield higher abnormal positive returns among stocks with higher past short-term returns and "low BM weak fundamentals" stocks to yield higher abnormal negative returns among stocks with lower past short-term returns. As a result we have a timing incongruent strategy that buys "past winners high BM strong fundamentals" and short-sells "past losers low BM weak fundamentals": first, it will yield higher returns than the standard incongruent strategy and second, in shorter holding periods.

To analyse this hypothesis we construct the BM and F_Score portfolios as before but this time we use 50% cut-offs for the F_Score in order to guarantee non-empty portfolios. Independently and simultaneously we construct two past-return equally weighted portfolios using 50% cut-offs determined by prior 6 months cumulative past returns with a skip of one month (i.e., for formation month t we use the distribution of cumulative returns of each stock in months t-7 to t-2). Portfolio Low-PR (i.e. "losers" firms) contains stocks ranked in the bottom 50%, and portfolio high-PR (i.e. "winners" firms) contains stocks ranked in the top 50%. This time we construct the portfolios quarterly (first of June, September, December and March) in order to better identify the start of momentum in the stock return.

[12] Bird and Casavecchia (2007) adopt a similar approach for the Value Investing Strategy of Piotrosky (2000)

Finally we construct twelve portfolios from the intersections of the above BM, F_Score and Past-returns portfolios. For example, portfolio low-BM x low-F_Score x low-Past-Returns comprises stocks that belong simultaneously to portfolios low-BM, low-F_Score and low-Past-returns. Table 10 presents the raw monthly returns, as well as the CAPM and Fama and French alphas for the "timing incongruent strategy", that is, the strategy that buys "winners high BM strong fundamentals" and short-sells "losers low BM weak fundamentals". The results are consistent with the timing hypothesis. Using past short-term return trends to decide when to buy the "high BM strong fundamentals" and when to short-sell the "low BM weak fundamentals" gives us a better timing of the strategy, increasing the abnormal returns and not requiring holding the stocks for more than one year. With a holding period of 12 months the timing incongruent strategy yields abnormal returns of 1.83% and 1.71% (CAPM and F&F adjustments, respectively), 24.31% and 22.56% in annual terms. For longer holding periods the abnormal monthly returns do not increase, so the best timing of this strategy allows us to the take a position in the mispriced stocks just when the market is correcting the mistake. In this way, the strategy does not include stocks that although are mispriced are going to continue being mispriced for a time, and therefore are only going to yield abnormal returns in the long run. Obviously these results further increase the evidence in favour of the mispricing hypothesis and they are difficult to explain under the rational pricing hypothesis.[13]

4. CONCLUSIONS

In our opinion the results obtained in this study make the following contributions to the literature. First, they demonstrate that the results of Piotrosky and So (2012) are not exclusive to the US market but are also observed in the Spanish market. This out-of-sample evidence reduces the possibility of the Piotrosky and So (2012) evidence being spurious or the result of data-mining. Second, that even in a market with weaker Value-Glamour effects the selection of the effective mispriced value and glamour stocks using a fundamental strength measure such as F_Score allows construction of a really highly profitable strategy: the incongruent strategy. Third, the introduction of timing criteria in the incongruent strategy results in an important improvement in the strategy profits. In a market as the Spanish one, which takes more time to correct the supposed mispricing in the incongruent stocks than in the US market, to introduce this timing criteria is especially important.

[13] These results are consistent with the 'momentum life cycle' hypothesis of Lee and Swaminathan (2000)

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Table 1

Descriptive Statistics

Variable	Mean	Std.Dev.	25th Pctl.	Median	75th Pctl.
PANEL A					
Monthly returns (%)	0.89	0.13	-4.30	0	5.09
SIZE	2633.09	7774.68	97.13	365.36	1629.16
BM	1.32	13.47	0.34	0.58	0.98
PANEL B					
F_score	4.80	1.18	3.99	4.80	5.57
ROA(%)	4.11	0.13	1.30	4.00	7.10
CFO(%)	10.40	0.15	5.00	10.60	16.00
IncROA(%)	1.99	1.01	-2.10	0	1.30
ACCRUAL(%)	-6.28	0.20	-11.70	-7.00	-2.70
IncLEVER(%)	0.44	0.10	-3.30	-0.10	3.10
IncLIQUID(%)	-3.56	1.04	-15.30	-1.10	12.50
IncEQUITY(%)	1.47	0.10	0	0	0
IncOPER_MARGIN(%)	3.33	1.54	-2.26	-0.01	1.75
IncTURN(%)	-2.14	1.84	-8.70	-0.40	6.20

Table 2

Size-adjusted buy-and-hold returns to BM portfolios

p-values in brackets

	Low-BM (Glamour)	Middle-BM	High_BM (Value)	Value-Glamour
12-month Returns(%)	-2.04	0.33	3.44	5.48
p-val	(0.28)	(0.82)	(0.16)	(0.13)
24-month Returns(%)	-7.10	-0.46	9.08	16.18
p-val (Newey-West)	(0.11)	(0.84)	(0.07)	(0.05)
36-month Returns(%)	-14.67	-2.65	16.99	31.66
p-val (Newey-West)	(0.06)	(0.40)	(0.01)	(0.02)
F_Score	5,09	4,85	4,46	-0,63
Size	4630,14	3078,21	1428,28	-3201,86
BM	0,25	0,62	2,39	2,14

Table 3

Monthly returns to value/glamour strategy

p-values in brackets

	PANEL A: 12-month holding period		PANEL B: 24-month holding period		PANEL C: 36-month holding period	
Raw-Return	0.25		0.36		0.44	
	(0.44)		(0.23)		(0.11)	
	CAPM	F&F	CAPM	F&F	CAPM	F&F
Return (alpha)	0.39	0.15	0.51	0.30	0.59	0.39
	(0.23)	(0.49)	(0.10)	(0.19)	(0.04)	(0.08)
Market Beta	-0.12	-0.10	-0.12	-0.10	-0.12	-0.10
	(0.04)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)
SMB Beta		0.20		0.18		0.22
		(0.00)		(0.00)		(0.00)
HML Beta		0.56		0.49		0.42
		(0.00)		(0.00)		(0.00)
R-adjusted	0.02	0.54	0.02	0.46	0.03	0.41

Table 4

Size adjusted returns to F_Score portfolios

p-values in brackets

	Low-F_Score	Middle-F_Score	High-F_Score	High-Low
12-month Returns	-0.38	-0.03	2.23	2.61
p-val	(0.82)	(0.98)	(0.38)	(0.49)
24-month Returns	-4.97	-0.19	5.82	10.79
p-val (Newey-West)	(0.09)	(0.92)	(0.16)	(0.06)
36-month Returns	-10.56	2.40	4.66	15.22
p-val (Newey-West)	(0.03)	(0.43)	(0.38)	(0.06)
F_score	3.99	4.80	5.75	1.76
Size	2127.61	3201.92	4559.62	2432.01
BM	0.89	1.10	0.66	-0.23

Table 5

Monthly returns to F_Score portfolios

p-values in brackets

	PANEL A: 12-month holding period		PANEL B: 24-month holding period		PANEL C: 36-month holding period	
Raw-Return	0.29		0.38		0.32	
	(0.28)		(0.1)		(0.15)	
	CAPM	F&F	CAPM	F&F	CAPM	F&F
Return (alpha)	0.56	0.66	0.62	0.74	0.55	0.69
	(0.04)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Market Beta	-0.22	-0.23	-0.20	-0.22	-0.19	-0.22
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SMB Beta		-0.12		-0.16		-0.20
		(0.03)		(0.00)		(0.00)
HML Beta		-0.18		-0.15		-0.17
		(0.00)		(0.00)		(0.00)
R-adjusted	0.09	0.17	0.11	0.21	0.11	0.25

Table 6

Size adjusted buy&hold returns to BM portfolios and F_Score portfolios

p-values in brackets

Min/Average/Max nº stocks	Low-BM (Glamour)	Middle-BM	High_BM (Value)	Value-Glamour
Low-F_Score	3 / 7 / 12	7 / 11 / 15	7 / 12 / 16	
Middle-F_Score	6 / 12 / 17	12 / 17 / 22	10 / 12 / 15	
High-F_Score	9 / 12 / 18	7 / 12 / 18	2 / 6 / 10	
PANEL A: 12-months holding period				
Low-F_Score	-4.19	-1.03	2.63	6.81
	(0.32)	(0.81)	(0.52)	(0.29)
Middle-F_Score	0.29	-0.46	0.06	-0.23
	(0.94)	(0.74)	(0.99)	(0.96)
High-F_Score	-3.40	4.49	11.67	15.06
	(0.28)	(0.13)	(0.02)	(0.01)
High-Low	0.79	5.51	9.04	
	(0.89)	(0.25)	(0.13)	
Incongruent V/G Strategy	15.85 (0.02)	Congruent V/G Strategy	6.02 (0.33)	
PANEL B: 24-months holding period				
	Low-BM (Glamour)	Middle-BM	High_BM (Value)	Value-Glamour
Low-F_Score	-16.06	-9.30	5.05	21.11
	(0.03)	(0.10)	(0.45)	(0.08)
Middle-F_Score	-6.53	1.11	3.97	10.50
	(0.17)	(0.78)	(0.61)	(0.31)
High-F_Score	-4.27	5.22	28.88	33.15
	(0.44)	(0.28)	(0.00)	(0.01)
High-Low	11.79	14.52	23.82	
	(0.15)	(0.03)	(0.00)	
Incongruent V/G Strategy	44.93 (0.00)	Congruent V/G Strategy	9.32 (0.38)	
PANEL C: 36-months holding period				
	Low-BM (Glamour)	Middle-BM	High_BM (Value)	Value-Glamour
Low-F_Score	-29.17	-21.35	9.18	38.35
	(0.01)	(0.03)	(0.26)	(0.02)
Middle-F_Score	-16.01	6.04	16.59	32.60
	(0.03)	(0.36)	(0.22)	(0.07)
High-F_Score	-6.09	3.66	37.20	43.30
	(0.41)	(0.60)	(0.06)	(0.08)
High-Low	23.07	25.01	28.02	
	(0.03)	(0.01)	(0.12)	
Incongruent V/G Strategy	66.37 (0.02)	Congruent V/G Strategy	15.27 (0.30)	

Figure 1

Buy-and-hold size-adjusted return for the 24 months after the formation date

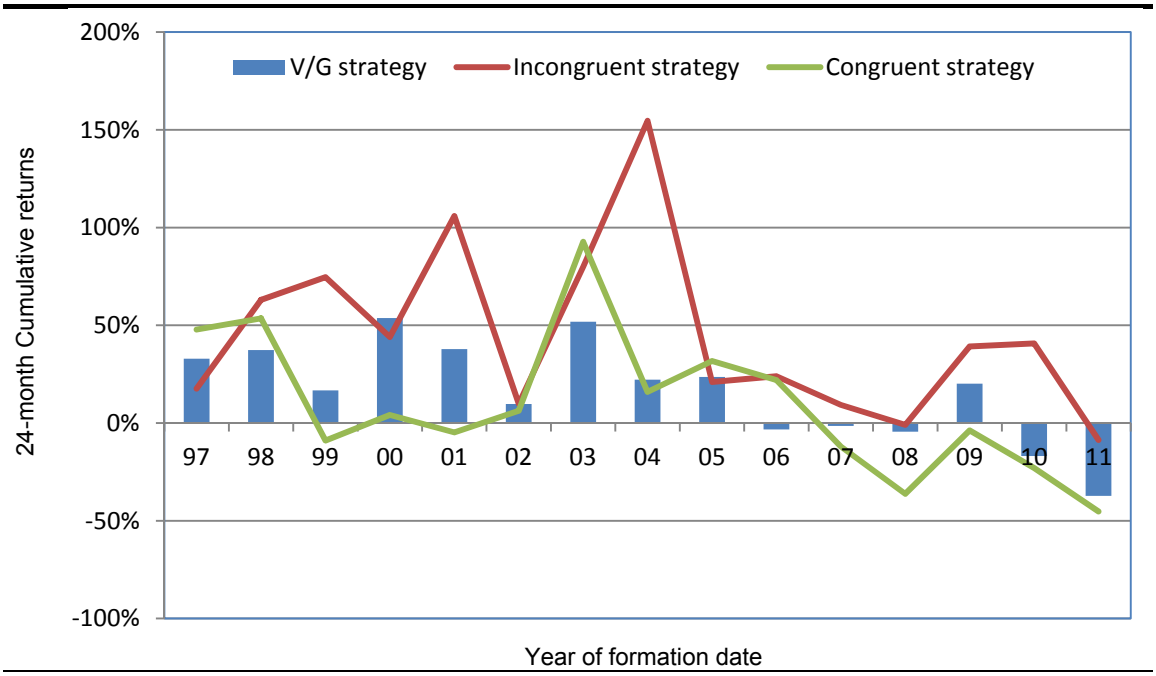


Table 7

Monthly returns to incongruent strategy

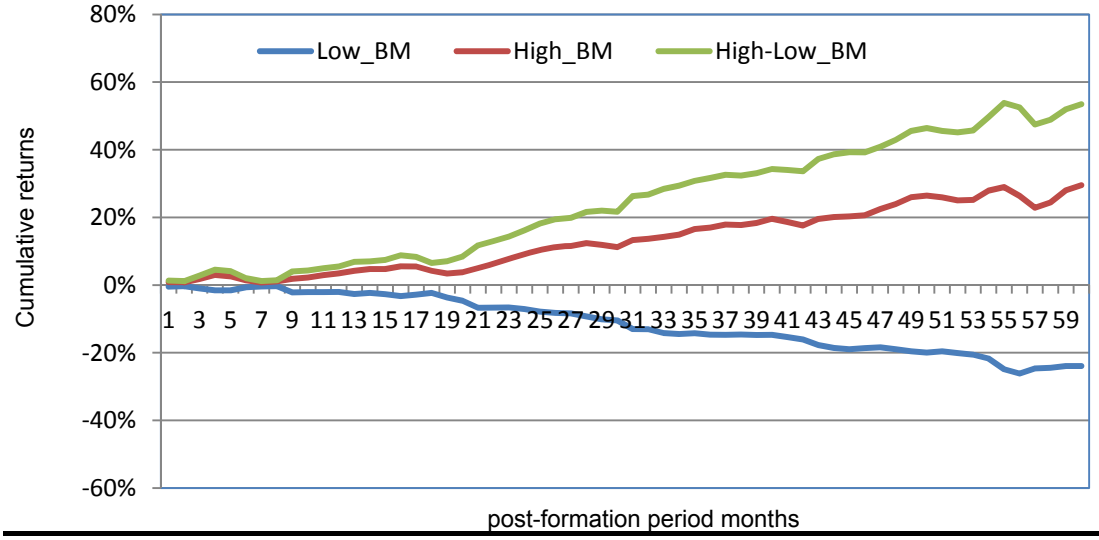
p-values in brackets

	PANEL A: 12-month holding period		PANEL B: 24-month holding period		PANEL C: 36-month holding period	
Raw-Return	1.11		1.34		1.08	
	(0.09)		(0.03)		(0.08)	
	CAPM	F&F	CAPM	F&F	CAPM	F&F
Return (alpha)	1.24	1.03	1.46	1.27	1.19	1.04
	(0.06)	(0.11)	(0.02)	(0.04)	(0.06)	(0.09)
Market Beta	-0.11	-0.09	-0.10	-0.08	-0.09	-0.08
	(0.34)	(0.42)	(0.38)	(0.46)	(0.40)	(0.47)
SMB Beta		0.19		0.17		0.13
		(0.17)		(0.22)		(0.33)
HML Beta		0.50		0.44		0.34
		(0.00)		(0.00)		(0.00)
R-adjusted	-0.00	0.09	-0.00	0.07	-0.00	0.04

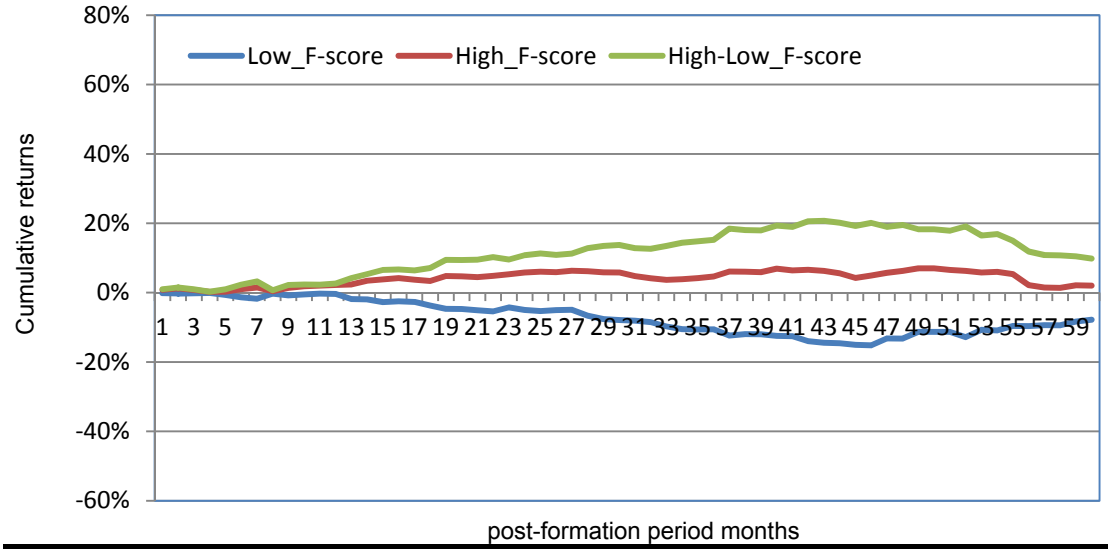
Figure 2

Buy-and-hold size-adjusted return for the 60 months after the formation date

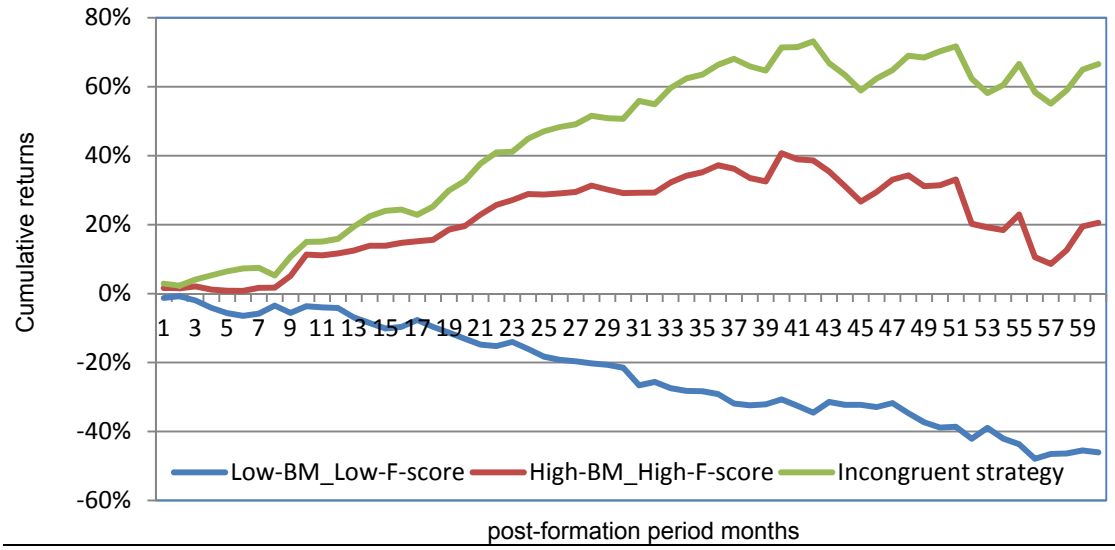
PANEL A: BM portfolios



PANEL B: F_Score portfolios



PANEL C: Incongruent strategy



Average buy-and-hold size-adjusted returns for the 60 months after the formation date for the.

Table 8

Monthly returns to incongruent strategy

Non-small stocks (20% low Size percentile eliminated)

p-values in brackets

	PANEL A: 12-month holding period		PANEL B: 24-month holding period		PANEL C: 36-month holding period	
Raw-Return	1.45		1.45		1.27	
	(0.03)		(0.01)		(0.02)	
	CAPM	F&F	CAPM	F&F	CAPM	F&F
Return (alpha)	1.37	0.99	1.36	1.00	1.19	0.84
	(0.05)	(0.13)	(0.02)	(0.07)	(0.04)	(0.12)
Market Beta	0.07	0.14	0.08	0.15	0.07	0.15
	(0.58)	(0.24)	(0.46)	(0.13)	(0.47)	(0.12)
SMB Beta		0.52		0.53		0.54
		(0.00)		(0.00)		(0.00)
HML Beta		0.50		0.38		0.35
		(0.00)		(0.00)		(0.00)
R-adjusted	0.00	0.11	0.00	0.12	0.00	0.12

Table 9

Monthly returns to incongruent strategy

Value-weighted incongruent strategy

p-values in brackets

	PANEL A: 12-month holding period		PANEL B: 24-month holding period		PANEL C: 36-month holding period	
Raw-Return	0.71		0.67		0.51	
	0.24)		0.21)		0.31)	
	CAPM	F&F	CAPM	F&F	CAPM	F&F
Return (alpha)	0.79	0.53	0.79	0.58	0.63	0.44
	(0.20)	(0.36)	(0.14)	(0.27)	(0.22)	(0.37)
Market Beta	-0.07	-0.03	-0.10	-0.07	-0.10	-0.08
	(0.54)	(0.75)	(0.28)	(0.44)	(0.26)	(0.37)
SMB Beta		0.29		0.25		0.20
		(0.03)		(0.03)		(0.07)
HML Beta		0.52		0.39		0.37
		(0.00)		(0.00)		(0.00)
R-adjusted	0.00	0.12	0.00	0.09	0.00	0.09

Table 10

Monthly returns to timing incongruent strategy

PANEL A: 12-month holding period

	Loser-Weak-Low-BM		Winner-Strong-High-BM		Timing incongruent strategy	
Min/Mean/Max nº stocks	1 / 6 / 14		1 / 4 / 9			
Return%	0.40		1.86		1.46	
p-val					(0.00)	
	CAPM	FF	CAPM	FF	CAPM	FF
alpha%	-0.92	-1.25	0.92	0.46	1.83	1.71
p-val	(0.03)	(0.00)	(0.03)	(0.16)	(0.00)	(0.00)
Market	0.92	1.02	0.61	0.71	-0.31	-0.31
	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)
SMB		0.63		0.70		0.07
		(0.00)		(0.00)		(0.50)
HML		0.07		0.45		0.37
		(0.25)		(0.00)		(0.00)
R-adjusted	0.43	0.56	0.25	0.55	0.06	0.15

PANEL B: 24-month holding period

	Loser-Weak-Low-BM		Winner-Strong-High-BM		Timing incongruent strategy	
Return%	0.25		1.67		1.42	
p-val					(0.00)	
	CAPM	FF	CAPM	FF	CAPM	FF
alpha%	-1.00	-1.30	0.65	0.25	1.65	1.55
p-val	(0.01)	(0.00)	(0.09)	(0.41)	(0.00)	(0.00)
Market	0.86	0.95	0.68	0.77	-0.19	-0.18
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)
SMB		0.55		0.63		0.08
		(0.00)		(0.00)		(0.38)
HML		0.12		0.35		0.23
		(0.04)		(0.00)		(0.00)
R-adjusted	0.46	0.58	0.35	0.59	0.03	0.07

PANEL C: 36-month holding period

	Loser-Weak-Low-BM		Winner-Strong-High-BM		Timing incongruent strategy	
Return%	0.31		1.53		1.22	
p-val					(0.00)	
	CAPM	FF	CAPM	FF	CAPM	FF
alpha%	-0.95	-1.24	0.51	0.14	1.46	1.38
p-val	(0.01)	(0.00)	(0.18)	(0.66)	(0.00)	(0.00)
Market	0.87	0.94	0.67	0.76	-0.19	-0.18
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
SMB		0.52		0.59		0.07
		(0.00)		(0.00)		(0.44)
HML		0.15		0.31		0.16
		(0.01)		(0.00)		(0.02)
R-adjusted	0.49	0.60	0.34	0.54	0.03	0.05