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CROSS SECTIONAL RETURN PREDICTABILITY IN TAIWAN STOCK EXCHANGE:
An Empirical Investigation

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Abstract

The purpose of this paper is to provide a comprehensive analysis of the effectiveness of certain return predictors in Taiwan stock market. Within this context, the paper provides a comprehensive analysis on the stock return predictability in Taiwan Stock Exchange (TWSE) from January 1990 to December 2011 by employing both portfolio method and cross-sectional regressions. In the risk-related predictors, we found no statistically significant predictive power of beta, total volatility, and idiosyncratic volatility. Our results indicate that two cheapness variables, book-to-market and cash-flow-to-price ratios showed strong consistent economically and statistically significant predictive powers in determining the returns for the stocks traded in the TWSE. In addition, our multiple regressions found predictive power in total volatility, short-term reversal, and market capitalization in the set of *small* stocks but not for the set of *large* stocks, while our *all* stock set showed predictive power only in total volatility and short-term reversal. We also found that regrouping the stocks as small and large according to the median value of the market capitalization of the stocks adds insights to the analysis. Our results show that the set of large stocks in the TWSE is the least predictable set of stocks.

Keywords: Taiwan Stock Exchange, TWSE, Stock return predictors, Book-to-Market Ratio, Momentum, Stock Cheapness

JEL: G10, G11,G12

1. Introduction

As market efficiency implies unpredictability of stock returns, it is well documented that stock returns can often be predicted by certain firm-level variables. In many studies predictors such as *momentum*[1]and *book-to-market ratios*[2] have shown strong consistent predictive powers causing a long debated issue in finance and promoting the use of behavioral models. While the risk-based asset pricing models will tie the predictability patterns to economically meaningful risk factors, empirical studies show that these models are generally not very effective in explaining return predictability patterns dealing with tendencies such as continuation, momentum, and reversals[3]. Researchers often use either the portfolio method or the cross-sectional regressions method, to investigate the statistically significant relationships between stock returns and firm-level predictors. In the portfolio method, one may compute the value-weighted and/or equal-weighted average monthly returns of quintile portfolios sorted based on the predictor in question, and analyze them to obtain meaningful return predictors. In cross-sectional regressions method, researchers regress the firm-level return predictors on stock returns and analyze the results.

Jagadeesh and Titman's (1993) study for the U.S., and other studies such as Fama and French (1998), Rouwenhorst (1998 and 1999), Chan, et al (2000), Grundy and Martin (2001), Wu (2011), Titman, et al (2004), and Pincus, et al (2007) showed that anomalies identified in the US market also exist in many markets outside the U.S. Relationships between stock returns and return predictors are visible in many markets around the world and are not only valid for a few markets with specific features.

Within this context, researchers evaluate common variables such as market capitalization, price, momentum, and also pay attention to risk related variables such as beta, total volatility, idiosyncratic volatility, as well as cheapness variables such as book-to-market ratio, or cash-flow-to-price ratio.

[1] See, for example, Asness, C.S., T. J. Moskowitz, and L.H. Pedersen, (2009)
[2] See, for example, Lakonishokm J., A. Shleifer, and R. Vishay, (1994)
[3] See, for example, Hong and Stein (1999), Bernard and Thomas (1989), and Fama and French (1996) for details.

This study extends this line of the literature by examining the predictability of the Taiwan stock market as it is one the emerging market countries. As Campbell R.H. (1995) highlights, it is well documented that emerging market returns present a low correlation with developed county returns, emerging market equities have high expected returns and this should be associated with larger exposure to risk factors, and emerging market returns are generally more predictable than the developed market returns; and finally, it is more likely that the emerging market returns are influenced by local rather than global information variables. While encompassing a small geographical area, over the past several decades Taiwan has transformed itself from a mostly agricultural island to a regional economic power, holding the world's fourth-largest stock of foreign exchange reserves ($385.6 billion as of December 2011). The country's securities markets have steadily grown with its economy and through gradual financial liberalization. According to Standard & Poor's Global Stock Markets Factbook 2011, Taiwan was ranked 14th largest country in terms of market value of all domestic listed companies. In the FTSE Emerging Index, Taiwan's equities account for 13.2%, only after China's 16.7% and Brazil's 16.1%. The country's economic importance and the insights that may be gained into the pricing behavior of emerging markets provide strong motivation for our research.

The Taiwan Stock Exchange was established in 1961 and today there are over 750 listed stocks. According to the TWSE Fact Book 2011, TWSE has a market capitalization of approximately 24,000,000 million TWD[4] as of 2010. In 2009 World Federation of Exchanges Annual Report 2009, TWSE was ranked as the 21st largest stock market in terms of market capitalization in 2009 with a total capitalization of US$657 billion.

Taiwan's stock market traditionally is dominated by domestic individual investors[5]. Beginning in 1990, Taiwan implemented a series of liberalization measure to gradually open its securities markets. Foreign and local institutional investors have increased substantially since then, but domestic individual investors still accounted for 68.8% of trading in 2005 (Kung and Wong

[4] TWD, New Taiwan Dollar. (conversion rate at May 21, 2012 is 29.58 TWD is 1 USD)

[5] Qualified foreign institutional investors (QFII) were first allowed to invest in domestic stock market and then after 1996 foreign juristic persons and natural persons were permitted. The QFII system was finally abolished in October 2003.

2005). In contrast, non-retail trading accounted for 96% of New York Stock Exchange trading volume in 2002 (Jones and Lipson, 2004).As individual investors tend to have limited ability to access and process information, their investment behavior may be significantly different from what one would expect in an efficient market. Several studies documented the inefficiency of the Taiwan stock market. Titman and Wei (1999) compare Korean and Taiwanese stock markets and find that the Taiwan's stock prices may have deviated from fundamental values at selected times and Taiwanese market has been the more volatile one despite the similarities between the two markets. Lee, Liu, Roll and Subrahmanyam (2004) found that institutional investors and informed investors can earn excess returns when they receive private signals. In addition, Demirer, Kutan and Chen (2010) show strong evidence of investors herd in all sectors, particularly during periods of market losses. On the other hand, literature also suggests that the efficiency of Taiwan stock market has been greatly enhanced by the liberalization measures implemented over the last two decades. Kung and Wong (2009) show that the two trading rules– the moving average and the trading range break have considerable predictive power for 1983–1990. However, the rules become less predictive for 1991–1997 and cannot predict the market for 1998–2005. It is also worth noting that Chui and Wei (1998) reported that book-to-market ratio fails to explain the cross sectional stock returns in Taiwan for the period of 1981 to 1993, and Chen and Zhang (1998) reported that high average returns on high book-to-market stocks that tend to persist in well-established markets are almost non-existent in the high growth market of Taiwan. Furthermore, the reported absence of book-to-market effect in the Taiwan Stock Market has been studied by Chiao, Hung, and Yao (2010) for the period of 1987 to 2004, and they reported that the absence may be attributable to R&D investments. Chio, Hung and Yao (2010) employs Daniel and Titman's (2006) book-to-market decomposition and show that R&D intensive stocks consistently outperform the stocks with little or no R&D and conclude that the absence of book-to-market effect is the result of incorrect valuation of the R&D-intensive firms under a speedy economic transition. All of the issues underlined above calls further attention to recent characteristics of Taiwan Stock Market and highlights the need of a more inclusive analysis of return predictors for a more mature stock market.

In more detail, the purpose of this paper is to provide a comprehensive analysis of the effectiveness of highlighted return predictors in Taiwan stock market. We analyze the data on the Taiwan Stock Exchange for the 20 years ending in 2011. Using portfolio method and the cross-sectional regressions, our results indicate strong predictive power of cash-flow-to-price and book-to-market ratio for all sets of firms. In addition, our multiple regressions found predictive power in total volatility, short-term reversal, and market capitalization in the set of *small* stocks but not for the set of *large* stocks, while our *all* stock set showed predictive power only in total volatility and short-term reversal.

As several characteristics of Taiwan stock market such as high turnover rate, high volatility, price limits, and a high participation of individual investors, are markedly different from those of the major stock markets in developed markets but shared with other emerging markets, what we learn from Taiwan's stock market should be useful to those interested in modeling or forecasting the return predictability of such markets.

The next section covers the data and variable descriptions; section 3 discusses the results of portfolio methods, section 4 reports the cross-sectional results, section 5 presents robustness tests, and section 6 concludes.

2. Data and Variables

The data for Taiwanese stocks is obtained from DataStream and covers the period of January 1990 through December 2011.

Daily stock returns are used to calculate the total volatility, market beta, and idiosyncratic volatility; monthly returns are used to calculate proxies for momentum and short-term reversals; share prices and shares outstanding are used to calculate market capitalization; the equity book values are used for calculating the book-to-market ratios of individual firms.

The variables used in this work are tabulated in Table 1 and defined as follows:

(a) SIZE (Market Capitalization): Following the existing literature, firm size is measured by the natural logarithm of the market value of equity (a stock's price times shares outstanding in New Taiwan Dollars -TWD) at the end of month *t-1* for each stock.

(b) PRICE: stock price at the end of month *t-1* for each stock

(c) BETA (Stock's Beta): Following Scholes and Williams (1977), using the current as well as

one-period lagged return of the market portfolio in estimating beta:

$$R_{i,d} - r_{f,d} = \alpha_i + \beta_{1,i}(R_{m,d-1} - r_{f,d-1}) + \beta_{2,i}(R_{m,d} - r_{f,d}) + \varepsilon_{i,d}$$

where $R_{i,d}$ is the return on stock *i* on day *d*, $R_{m,d}$ is the market return on day *d*, and $r_{f,d}$ is the risk free rate on day *d*. Once the above equation is estimated using daily returns within a month, the market beta of stock *i* in month *t* is defined as $\beta_i = \beta_{1,i} + \beta_{2,i}$.

(d) SD (Stock's Standard Deviation): (total volatility) of the stock *i* in month *t* is defined as the standard deviation of daily returns within month *t*:

$$SD_{i,t} = \sqrt{var(R_{i,d})}$$

(e) SEE (Stock's Idiosyncratic Volatility): Monthly idiosyncratic volatility of an individual stock is obtained from the following single factor return generating process:

$$R_{i,d} - r_{f,d} = \alpha_i + \beta_i(R_{m,d} - r_{f,d}) + \varepsilon_{i,d}$$

where $\varepsilon_{i,d}$ is the idiosyncratic return on day *d*. The idiosyncratic volatility of stock *i* in month *t* is defined as the standard deviation of daily residuals in month *t*:

$$SSE_{i,t} = \sqrt{var(\varepsilon_{i,d})}$$

For Beta, SD, and SEE, we use daily stock returns over the past month (*t-1)*, and the values we compute for these measures will be used to forecast stock returns in month *t*.

(f) STREV (Short-Term Reversal): Following Jegadeesh (1990) and Lehmann (1990), the reversal variable for each stock in month *t* is defined as the return on the stock over the previous month. (i.e. return in month *t-1*)

(g) MOM1 (Momentum): Following Jegadeesh and Titman (1993), the momentum variable for each stock in month *t* is defined as the cumulative return from month *t-12* to month *t-2* (previous 11 months starting one month ago)

(h) MOM2 (Momentum): cumulative return from month *t-7* to month *t-2* (previous 6 months starting one month ago)

(i) BKMT (Book-to-Market Ratio) is obtained directly from DataStream.

(j) CFPR (Cash-Flow-to-Price) is obtained directly from DataStream.

(k) EPR (Earnings-to-Price) is obtained directly from DataStream.

(l) DY (Dividend Yield) is obtained directly from DataStream.

The predictor, BMKT, CFPR, EPR, and DY is related to "cheapness" of stocks. In the subsequent analysis, we will investigate whether we can employ this predictor in month *t-1* to predict cross-sectional variations of returns in month *t*.

Table 2 reports the average values of the variables over times in panel A and the correlation of the variables in panel B.

3. Univariate Portfolio-Level Analysis

Applying portfolio method covering the period of January 1990 to December 2011 yields the results tabulated in Tables 3 (A), (B), and (C) for all, large, and small stocks, respectively. Table 3 (A) reports the equal-weighted and value-weighted quintile returns on portfolios of *all stocks* sorted into quintiles based on the predictors in question. The return predictors evaluated are the market capitalization, price, beta, total volatility, idiosyncratic volatility, short-term reversal, momentum, book-to-market ratio, cash-flow-to-price ratio, earnings-to-price ratio, and the dividend yield. The last column reports the number of firms in each quintile.

In addition to usual return information sorted into quintiles based on certain firm-level predictors, Table 3 also reports the reactions of other predictors to the sorting. This information helps researchers to see the movement patterns of the predictors in addition to the sorting predictor that determines the quintile returns.

3.1 All-Stocks

Table 3 (A) Panel 1 uses market capitalization, or size, as the sorting predictor, and Q1 is the portfolio of stocks with the lowest quintile of the relative size, and their equal-weighted (column EQW) and value-weighted (column WV) average monthly return, and Q5 reports the same for the highest quintile of the relative firm size. Row Q5-1 corresponding to EQW column reports the *equal-weighted average raw return difference between quintile 5 and quintile 1* and is equal to –0.61% per month with a corresponding Newey-West (1987) t-statistic of –1.44. Similarly, row Q5-1 corresponding to column VW reports the highest to lowest quintile returns difference for the value-weighted portfolios as -0.51% per month with a Newey-West (1987) t-statistic of –1.12. The differences in raw returns are statistically not significant at conventional levels.

In addition to the average raw returns, Table 4 (A) Panel 1 (Size) also reports the *alphas, the risk adjusted returns* obtained from the regression of the value-weighted and equal-weighted portfolio returns on a constant and the excess market return. As shown in the last row of Table 3 (A) Panel 1 (Size), the difference in alphas between the high and low portfolios are –0.69% per month with a Newey-West (1987) t-statistic of –1.70 for the equal-weighted and -0.59% with a Newey-West (1987) t-statistic of –1.35 for the value-weighted portfolios. The differences in raw as well as risk-adjusted returns are also not statistically significant at all conventional levels. Other columns of the table report information on the other predictors corresponding to different market capitalization quintiles. For instance, column named MSH, the market share, shows that the market share of the firms that fall in the first market capitalization quintile is 2 percent while the market share of the fifth market capitalization quintile is 74 percent. Similarly, we see that momentum1 rises with the size and is equal to -1.9 percent for the first quintile's firms (firms with the lowest 20 percent market capitalization) while it is equal to 11.7 percent for the fifth one[6], showing an obvious positive relationship between momentum and market capitalization. Overall, we see that when the sorting is made by the market capitalization, momentum, market share, price, beta, and short-term reversal will increase with size, as we move from first to fifth quintile.

Similarly, other panels of Table 3 (A) evaluating EQW and VW sorted by price, beta, total volatility (SD), idiosyncratic volatility (SEE), short term reversal (STREV), 12 months momentum

[6] Momentum here shows January to November, average return percent for eleven months.

(MOM1), 6 months momentum (MOM2), and dividend yield (DY) produce statistically insignificant results.

Table 3 (A) panel of book-to-market ratio (BKTM) reports the returns when book-to-market-ratio is used as the sorting return predictor. Difference in raw returns for the equal-weighted portfolios is 1.69% per month with a Newey-West (1987) t-statistic of 3.46 and the value- weighted one is 1.00% per month with a Newey-West (1987) t-statistic of 1.87. Alphas, the risk-adjusted return differences are reported as 1.71% per month with a Newey-West (1987) t-statistic of 3.63 for the equal-weighted and 1.04% with a Newey-West (1987) t-statistic of 2.01 for the value-weighted portfolios. The differences in raw as well as risk-adjusted returns are statistically and economically significant at all conventional levels when book-to-market-ratio is used as the sorting predictor of quintile portfolios for both equal and value weighted returns. When sorted by BKMT, we see that as book-to-market ratio increases, market share, size, price, short-term reversal, and momentum consistently decline, and cash-flow-to-price ratio and earnings-to-price ratio increase.

Table 3 (A) panel of cash-flow-to-price ratio (CFPR) reports the returns sorted by CFPR. Difference in raw returns for the equal-weighted portfolios is 3.35% per month with a Newey-West (1987) t-statistic of 8.6 and the value- weighted one is 2.29% per month with a Newey-West (1987) t-statistic of 5.19. Alphas, the risk-adjusted return differences are reported as 3.42% per month with a Newey-West (1987) t-statistic of 9.15 for the equal-weighted and 2.35% with a Newey-West (1987) t-statistic of 5.44 for the value-weighted portfolios. The differences in raw as well as risk-adjusted returns are statistically and economically significant at all conventional levels when cash-flow-to-price ratio is used as the sorting predictor of quintile portfolios for both equal and value weighted returns. Unlike BKMT, when sorting based on CFPR, other predictors fail to present a consistent increasing or decreasing tendency.

Table 3 (A) panel of earnings-to-price ratio (EPR) reports the returns sorted by EPR. Difference in raw returns for the equal-weighted portfolios is 0.78% per month with a Newey-West (1987) t-statistic of 2.66 and the value- weighted one is 0.98% per month with a Newey-West (1987) t-statistic of 2.40. Alphas, the risk-adjusted return differences are reported as 0.82% per month with a Newey-West (1987) t-statistic of 2.92 for the equal-weighted and 1.04% with a Newey-West

(1987) t-statistic of 2.63 for the value-weighted portfolios. The differences in raw as well as risk-adjusted returns are statistically and economically significant at all conventional levels when book-to-market-ratio is used as the sorting predictor of quintile portfolios for both equal and value weighted returns. As EPR increases, short-term reversal, and momentum decline and CFPR, EPR, and dividend yield increase.

Among the predictors monitored, *cash-flow-to-price* ratio has the highest degree of predictability in terms of economic and statistical significance. The absolute differences in both raw and risk-adjusted returns between the highest and lowest quintiles are the highest when the stocks are sorted based on cash-flow-to-price ratio.

Sorting with DY will not produce any statistically significant returns.

3.2 Large-Stocks

In order to discover characteristics attributable to groups of firms with similar sizes, we reclassified the firms as small and large by using the median market capitalization as the benchmark, and repeated the same analyses separately for each group. Table 3 (B) reports the results for *large* stocks:

Size, Price, Beta, SD (total volatility), SEE (idiosyncratic volatility), STREV (short-term reversal), Mom1, and Mom2 are still not an economically or statistically significant return predictors in the set of large stocks when used with value-weighted or equal weighted portfolios, suggesting they have no predictive power. Specific return values and corresponding Newey-West (1987) t-statistics are reported in the Table 3 (B) in the same format of Table 3 (A).

In the set of large stocks, BKMT, CFPR, and EPR stayed as statistically and economically significant predictors except the value weighted BKMK, but all lost some economic and statistical significance.

For BKTM, the difference in raw returns for the equal-weighted portfolios of large stocks now is 1.24% per month with a Newey-West (1987) t-statistic of 2.38 and the value- weighted one is 0.65% per month with a Newey-West (1987) t-statistic of 1.23. Alphas, the risk-adjusted return differences are reported as 1.30% per month with a Newey-West (1987) t-statistic of 2.60 for the equal-weighted and 0.73% with a Newey-West (1987) t-statistic of 1.46 for the value-weighted portfolios. The differences in raw as well as risk-adjusted returns are statistically and economically significant at all conventional levels for equal weighted returns but not for the value weighted ones. When large stocks are sorted by BKMT, we see that as book-to-market ratio increases, market share, size, price, beta, total volatility, idiosyncratic volatility, short-term reversal, and momentum consistently decline, and cash-flow-to-price ratio and dividend yield increase.

CFPR maintains to be the most economically and statistically significant predictor in the set of large stocks with the difference in raw returns and risk adjusted returns for both, equal and value weighted portfolios of large stocks; but again with a bit power loss in both economic and statistical significance levels. It is now 3.01% per month with a Newey-West (1987) t-statistic of 7.53 for equal weighted one and 2.26% per month with a Newey-West (1987) t-statistic of 4.90 for the value weighted one. Alphas now are reported as 3.05% per month with a Newey-West (1987) t-statistic of 7.72 for the equal-weighted and 2.32% with a Newey-West (1987) t-statistic of 5.12 for the value-weighted portfolios. When large stocks are sorted by CFPR, we see that the price, total volatility, and idiosyncratic volatility decreases, while EPR and DY increase when CFPR increases. It is noticeable that we do not observe the consistency we had with BKMK in the previous panel.

EPR results are also quite close to the ones we obtained from the set of all stocks. It is now 0.71% per month with a Newey-West (1987) t-statistic of 1.94 for equal weighted one and 0.72% per month with a Newey-West (1987) t-statistic of 1.64 for the value weighted one. Alphas now are reported as 0.81% per month with a Newey-West (1987) t-statistic of 2.52 for the equal-weighted and 0.84% with a Newey-West (1987) t-statistic of 2.09 for the value-weighted portfolios.

Dividend yield is not statistically significant.

3.3 Small-Stocks

Table 3 (C) reports the results for *small* stocks:

Price, Beta, SD (total volatility), SEE (idiosyncratic volatility), STREV (short-term reversal), Mom1, and Mom2 are still not economically or statistically significant return predictors, suggesting they have no predictive power. Specific return values and corresponding Newey-West (1987) t-statistics are reported in the Table 3 (C) in the same format of Table 3 (A).

It is, however, remarkable that the *market capitalization,* very first time, becomes a statistically and economically significant predictor in the set of small stocks with a value of -1.01percent per month with a Newey-West (1987) t-statistic of -2.79 for the equal weighted one and -0.90 per month with a Newey-West (1987) t-statistic of -2.59 for the value weighted one. The alphas are -1.04percent per month with a Newey-West (1987) t-statistic of -2.98 for the equal weighted one and -0.92 per month with a Newey-West (1987) t-statistic of -2.76 for the value weighted one. Size is positively related with market share, beta, short-term reversal, and momentum, and negatively related with book-to-market ratio.

Set of small stocks produces the most economically and statistically significant values for BKMK and CFPR. For book-to-market ratio, we have 2.17 percent per month with a Newey-West (1987) t-statistic of 4.32 for the equal weighted one and 1.89 per month with a Newey-West (1987) t-statistic of 3.80 for the value weighted one. The alphas are 2.16 percent per month with a Newey-West (1987) t-statistic of 4.44 for the equal weighted one and 1.86 per month with a Newey-West (1987) t-statistic of 3.92 for the value weighted one. For cash-flow-to-price ratio, we have 3.92 percent per month with a Newey-West (1987) t-statistic of 9.13 for the equal weighted one and 3.99 per month with a Newey-West (1987) t-statistic of 9.09 for the value weighted one. The alphas are 4.00 percent per month with a Newey-West (1987) t-statistic of 9.71 for the equal weighted one and 4.05 per month with a Newey-West (1987) t-statistic of 9.41 for the value weighted one. These are by far the highest values in three sets.

EPR is statistically significant for equal weighted raw as well as risk adjusted returns, but significant only for the value weighted alpha. Finally, dividend yield, once again failed to show any statistically significant relationship.

4. Cross Sectional Regression Analysis

Next, cross-sectional regressions are used to confirm the results obtained from the portfolio method. Cross sectional regressions are helpful in discovering a potentially more complex relationship not obtainable from the portfolio method. Here, we are employing standard Fama-

MacBeth cross-sectional regressions (Fama and MacBeth 1973): Each month, the cross section of returns on stocks is regressed on variables chosen to explain expected returns. The time-series means of the monthly regressions' slopes then provide standard tests of evaluating different explanatory variables. In more detail, in each month from January 1990 to December 2011, we run a firm-level cross-sectional regression of the stock return predictors in the previous month on the monthly stock returns in the current month and report the time-series averages of the cross-sectional regression slope coefficients and their associated Newey-West (1987) adjusted t-statistics. Our results are tabulated in three tables (Tables 4 (A, B, C)); for *all stocks* first, and then *large* and *small stocks*, classified according to the median market capitalization. In all cross sections, the beta, total volatility, and idiosyncratic volatility are computed using the daily returns over the last month[7].

Table 4 (A) top panel reports the simple regressions of our return predictors by regressing them on monthly stock returns for the month in question. This top panel, separated by a solid line from the bottom panel, has twelve rows and reports the simple regression coefficients of the twelve underlined return predictors. The bottom panel shows alternative multiple regression results including "controlled variables" to facilitate a more complex analysis for the same return predictors.

As an example, the first entry of the first row of the Table 4 (A), -0.002 is the coefficient value of *size* as an explanatory (independent) variable when it was regressed on monthly stock returns, and the value in the parenthesis, (-1.36), is the Newey-West (1987) adjusted t-statistics of the corresponding coefficient.

Simple regression panels of all three cross sectional tables will consistently report the *size*, *price*, *beta, total volatility, idiosyncratic volatility*, *short-term reversal*, *momentum, earnings-to-price, and the dividend yield* as statistically insignificant return predictors. Note that this is very parallel to what we obtained in portfolio approach. It is also worth noting that the *size* was statistically significant in portfolio approach for the small firms, and we observe this in cross sections as the t-statistics is -1.45 for the small firms. Book-to-market and cash-flow-to-price ratios are consistently statistically significant in all simple regressions for the full set as well as for the sets

[7] We also obtained the cross sections by computing the beta, total volatility, and the idiosyncratic volatility from the daily returns over the past 12 months. Since the results are not substantially different, the latter is not reported in the paper, but available upon request.

of large and small firms, but note that there is only a borderline significance in case of large firms, similar to what we obtained in portfolio approach. The economic significance of CFPR is again the highest in cross sections with a size 4 to 8 times bigger than the coefficient of BKMT, noting that the difference in economic significance increases when the size of the firms decreases.

The panel of multiple regressions showing variety of alternative multiple regressions will tell us more as we now have controlled variables. First noticeable finding is that the total volatility becomes statistically and economically significant *all* and *small* stocks sets. Similarly, the short-term reversal also becomes statistically significant in *all* and *small* stocks sets, when we control certain predictors. The details of those regressions such as the included controlled variables as well and the magnitudes of statistical and economic significance can be seen in detail in cross sectional tales Table 4, A, B, and C.

Cross sectional multiple regressions report that for the set of *all* stocks, *total volatility, book-to-market ratio,* and *cash-flow-to-price ratio* are almost always produce significant results. The most economically important predictor however is, once again, the CFPR.

Small firms are the most predictable ones as *size, total volatility*, *short-term reversal, book-to-market ratio*, and *cash-flow-to-price ratio* are almost always producing statistically significant results. Total volatility and CFPR are the most economically significant predictors for the set of small stocks.

Finally, and just like the results of portfolio approach, large firms were once again confirmed as the least predictable ones, with only cash-flow-to-price ratio showing some statistical significance.

In summary, the portfolio approach and the simple cross-sectional regression results are in agreement in the signs of the coefficients as well as the statistical and economical significance of their values. Our portfolio approach and simple regression results highlight the powerful and consistent predictive power of the cheapness variables book-to-market ratio and cash-flow-to-price ratio and marks all of the other risk related predictors as not useful in predicting stock returns. The predictor related to cheapness, the cash-flow-to-price ratio stands out as a consistent and very reliable return predictor especially for all stocks and small stocks but loses a bit of economic and statistical significance when restricted to large stocks only. Multiple regressions, however, helped us discover the predictive powers of some variables we found statistically insignificant in portfolio approach and simple cross sections. *Size, total volatility,* and *sort-term reversal* can be safely used in predicting stock returns when included in multiple regressions. The details are in Tables 4, A, B, and C.

5. Predictability Based on Lagged Values

This section examines the robustness of the book-to-market ratio, cash-flow-to-price ratio, earnings-to-price ratio, and dividend yield. While our risk-related variables mostly failed to be useful in predicting the cross-sectional differences of returns[8], book-to-market ratio and cash-flow-to-price ratio showed the highest degree of predictability and consistency, in terms of both the economic magnitudes and statistical significance. So far however, we have investigated only the differences in raw returns and risk-adjusted returns between Q1 and Q5 in the *first month* after the quintile formation implying frequent trading and higher transaction costs and making it difficult to implement and benefit. Therefore, one has to ask whether those variables can predict the return beyond the first month. Table 5 reports the equal-weighted and value-weighted quintile returns on portfolios of all stocks sorted into quintiles in month t, using information on BMKT, CFPR, EPR, and DY at month t-3, t-6, t-9, and t-12.

When all-stocks set are sorted based on BMKT at month t-3, t-6, t-9, and t-12, the differences in raw returns are 1.42%, 1.22%, 0.90%, and 0.86% for equal-weighted quintiles and 0.67%, 0.59%, 0.41%, and 0.63 for value-weighted quintiles. All of the equal weighted ones stayed significant up to 12 months, statistically and economically. As expected, the statistical and economic significance levels declined as we move from 3 to 12 months. However, none of the value weighted differences are statistically significant even for 3 months. We obtained very similar results for the alpha spread as can be seen in the first panel of Table 5.

When sorted by CFPR at month t-3, t-6, t-9, and t-12, the differences in raw returns are 2.86%, 2.06%, 1.27%, and 0.89% for equal-weighted quintiles and 1.77%, 1.24%, 0.72%, and 0.61

[8] Other than multiple regressions, neither the portfolio approach nor the simple cross sections showed statistically significant predictive powers.

for value-weighted quintiles. Clearly, the economic significance is about twice as much of the one with BKMT for t-3 and stays higher for higher lag levels, and statistical significance presents better t-values at each lag level compared to BKMT. Value weighted return differences now statistically significant at t-3, and t-6 at 5percent level, but borderline for t-9 and t-12 lag levels. Alpha spread presents very similar results.

Earnings-to-price ratio presents statistically significant results for both equal weighted and value weighted differences for t-6 and t-12, but not for t-1 and t-9, and the dividend yield is significant only at t-12 for both equal and value weighted returns.

Table 6 explains the sign consistency of our statistically significant variables.

6. Conclusion

This paper analyzes the stock return predictability in Taiwan Stock Exchange using the TWSE listed stocks covering the period of January 1990 to December 2011 by employing both portfolio method and Fama-MacBeth cross-sectional regressions to report the predictive powers of selected return predictors used in most previous studies.

With monthly data from January 1990 to December 2011, we showed that portfolio method and the cross-sectional regressions both confirm the strong predictive power of cash-flow-to-price and book-to-market ratio as "cheapness" variables for all sets of firms. In addition to cheapness variables, our multiple regressions found predictive power in *total volatility*, *short-term reversal*, and *market capitalization* in the set of small stocks but not for the set of large stocks. Our all stock set showed predictive power only in *total volatility* and *short-term reversal*.

The differences in raw returns between the highest and lowest stock quintiles, sorted based on *cash-flow-to-price ratio* and *book-to-market ratio* are uniformly positive in all years. When we sort stocks using information on *cash-flow-to-price ratio* lagged up to 12 months, we have statistically and economically significant results. Therefore, fund managers and individual investors should pay more attention to the "cheapness" variables when investing into the Taiwanese stocks than any other return predictor, especially CFPR ratio would not lose its predictive power for 12 months predictions.

We also found that regrouping the stocks as *small* and *large* according to the median value of the market capitalization adds important insights to the analysis. Our results show that the set of large stocks in Taiwan Stock Exchange is the least predictable set of stocks and no predictor other than cash-flow-to-price ratio should be considered reliable in predicting their returns.

References

Asness CS, Moskowitz TJ, Pedersen LH (2009) Value and Momentum Everywhere. *AFA 2010 Atlanta Meetings Paper*. Available at SSRN: http://ssrn.com/abstract=1363476.

Bernard VL, Thomas J (1989) Post-earnings announcement drift: Delayed price response or risk premium? *Journal of Accounting Research*, 27:1–48

Campbell RH, (1995) Predictable Risk and Returns in Emerging Markets. *Review of Financial Studies*, 773-816

Chan K, Hameed A, Tong W (2000) Profitability of Momentum Strategies in the International Equity. *The Journal of Financial and Quantitative Analysis*, 35:153-72

Chen NF, Zhang F (1998) Risk and Return of Value Stocks. *Journal of Business*, 71:501-35

Chiao C, Hung W, Yao C (2010) The Absence of Book-to-Market Effect in the Taiwan Stock Market: A Decomposition Approach. The Japanese Economic Review, 61:289-99

Chui AC, Wei KCJ (1998) Book-to-Market, Firm Size, and Turn-of-the-Year Effect from Pacific Basin Emerging Markets. *Pacific-Basin Finance Journal*, 6:275-93

Daniel K, Titman S (1997) Evidence on the Characteristics of Cross Sectional Variation in Stock Returns. *Journal of Finance*, 50: 1-33

Fama EF, MacBeth J (1973) Risk, Return, and Equilibrium: Empirical Tests Journal of Political Economy. Vol. 81, 3: 607-36

Fama EF, French KR (1996) Multifactor Explanations of Asset Pricing Anomalies., *Journal of Finance*, 51:55–84

Fama, EF, French KR (1998) Value versus growth: The international evidence. *Journal of Finance,* 53:1975–99

Grundy BD, Martin S (2001) Momentum: Fact or Factor? Momentum Investing when Returns have a Factor Structure. *Review of Financial Studies*, 14 (1): 29-78

Hong H, Stein J (1999) A Unified Theory of Underreaction, Momentum Trading and Overreaction in Asset Markets. *Journal of Finance,* 54: 2143–84

Jegadeesh N (1990) Evidence of Predictable Behavior of Security Returns. *Journal of Finance*, 45: 881-98

Jegadeesh N, Titman S (1993) Returns to buying winners and selling losers: Implications for stock market efficiency. *Journal of Finance,* 48:65–91

Lakonishokm J, Shleifer A, Vishay R (1994) Contrarian Investment, Extrapolation, and Risk. *Journal of Finance*, 49:1541-78

Lehmann BN (1990) Fads, Martingales, and Market Efficiency, Quarterly Journal of Economics, 105:1-28

Newey WK, West KD (1987) A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix. *Econometrica* 55:703-8

Pincus M, Rajgopal S, Venkatachalam M (2007) The Accrual Anomaly: International Evidence. *Accounting Review* 82 (1):169-203

Rouwenhorst KG (1998) International momentum strategies. Journal of Finance, 53:267–84

Rouwenhorst KG (1999) Local Return Factors and Turnover in Emerging Stock Markets. *Journal of Finance*, 54: 1439-64

Scholes M, Williams J (1977) Estimating Betas from Nonsynchronous Data. *Journal of Financial Economics,* 5: 309-27

Titman S, Wei J, Xie F (2004) Capital investments and stock returns. *Journal of Financial and Quantitative Analysis* 39:677–700

Wu Y (2011) Momentum Trading, Mean Reversal and Overreaction in Chinese Stock Market. *Review of Quantitative Finance and Accounting*, 37:301-23

Jones CM, Lipson ML (2005) Are retail orders different? Working Paper, Columbia University

Kung J, Wong WK (2009) Efficiency of the Taiwan Stock Market. *The Japanese Economic Review* 60:389-94

Lee YT, Liu YJ, Roll R, Subrahmanyam A (2004) Order Imbalances and Market Efficiency: Evidence from the Taiwan Stock Exchange. Journal of Financial and Quantitative Analysis 39:327-41

Titman S, Wei KCJ (1999) Understanding Stock Market Volatility: The Case of Korea and Taiwan. *Pacific-Basin Finance Journal* 7:41–66

Demirer R, Kutan AM, Chen C (2010) Do investors herd in emerging stock markets?: Evidence from the Taiwanese Market. *Journal of Economic Behavior & Organization* 76:283–95

Table 1. List of Variables and Their Descriptions

Variable	Description
RET	Return
MSH	Market Share
SIZE	Market Capitalization of the Firm
PRICE	Market Price
BETA	Stock's Beta
SD	Stock's Standard Deviation
SEE	Idiosyncratic Risk
STREV	Short-Term Reversal (return at month t-1)
MOM1	Momentum (cumulative return from month t-12 to month t-2)
MOM2	Momentum (cumulative return from month t-7 to month t-2)
BKMT	Book-to-Market Ratio
CFPR	Cash-Flow-to-Price Ratio
EPR	Earnings-to-Price Ratio
DY	Dividend Yield
nfirms	Number of Firms

Table 2 - Table reports the average values and correlation among the variables of the Taiwanese stocks from January 1990 to December 2011.

Panel A: Average values of the Variables over Time

	SD	SEE	BKMT	CFPR	EPR	DY	nfirms
1991	56.60	32.90	0.41	6.68	3.93	1.72	121
1992	36.55	25.78	0.47	7.19	4.62	1.41	136
1993	37.36	25.39	0.49	7.56	4.72	1.53	158
1994	38.59	29.57	0.38	5.77	3.55	1.29	186
1995	36.23	26.57	0.50	6.66	4.79	1.43	206
1996	32.00	25.79	0.54	6.50	5.09	1.61	229
1997	42.72	35.56	0.46	5.45	3.69	1.61	273
1998	41.44	32.85	0.51	4.78	4.53	1.79	303
1999	46.95	37.90	0.71	6.48	6.51	1.96	330
2000	56.40	45.53	0.87	9.35	6.45	2.69	375
2001	50.64	41.98	1.25	11.74	9.40	2.63	411
2002	52.76	42.79	0.93	12.47	6.31	1.98	444
2003	42.60	36.39	0.92	13.20	6.78	2.32	477
2004	41.10	33.30	0.83	13.71	8.17	2.52	496
2005	33.12	29.52	0.92	18.22	9.21	3.48	498
2006	36.36	31.44	0.90	16.48	8.18	3.63	500
2007	39.93	34.63	0.69	13.10	6.77	2.99	496
2008	49.75	37.91	0.91	14.20	10.02	4.90	492
2009	44.25	36.09	1.01	16.18	8.64	5.31	503
2010	34.75	28.76	0.72	14.48	6.63	2.82	510
2011	33.55	27.34	0.75	14.73	7.91	3.89	512

Panel B: Correlation Matrix of the Variables

	RET	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMT	CFPR	EPR	DY
RET	1.00	-0.01	0.00	-0.01	-0.01	-0.02	0.00	-0.01	-0.01	0.06	0.08	0.02	0.01
SIZE		1.00	0.28	0.05	-0.08	-0.15	0.02	0.06	0.05	-0.17	0.06	0.04	0.08
PRICE			1.00	0.08	0.07	0.02	0.09	0.27	0.22	-0.60	-0.09	-0.05	-0.08
BETA				1.00	0.46	0.19	0.00	0.04	0.04	-0.06	-0.03	-0.07	-0.07
SD					1.00	0.88	0.23	0.12	0.14	-0.07	-0.11	-0.12	-0.19
SEE						1.00	0.28	0.10	0.12	-0.04	-0.10	-0.10	-0.17
STREV							1.00	0.00	-0.01	-0.12	0.01	-0.09	-0.04
MOM1								1.00	0.69	-0.28	0.03	-0.06	-0.11
MOM2									1.00	-0.24	0.01	-0.11	-0.10
BKMT										1.00	0.07	0.07	0.03
CFPR											1.00	0.10	0.08
EPR												1.00	0.20
DY													1.00

Table 3. (A) Returns on Portfolios of All Stocks Sorted into Quintiles based on Predictors in Upper Left Corner.

Table reports the equal-weighted (EQW) and value-weighted (VW) portfolio quintile returns that are formed every month from January 1990 to December 2011, sorted into quintiles based on each predictor. Q1 (5) is the portfolio of stocks with the highest quintile of the signed predictor. Return and alpha spreads and their Newey-West (1987) t-statistics in parentheses are reported in **boldface**. BETA, SD, SEE are computed using daily returns over the **past month**.

SIZE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.51	1.33	2.0	7.7	21.9	0.7	2.4	1.9	-1.1	-1.9	-1.2	0.9	9.3	5.3	1.2	68.6
2	1.24	1.22	4.2	8.5	25.2	0.8	2.4	1.8	-0.5	2.3	0.9	0.7	9.7	7.2	1.9	68.6
3	1.02	1.02	6.9	9.0	31.1	0.8	2.4	1.8	0.0	6.2	3.2	0.6	9.1	6.1	1.9	68.6
4	0.87	0.88	12.8	9.6	34.2	0.9	2.4	1.8	0.6	9.7	5.6	0.6	9.4	6.1	1.9	68.6
5	0.90	0.83	74.0	10.8	44.2	0.9	2.3	1.6	0.7	11.7	6.0	0.5	9.7	6.1	2.2	68.6
5-1	**-0.61**	**-0.51**														
t	**(-1.44)**	**(-1.12)**														
alpha	**-0.69**	**-0.59**														
t	**(-1.70)**	**(-1.35)**														

PRICE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.61	1.23	9.9	8.4	14.5	0.8	2.3	1.8	-1.1	-4.6	-2.9	1.1	10.6	5.1	1.1	68.9
2	1.21	0.83	10.0	8.7	21.2	0.8	2.3	1.7	-0.6	0.8	0.2	0.8	10.6	7.3	2.0	68.7
3	0.90	0.99	13.8	8.9	28.9	0.8	2.3	1.7	-0.2	5.0	3.3	0.7	10.0	6.4	2.2	68.5
4	0.92	0.84	19.6	9.2	41.2	0.8	2.3	1.7	0.5	10.5	5.2	0.5	9.7	6.5	2.4	68.5
5	0.95	1.05	46.7	9.7	71.5	0.9	2.5	1.8	1.6	25.8	13.1	0.3	7.7	5.5	1.6	68.5
5-1	**-0.66**	**-0.19**														
t	**(-1.23)**	**(-0.37)**														
alpha	**-0.69**	**-0.25**														
t	**(-1.35)**	**(-0.53)**														

BETA	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.23	1.02	16.2	8.8	29.0	0.1	2.0	1.7	0.8	5.1	3.0	0.7	9.3	5.9	2.0	68.6
2	0.97	0.92	18.3	8.9	27.9	0.5	1.9	1.5	-0.8	3.1	1.4	0.7	10.1	6.3	2.3	68.6
3	1.24	1.22	19.5	9.0	28.4	0.8	2.1	1.6	-0.9	2.9	1.3	0.7	9.8	6.8	2.1	68.6
4	0.95	0.84	22.6	9.1	30.2	1.1	2.5	1.8	-0.6	5.6	2.9	0.7	9.3	5.8	1.7	68.6
5	1.13	1.09	23.5	9.2	34.5	1.6	3.1	2.1	1.4	12.9	7.5	0.6	8.8	5.5	1.3	68.6
5-1	**-0.10**	**0.07**														
t	**(-0.25)**	**(0.15)**														
alpha	**-0.24**	**-0.09**														
t	**(-0.65)**	**(-0.18)**														

SD	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.92	0.73	24.4	9.0	28.8	0.5	1.4	1.1	-1.3	0.8	-0.2	0.7	10.4	6.8	3.0	68.6
2	1.06	0.68	23.4	9.1	28.8	0.7	1.9	1.5	-1.3	2.6	0.7	0.7	10.0	6.4	2.3	68.6
3	1.20	1.00	20.7	9.0	28.4	0.9	2.3	1.8	-0.3	4.3	2.2	0.7	9.7	6.0	1.9	68.6
4	1.10	1.05	17.8	9.1	30.5	1.0	2.8	2.1	1.0	8.4	5.1	0.6	9.1	6.8	1.4	68.6
5	1.30	1.03	13.7	8.9	33.5	1.3	3.4	2.8	4.5	17.4	11.8	0.6	7.9	4.9	1.0	68.6
5-1	**0.38**	**0.29**														
t	**(0.95)**	**(0.56)**														
alpha	**0.19**	**0.08**														
t	**(0.58)**	**(0.18)**														

Table 3 – A Cont'd

SEE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.91	0.62	33.2	9.2	29.5	0.6	1.5	1.0	-1.8	1.2	-0.1	0.7	10.2	6.7	2.8	68.6
2	1.10	1.06	24.0	9.1	29.5	0.8	2.0	1.4	-1.6	2.6	1.1	0.7	9.8	6.4	2.3	68.6
3	1.26	1.02	18.3	9.0	29.0	0.9	2.3	1.7	-0.3	5.6	2.4	0.7	9.7	6.0	1.9	68.6
4	1.14	0.97	14.3	9.0	29.8	0.9	2.7	2.1	1.5	8.3	4.9	0.7	9.3	6.8	1.5	68.6
5	1.13	1.01	10.2	8.8	31.3	1.0	3.4	2.8	5.1	14.3	9.7	0.6	8.0	4.9	1.0	68.6
5-1	**0.22**	**0.40**														
t	**(0.60)**	**(0.86)**														
alpha	**0.10**	**0.31**														
t	**(0.31)**	**(0.71)**														

STREV	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.39	1.07	17.2	8.9	29.4	0.9	2.4	1.7	-9.7	9.4	6.2	0.7	8.8	6.0	1.6	68.7
2	0.70	0.48	19.6	9.0	27.3	0.8	2.1	1.5	-4.1	2.8	1.5	0.7	9.8	6.3	2.2	68.7
3	0.94	0.89	20.9	9.0	27.4	0.8	2.1	1.6	-0.1	3.2	1.0	0.7	9.8	6.9	2.2	68.6
4	1.19	0.99	21.7	9.1	30.5	0.8	2.3	1.8	4.4	4.7	2.0	0.7	9.7	6.0	2.0	68.6
5	1.33	1.13	20.6	9.1	35.9	0.9	2.8	2.3	13.3	9.7	5.0	0.6	9.1	5.2	1.5	68.6
5-1	**-0.06**	**0.06**														
t	**(-0.18)**	**(0.13)**														
alpha	**-0.04**	**0.09**														
t	**(-0.11)**	**(0.18)**														

MOM1	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.99	0.80	14.7	8.8	23.8	0.9	2.4	1.8	-0.2	-25.5	-14.5	0.8	8.7	6.1	2.1	68.6
2	1.24	0.99	17.9	8.9	25.6	0.8	2.2	1.6	-0.1	-9.1	-4.4	0.7	9.9	7.4	2.2	68.6
3	0.98	0.70	19.6	9.0	27.7	0.8	2.2	1.6	-0.1	4.9	3.0	0.7	9.9	6.2	2.2	68.6
4	1.27	1.07	22.7	9.1	32.3	0.8	2.3	1.7	0.1	23.3	12.6	0.6	9.7	6.0	1.9	68.6
5	1.06	0.76	25.1	9.3	44.3	0.9	2.6	2.0	0.0	63.7	33.7	0.5	9.1	5.3	1.2	68.6
5-1	**0.06**	**-0.04**														
t	**(0.13)**	**(-0.07)**														
alpha	**0.07**	**-0.03**														
t	**(0.16)**	**(-0.05)**														

MOM2	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.23	1.08	15.6	8.8	25.6	0.9	2.4	1.8	0.0	-18.4	-19.9	0.7	8.8	6.4	2.0	68.6
2	1.02	1.09	18.9	9.0	26.7	0.8	2.2	1.6	0.0	-7.1	-7.6	0.7	9.8	6.3	2.2	68.6
3	1.16	0.87	20.1	9.0	27.8	0.7	2.2	1.6	-0.1	2.7	2.5	0.7	10.0	6.8	2.2	68.6
4	1.12	0.95	22.2	9.1	31.1	0.8	2.3	1.7	-0.2	16.1	15.1	0.6	9.7	5.9	2.0	68.6
5	1.04	0.96	23.3	9.3	40.6	0.9	2.7	2.0	-0.1	49.9	42.6	0.5	9.1	5.0	1.2	68.6
5-1	**-0.19**	**-0.12**														
t	**(-0.39)**	**(-0.22)**														
alpha	**-0.15**	**-0.08**														
t	**(-0.32)**	**(-0.15)**														

Table 3 – A Cont'd

BKMK	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.39	0.82	40.4	9.6	66.6	0.9	2.5	1.9	1.7	25.6	13.1	0.3	6.7	5.1	1.5	69.0
2	0.70	0.69	21.5	9.2	40.1	0.8	2.4	1.8	0.5	11.2	5.6	0.5	9.4	6.4	2.1	69.1
3	1.20	1.21	16.9	8.9	28.2	0.8	2.3	1.7	-0.1	4.7	2.3	0.7	10.4	6.5	2.3	68.9
4	1.24	1.21	11.8	8.8	21.1	0.8	2.3	1.7	-0.6	0.5	0.4	0.9	11.0	6.4	2.2	68.7
5	2.08	1.82	9.4	8.5	15.2	0.8	2.3	1.7	-1.2	-4.8	-2.5	1.2	11.8	6.7	1.5	67.5
5-1	**1.69**	**1.00**														
t	**(3.46)**	**(1.87)**														
alpha	**1.71**	**1.04**														
t	**(3.63)**	**(2.01)**														

CFPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	-0.42	-0.46	16.4	9.0	30.7	0.9	2.6	1.9	-0.3	5.0	2.1	0.6	2.9	4.1	0.9	68.7
2	0.39	0.72	21.4	9.0	36.9	0.8	2.4	1.8	0.2	7.2	3.6	0.5	6.8	5.2	1.8	68.7
3	0.95	1.01	20.9	8.9	32.8	0.8	2.3	1.7	0.0	5.9	3.2	0.6	9.5	6.9	2.3	68.6
4	1.73	1.35	19.1	8.9	28.2	0.8	2.2	1.7	-0.1	5.8	3.9	0.7	12.6	6.8	2.3	68.7
5	2.93	1.83	22.2	9.1	23.6	0.8	2.3	1.7	-0.2	4.1	1.8	0.9	18.9	7.2	2.2	68.5
5-1	**3.35**	**2.29**														
t	**(8.6)**	**(5.19)**														
alpha	**3.42**	**2.35**														
t	**(9.15)**	**(5.44)**														

EPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.59	0.31	18.2	8.8	26.4	0.9	2.6	2.0	0.8	5.9	5.5	0.7	6.9	2.1	0.6	68.8
2	1.06	0.95	23.9	9.1	32.4	0.9	2.5	1.9	0.7	9.4	5.6	0.6	8.0	4.2	1.4	69.1
3	1.07	0.86	21.2	9.1	33.7	0.8	2.3	1.7	0.2	7.6	4.1	0.6	9.2	5.9	2.0	69.1
4	1.41	1.01	19.9	9.1	31.2	0.8	2.2	1.6	-0.3	4.3	1.7	0.6	10.8	7.8	2.7	68.8
5	1.37	1.28	16.9	9.1	28.4	0.8	2.2	1.6	-1.4	1.1	-1.9	0.8	11.9	11.9	3.1	67.4
5-1	**0.78**	**0.98**														
t	**(2.66)**	**(2.40)**														
alpha	**0.82**	**1.04**														
t	**(2.92)**	**(2.63)**														

DY	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.39	0.96	10.5	8.6	27.1	0.9	2.6	2.0	-0.3	8.6	4.3	0.7	8.9	4.5	0.0	68.6
2	1.06	1.09	23.7	9.1	32.0	0.9	2.5	1.9	0.5	12.1	6.3	0.6	8.5	6.2	0.6	68.6
3	0.99	0.83	23.6	9.3	36.4	0.9	2.4	1.8	0.6	10.0	5.8	0.5	8.6	5.4	1.8	68.6
4	1.03	0.81	21.7	9.2	30.9	0.8	2.2	1.6	-0.1	3.9	2.5	0.6	10.0	6.5	3.3	68.6
5	1.08	0.84	20.6	8.9	25.7	0.7	2.0	1.5	-0.9	-3.3	-2.5	0.8	11.2	7.8	5.6	68.6
5-1	**-0.31**	**-0.12**														
t	**(-0.98)**	**(-0.29)**														
alpha	**-0.23**	**0.02**														
t	**(-0.83)**	**(0.06)**														

Table 3. (B) Returns on Portfolios of Large Stocks Sorted into Quintiles based on Predictors in Upper Left Corner.

Table reports the equal-weighted (EQW) and value-weighted (VW) portfolio quintile returns that are formed every month from January 1990 to December 2011, sorted into quintiles based on each predictor. Q1 (5) is the portfolio of stocks with the highest quintile of the signed predictor. Return and alpha spreads and their Newey-West (1987) t-statistics in parentheses are reported in **boldface**. BETA, SD, SEE are computed using daily returns over the **past month**.

SIZE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.11	1.10	4.55	9.16	31.26	0.83	2.39	1.79	0.38	6.38	3.68	0.63	9.16	6.08	1.99	34.3
2	0.80	0.79	5.66	9.44	33.31	0.86	2.38	1.78	0.50	8.95	4.30	0.59	9.20	6.14	1.85	34.3
3	1.01	1.04	8.65	9.84	35.92	0.87	2.41	1.79	0.92	12.52	7.99	0.56	9.54	6.08	1.93	34.2
4	0.88	0.84	14.86	10.40	40.17	0.90	2.35	1.68	0.66	11.18	5.80	0.55	9.38	6.30	2.06	34.3
5	0.92	0.90	66.28	11.51	47.26	0.93	2.20	1.47	0.90	12.66	7.03	0.49	9.91	5.97	2.35	34.3
5-1	**-0.18**	**-0.20**														
t	**(-0.58)**	**(-0.56)**														
alpha	**-0.23**	**-0.25**														
t	**(-0.76)**	**(-0.73)**														
PRICE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.07	0.83	13.27	9.70	17.21	0.86	2.26	1.65	-0.49	-0.58	-0.68	0.99	11.99	5.92	1.79	34.4
2	1.06	1.09	12.64	9.73	26.12	0.88	2.30	1.65	0.20	6.29	3.21	0.71	10.86	6.35	2.24	34.3
3	0.90	0.89	16.05	9.84	36.07	0.86	2.30	1.66	0.73	9.62	5.77	0.55	10.49	6.43	2.37	34.2
4	0.71	0.85	23.04	9.92	52.31	0.88	2.39	1.72	1.54	18.34	9.29	0.43	9.18	6.53	2.24	34.3
5	1.06	1.08	34.99	10.28	92.77	0.94	2.53	1.83	2.29	33.60	16.81	0.29	7.11	5.39	1.66	34.2
5-1	**-0.01**	**0.25**														
t	**(-0.02)**	**(0.47)**														
alpha	**-0.08**	**0.17**														
t	**(-0.14)**	**(0.35)**														
BETA	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.97	0.91	17.93	9.75	38.37	0.21	1.90	1.57	1.08	8.74	5.85	0.55	9.81	6.31	2.48	34.3
2	0.90	0.90	18.98	9.86	35.35	0.59	1.95	1.47	-0.14	7.88	3.93	0.58	9.94	6.43	2.47	34.3
3	1.02	0.89	20.60	9.90	35.65	0.87	2.19	1.61	-0.17	8.31	4.24	0.58	9.73	6.34	2.19	34.2
4	1.15	1.30	20.94	9.95	36.97	1.18	2.49	1.74	0.11	11.71	5.90	0.57	9.31	6.02	1.84	34.3
5	0.87	0.91	21.55	9.95	42.74	1.68	3.03	2.04	2.71	20.68	11.09	0.54	8.79	5.52	1.43	34.3
5-1	**-0.10**	**0.01**														
t	**(-0.23)**	**(0.01)**														
alpha	**-0.25**	**-0.15**														
t	**(-0.61)**	**(-0.34)**														
SD	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.67	0.61	25.14	9.92	35.03	0.51	1.46	1.06	-1.17	2.88	1.36	0.60	10.60	6.98	3.15	34.3
2	0.93	0.81	22.72	9.95	35.94	0.76	1.94	1.41	-0.64	6.46	3.10	0.59	9.87	6.62	2.42	34.3
3	0.94	0.80	20.76	9.92	36.08	0.93	2.33	1.71	0.28	9.89	5.00	0.57	9.59	6.20	2.10	34.2
4	1.02	1.10	17.61	9.87	39.00	1.11	2.75	2.02	1.99	16.08	8.86	0.54	8.95	5.76	1.63	34.3
5	1.08	0.98	13.77	9.75	43.81	1.38	3.36	2.59	5.65	28.54	17.19	0.51	8.40	5.11	1.24	34.3
5-1	**0.40**	**0.37**														
t	**(0.89)**	**(0.67)**														
alpha	**0.24**	**0.18**														
t	**(0.62)**	**(0.37)**														

Table 3 – B Cont'd

SEE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.83	0.65	31.85	10.08	35.81	0.65	1.53	0.98	-1.56	4.20	1.83	0.60	10.14	6.76	2.87	34.3
2	0.94	1.00	23.00	9.99	35.15	0.82	1.97	1.36	-0.95	6.53	3.44	0.58	9.85	6.60	2.38	34.3
3	0.96	0.98	18.59	9.89	37.28	0.93	2.30	1.68	0.45	10.13	5.12	0.56	9.59	6.23	1.99	34.2
4	1.05	0.85	14.93	9.83	39.04	1.01	2.67	2.06	2.64	15.51	8.70	0.54	9.27	5.79	1.76	34.3
5	1.01	1.08	11.63	9.67	41.96	1.10	3.25	2.66	6.22	26.26	15.94	0.52	8.44	5.22	1.34	34.3
5-1	**0.17**	**0.43**														
t	**(0.37)**	**(0.80)**														
alpha	**0.09**	**0.36**														
t	**(0.20)**	**(0.71)**														

STREV	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.07	1.01	18.85	9.85	36.98	0.93	2.31	1.64	-8.88	14.83	8.55	0.59	9.42	6.39	2.06	34.4
2	0.65	0.58	19.59	9.89	34.19	0.83	2.12	1.46	-3.39	7.68	4.43	0.60	9.82	6.39	2.27	34.2
3	0.64	0.83	21.53	9.87	35.19	0.83	2.16	1.52	0.48	8.19	4.08	0.58	9.59	6.36	2.27	34.2
4	1.18	1.11	21.12	9.91	38.70	0.85	2.33	1.71	5.11	11.32	5.35	0.55	9.65	6.22	2.16	34.3
5	1.24	1.19	18.91	9.87	45.36	0.99	2.80	2.18	13.92	16.07	8.65	0.50	9.14	5.31	1.63	34.3
5-1	**0.17**	**0.18**														
t	**(0.42)**	**(0.35)**														
alpha	**0.23**	**0.22**														
t	**(0.54)**	**(0.42)**														

MOM1	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.94	0.94	17.19	9.79	31.64	0.91	2.33	1.69	0.77	-21.73	-11.98	0.66	9.61	6.73	2.62	34.3
2	0.79	0.83	18.77	9.82	31.47	0.84	2.20	1.57	0.47	-5.25	-2.16	0.64	9.96	6.46	2.39	34.3
3	0.89	0.85	20.97	9.88	35.18	0.84	2.22	1.57	0.48	9.73	5.18	0.59	9.72	6.32	2.24	34.2
4	0.98	1.01	22.38	9.96	40.71	0.88	2.38	1.71	1.05	30.25	16.57	0.53	9.46	5.92	1.96	34.3
5	1.19	0.85	20.69	9.95	56.26	0.96	2.63	1.96	0.94	73.60	37.89	0.43	8.83	5.24	1.32	34.3
5-1	**0.25**	**-0.08**														
t	**(0.44)**	**(-0.14)**														
alpha	**0.27**	**-0.05**														
t	**(0.51)**	**(-0.09)**														

MOM2	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.98	1.06	17.47	9.82	32.96	0.93	2.37	1.71	1.15	-14.51	-17.33	0.64	9.59	6.83	2.45	34.3
2	1.07	1.24	19.86	9.83	32.87	0.84	2.16	1.55	0.54	-3.29	-5.29	0.62	9.87	6.54	2.30	34.3
3	0.86	0.77	20.48	9.87	34.53	0.81	2.19	1.55	0.34	7.36	4.85	0.59	9.91	6.37	2.34	34.2
4	0.92	1.09	22.36	9.93	39.39	0.88	2.35	1.70	0.68	23.61	18.95	0.54	9.52	5.89	1.99	34.3
5	0.94	0.91	19.84	9.93	51.91	0.96	2.66	1.98	1.02	59.21	46.58	0.44	8.66	5.05	1.40	34.3
5-1	**-0.04**	**-0.15**														
t	**(-0.07)**	**(-0.25)**														
alpha	**-0.01**	**-0.11**														
t	**(-0.01)**	**(-0.19)**														

Table 3 – B Cont'd

BKMK	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.52	0.98	34.44	10.17	85.24	0.92	2.52	1.82	2.42	33.41	17.08	0.28	6.57	5.14	1.60	34.5
2	0.56	0.48	19.47	9.85	49.97	0.89	2.42	1.76	1.52	19.08	10.17	0.42	9.02	6.32	2.12	34.5
3	0.96	0.99	19.39	9.86	35.32	0.87	2.34	1.69	0.74	10.58	5.15	0.56	10.79	6.50	2.34	34.3
4	0.97	1.11	14.91	9.84	26.00	0.88	2.28	1.64	0.05	5.05	2.74	0.74	11.25	6.73	2.44	34.4
5	1.76	1.62	11.79	9.68	17.95	0.86	2.21	1.59	-0.53	-1.00	-0.27	1.04	12.76	6.14	2.05	33.7
5-1	**1.24**	**0.65**														
t	**(2.38)**	**(1.23)**														
alpha	**1.30**	**0.73**														
t	**(2.60)**	**(1.46)**														
CFPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	-0.52	-0.45	16.23	9.79	42.47	0.97	2.57	1.85	0.86	13.06	7.14	0.48	3.70	4.30	1.18	34.3
2	0.62	0.89	20.32	9.81	48.90	0.90	2.40	1.73	0.92	14.10	7.61	0.45	6.78	5.47	1.90	34.3
3	0.74	0.85	22.06	9.83	43.40	0.86	2.31	1.65	0.87	12.81	7.76	0.49	9.50	6.41	2.32	34.2
4	1.38	1.21	20.79	9.95	33.58	0.83	2.27	1.65	0.49	9.67	5.46	0.60	12.71	7.04	2.58	34.2
5	2.50	1.81	20.60	9.93	27.73	0.84	2.23	1.62	0.19	6.11	2.61	0.77	19.08	7.44	2.53	34.3
5-1	**3.01**	**2.26**														
t	**(7.53)**	**(4.90)**														
alpha	**3.05**	**2.32**														
t	**(7.72)**	**(5.12)**														
EPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.42	0.43	22.04	9.84	36.15	0.99	2.64	1.93	1.92	18.07	12.25	0.57	6.74	2.52	0.88	34.4
2	0.93	0.97	21.95	9.91	44.80	0.92	2.50	1.82	1.75	18.46	11.15	0.48	7.99	4.50	1.48	34.6
3	0.86	0.82	21.31	9.84	42.24	0.85	2.31	1.67	0.86	11.81	7.17	0.51	9.19	6.09	2.16	34.4
4	1.43	1.17	18.99	9.89	36.33	0.83	2.22	1.58	0.06	7.49	2.92	0.57	10.98	7.68	2.88	34.4
5	1.13	1.15	15.70	9.84	33.47	0.81	2.11	1.54	-0.73	2.34	-0.91	0.67	12.59	10.87	3.36	33.5
5-1	**0.71**	**0.72**														
t	**(1.94)**	**(1.64)**														
alpha	**0.81**	**0.84**														
t	**(2.52)**	**(2.09)**														
DY	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.08	1.07	16.69	9.70	36.91	0.99	2.62	1.91	1.25	20.25	10.54	0.59	9.13	4.83	0.12	34.3
2	0.97	0.95	20.97	9.89	43.60	0.97	2.53	1.82	1.35	20.32	9.91	0.50	7.92	4.89	0.86	34.3
3	0.95	0.91	21.34	10.00	45.98	0.92	2.45	1.74	1.18	17.03	9.81	0.48	8.50	5.69	1.99	34.3
4	0.94	0.83	20.30	9.89	36.63	0.82	2.18	1.56	0.36	6.18	3.36	0.57	9.96	6.88	3.28	34.3
5	0.85	0.77	20.70	9.81	32.22	0.72	1.97	1.45	-0.66	-1.06	-1.64	0.67	11.80	8.18	5.40	34.1
5-1	**-0.23**	**-0.30**														
t	**(-0.56)**	**(-0.60)**														
alpha	**-0.10**	**-0.16**														
t	**(-0.30)**	**(-0.37)**														

Table 3. (C) Returns on Portfolios of Small Stocks Sorted into Quintiles based on Predictors in Upper Left Corner.

Table reports the equal-weighted (EQW) and value-weighted (VW) portfolio quintile returns that are formed every month from January 1990 to December 2011, sorted into quintiles based on each predictor. Q1 (5) is the portfolio of stocks with the highest quintile of the signed predictor. Return and alpha spreads and their Newey-West (1987) t-statistics in parentheses are reported in **boldface**. BETA, SD, SEE are computed using daily returns over the **past month**.

SIZE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.92	1.80	7.94	7.41	20.87	0.68	2.42	1.96	-1.15	-3.22	-1.30	0.95	9.30	4.99	0.75	34.4
2	1.05	1.05	13.26	7.94	24.13	0.72	2.30	1.81	-0.61	0.94	-0.01	0.80	9.63	5.72	1.65	34.4
3	1.33	1.33	18.97	8.30	23.86	0.76	2.33	1.80	-0.52	1.05	0.20	0.78	9.79	7.18	2.02	34.3
4	1.14	1.13	25.75	8.61	27.95	0.79	2.37	1.79	-0.13	4.92	3.06	0.69	9.69	5.95	1.87	34.4
5	0.90	0.90	34.08	8.87	32.55	0.83	2.38	1.79	-0.09	6.65	3.45	0.65	9.24	6.22	2.02	34.4
5-1	**-1.01**	**-0.90**														
t	**(-2.79)**	**(-2.59)**														
alpha	**-1.04**	**-0.92**														
t	**(-2.98)**	**(-2.76)**														
PRICE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.69	1.58	16.62	7.98	13.23	0.76	2.41	1.90	-1.50	-5.36	-3.02	1.27	9.76	4.81	0.74	34.6
2	1.45	1.45	17.56	8.07	18.82	0.72	2.27	1.78	-0.61	-1.50	-0.97	0.96	10.62	5.62	2.09	34.4
3	1.03	0.88	18.92	8.22	24.72	0.74	2.28	1.77	-0.54	0.12	0.02	0.77	10.17	7.41	2.27	34.3
4	1.19	1.07	21.15	8.36	32.70	0.77	2.39	1.85	0.22	4.73	2.76	0.60	9.58	6.24	2.07	34.3
5	0.90	0.86	25.75	8.60	49.67	0.81	2.46	1.89	0.44	14.81	7.75	0.44	8.47	6.08	1.69	34.3
5-1	**-0.79**	**-0.72**														
t	**(-1.42)**	**(-1.30)**														
alpha	**-0.75**	**-0.68**														
t	**(-1.42)**	**(-1.30)**														
BETA	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.32	1.08	18.56	8.16	25.43	0.07	2.09	1.81	0.76	2.77	1.70	0.76	9.31	5.52	1.65	34.4
2	1.06	1.02	19.45	8.26	24.34	0.48	1.95	1.58	-0.73	1.07	0.33	0.80	10.03	6.00	2.13	34.4
3	1.20	1.04	19.97	8.30	25.38	0.75	2.14	1.68	-1.51	0.58	0.06	0.80	9.78	7.36	2.02	34.3
4	1.28	1.13	20.52	8.32	24.62	1.04	2.45	1.85	-1.30	0.40	0.22	0.79	9.67	5.78	1.79	34.4
5	1.51	1.46	21.50	8.36	27.45	1.56	3.03	2.22	0.18	5.39	3.31	0.74	8.99	5.62	1.25	34.4
5-1	**0.19**	**0.38**														
t	**(0.37)**	**(0.81)**														
alpha	**0.06**	**0.25**														
t	**(0.13)**	**(0.57)**														
SD	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.04	0.99	20.53	8.29	24.99	0.46	1.47	1.12	-1.53	-1.03	-1.30	0.80	10.19	6.52	2.84	34.4
2	1.36	1.21	20.08	8.30	24.64	0.68	1.94	1.51	-1.68	-0.46	-0.42	0.81	10.14	6.22	2.20	34.4
3	1.35	1.17	19.69	8.27	23.95	0.82	2.35	1.84	-1.14	1.38	0.63	0.80	10.01	7.09	1.73	34.3
4	1.36	1.26	20.02	8.31	25.66	0.95	2.79	2.22	0.64	2.70	2.07	0.76	9.39	5.48	1.37	34.4
5	1.34	1.25	19.67	8.25	27.27	1.16	3.48	2.88	3.82	9.54	6.86	0.71	7.95	4.95	0.79	34.4
5-1	**0.30**	**0.26**														
t	**(0.68)**	**(0.61)**														
alpha	**0.12**	**0.07**														
t	**(0.31)**	**(0.20)**														

Table 3 – C Cont'd

SEE	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.97	0.85	21.31	8.35	24.69	0.57	1.52	1.07	-2.08	-2.01	-1.87	0.81	10.22	6.66	2.85	34.4
2	1.60	1.46	20.17	8.31	24.00	0.72	1.95	1.46	-2.04	-0.14	-0.22	0.79	10.04	6.24	2.24	34.4
3	1.25	1.06	19.90	8.29	24.78	0.82	2.32	1.82	-0.85	2.01	1.57	0.79	9.71	7.11	1.71	34.3
4	1.21	1.05	19.88	8.28	26.19	0.88	2.72	2.23	1.02	3.63	2.95	0.76	9.51	5.29	1.25	34.4
5	1.27	1.11	18.73	8.18	25.90	0.92	3.41	2.93	4.45	7.73	5.52	0.74	8.11	4.93	0.81	34.4
5-1	**0.30**	**0.25**														
t	**(0.65)**	**(0.55)**														
alpha	**0.11**	**0.07**														
t	**(0.28)**	**(0.18)**														

STREV	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.57	1.32	19.35	8.21	24.93	0.84	2.43	1.85	-10.12	7.04	5.43	0.78	8.64	5.91	1.36	34.5
2	0.89	0.75	19.82	8.28	24.16	0.75	2.10	1.57	-4.38	-0.59	-0.04	0.81	9.90	6.01	2.02	34.3
3	1.11	1.06	20.00	8.28	23.68	0.72	2.12	1.61	-0.70	-0.26	-0.67	0.81	9.96	6.21	2.23	34.3
4	1.23	1.03	20.13	8.31	25.41	0.72	2.32	1.83	3.75	0.92	-0.53	0.78	9.87	5.80	1.93	34.3
5	1.52	1.37	20.70	8.32	28.42	0.77	2.83	2.37	12.44	3.62	1.42	0.70	9.35	6.40	1.35	34.4
5-1	**-0.05**	**0.05**														
t	**(-0.13)**	**(-0.12)**														
alpha	**-0.03**	**0.08**														
t	**(-0.08)**	**(0.23)**														

MOM1	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.06	0.91	18.65	8.18	21.01	0.81	2.46	1.92	-0.58	-27.59	-15.46	0.87	8.33	5.72	1.98	34.4
2	1.12	1.08	19.13	8.24	22.82	0.75	2.24	1.73	-0.04	-11.41	-5.47	0.85	9.81	5.75	2.13	34.4
3	1.80	1.61	19.76	8.28	24.95	0.73	2.23	1.72	-0.50	1.26	1.11	0.82	9.96	7.28	2.12	34.3
4	1.19	1.06	20.45	8.32	26.76	0.72	2.29	1.79	-0.44	17.13	9.71	0.76	9.92	5.88	1.85	34.4
5	1.35	1.22	22.01	8.39	33.32	0.79	2.58	2.04	-1.12	51.87	28.37	0.62	9.74	5.72	1.01	34.4
5-1	**0.29**	**0.31**														
t	**(0.58)**	**(0.60)**														
alpha	**0.32**	**0.33**														
t	**(0.67)**	**(0.68)**														

MOM2	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.21	0.96	18.98	8.20	22.33	0.82	2.46	1.91	-0.21	-20.31	-21.43	0.84	8.43	6.08	1.79	34.4
2	1.35	1.28	19.23	8.24	23.14	0.75	2.24	1.72	-0.15	-9.70	-8.80	0.84	9.68	6.02	2.08	34.4
3	1.24	1.19	20.04	8.29	24.74	0.71	2.20	1.71	-0.38	0.84	0.33	0.81	10.01	6.05	2.08	34.3
4	1.18	1.10	20.60	8.34	26.52	0.73	2.32	1.78	-0.53	10.23	11.98	0.76	9.94	5.78	1.89	34.4
5	1.34	1.15	21.15	8.35	31.15	0.82	2.63	2.09	-1.22	38.93	36.51	0.65	9.68	6.47	1.16	34.4
5-1	**0.13**	**0.19**														
t	**(0.25)**	**(0.38)**														
alpha	**0.17**	**0.22**														
t	**(0.34)**	**(0.47)**														

Table 3 – C Cont'd

BKMK	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	0.42	0.41	24.36	8.53	46.52	0.78	2.50	1.95	0.61	14.35	7.52	0.42	7.17	5.44	1.36	34.7
2	1.06	1.03	20.56	8.33	31.70	0.77	2.38	1.84	-0.11	5.39	2.83	0.59	9.58	6.36	2.08	34.5
3	1.23	1.15	20.03	8.28	24.53	0.76	2.32	1.79	-0.51	1.06	0.76	0.77	10.45	6.34	2.28	34.5
4	1.04	1.09	18.71	8.19	18.68	0.73	2.28	1.78	-0.60	-1.66	-1.30	0.98	11.02	5.85	2.13	34.6
5	2.59	2.30	16.34	8.01	14.01	0.77	2.31	1.80	-1.57	-5.60	-2.73	1.34	11.20	6.41	1.22	33.5
5-1	**2.17**	**1.89**														
t	**(4.32)**	**(3.80)**														
alpha	**2.16**	**1.86**														
t	**(4.44)**	**(3.92)**														
CFPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	-0.50	-0.69	19.36	8.21	26.35	0.79	2.58	2.04	-0.97	-1.68	-1.42	0.76	2.06	4.08	0.66	34.4
2	0.45	0.21	20.52	8.32	27.53	0.77	2.41	1.86	-0.15	2.24	1.99	0.65	7.01	5.25	1.81	34.4
3	0.96	0.93	20.40	8.32	27.81	0.75	2.28	1.77	-0.28	2.22	1.00	0.70	9.56	7.36	2.19	34.3
4	2.01	1.90	20.00	8.29	24.29	0.72	2.22	1.72	-0.50	2.71	1.18	0.78	12.44	6.55	2.32	34.3
5	3.42	3.29	19.72	8.22	21.06	0.76	2.32	1.81	-0.51	2.50	1.86	0.97	18.55	6.80	1.81	34.3
5-1	**3.92**	**3.99**														
t	**(9.13)**	**(9.09)**														
alpha	**4.00**	**4.05**														
t	**(9.71)**	**(9.41)**														
EPR	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.09	0.97	18.49	8.14	22.73	0.76	2.56	2.04	-0.04	-0.39	2.10	0.85	6.95	1.77	0.42	34.5
2	1.07	1.03	19.50	8.27	23.47	0.77	2.50	1.95	0.36	2.95	3.45	0.76	8.57	3.96	1.28	34.5
3	1.30	1.17	21.04	8.34	27.41	0.76	2.34	1.81	-0.20	3.38	2.02	0.72	9.72	5.88	2.08	34.6
4	1.22	1.04	20.97	8.35	28.54	0.75	2.22	1.69	-0.92	1.73	0.09	0.70	10.61	7.54	2.65	34.4
5	1.60	1.40	20.01	8.28	24.33	0.74	2.22	1.70	-1.54	1.11	-1.69	0.85	11.28	11.88	2.79	33.9
5-1	**0.50**	**0.44**														
t	**(1.64)**	**(1.41)**														
alpha	**0.55**	**0.48**														
t	**(1.84)**	**(1.57)**														
DY	EQW	VW	MSH	SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMK	CFPR	EPR	DY	nfirms
Q1	1.53	1.33	16.36	8.01	22.10	0.80	2.59	2.05	-0.61	3.33	2.26	0.87	9.11	4.60	0.00	34.4
2	1.21	1.07	20.40	8.31	29.06	0.78	2.52	1.99	-0.35	7.39	3.15	0.73	8.80	4.58	0.39	34.4
3	1.19	1.07	22.13	8.41	27.79	0.80	2.40	1.85	-0.05	4.71	2.64	0.69	9.10	5.56	1.72	34.4
4	1.09	1.03	21.17	8.36	25.93	0.72	2.20	1.68	-0.53	0.35	1.00	0.73	10.03	6.36	3.38	34.4
5	1.29	1.14	19.93	8.28	22.20	0.69	2.09	1.60	-0.97	-5.70	-3.60	0.88	10.62	8.72	5.73	34.3
5-1	**-0.24**	**-0.19**														
t	**(-0.73)**	**(-0.54)**														
alpha	**-0.18**	**-0.11**														
t	**(-0.61)**	**(-0.35)**														

Table 4 (A) – Cross-Sectional Regressions – All Stocks

In each month from January 1990 to December 2011, we run a firm-level cross-sectional regression of the monthly stock return in that month on the stock return predictors in the previous month. In each row the table reports the time-series averages of the cross-sectional regression slope coefficients and their associated Newey-West (1987) adjusted t-statistics (in parenthesis). Corresponding R^2 value is reported in the last column. Beta, SD, SEE are computed using daily returns over the past month.

SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMT	CFPR	EPR	DY	R2
-0.002 (-1.36)												0.037
	0.00 (0.04)											0.050
		0.00 (0.16)										0.041
			0.09 (0.48)									0.047
				0.03 (0.14)								0.037
					0.01 (0.72)							0.035
						-0.02 (-1.36)						0.046
							-0.01 (-1.25)					0.043
								0.02 (2.85)				0.052
									0.10 (3.98)			0.032
										0.05 (1.73)		0.026
											0.00 (0.13)	0.017
-0.002 (-0.66)		0.01 (1.34)	-0.60 (-2.36)		0.03 (1.89)	0.00 (0.63)		0.02 (3.22)				0.189
-0.002 (-1.81)		0.01 (1.46)	-0.51 (-2.12)		0.02 (1.52)	-0.01 (-1.07)			0.11 (4.27)			0.176
-0.002 (-1.44)		0.00 (0.92)	-0.55 (-2.06)		0.02 (1.50)	-0.01 (-0.90)				0.05 (1.92)		0.174
-0.02 (-1.36)		0.00 (0.90)	-0.59 (-2.13)		0.02 (1.43)	-0.01 (-1.01)					0.01 (0.49)	0.165
-0.002 (-0.74)		0.01 (1.45)	-0.63 (-2.26)		0.03 (2.20)	0.00 (-0.05)		0.02 (2.84)	0.09 (4.08)	0.03 (1.33)	-0.01 (-0.44)	0.231
								0.02 (2.45)	0.09 (3.80)			0.080
								0.02 (2.51)	0.08 (3.50)	0.03 (0.86)		0.100
								0.02 (2.46)	0.09 (3.73)	0.03 (0.99)	-0.02 (-0.88)	0.112

Table 4 (B) – Cross-Sectional Regressions – Large Stocks

In each month from January 1990 to December 2011, we run a firm-level cross-sectional regression of the monthly stock return in that month on the stock return predictors in the previous month. In each row the table reports the time-series averages of the cross-sectional regression slope coefficients and their associated Newey-West (1987) adjusted t-statistics (in parenthesis). Corresponding R^2 value is reported in the last column. BETA, SD, SEE are computed using daily returns over the <u>past month</u>.

SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMT	CFPR	EPR	DY	R2
-0.001												
(-0.32)												0.042
	0.00											
	(0.75)											0.068
		0.00										
		(0.26)										0.061
			0.12									
			(0.56)									0.075
				0.02								
				(0.07)								0.066
					0.02							
					(1.43)							0.058
						-0.02						
						(-1.26)						0.074
							-0.01					
							(-1.33)					0.063
								0.02				
								(1.78)				0.074
									0.08			
									(3.34)			0.040
										0.07		
										(1.60)		0.044
											0.02	
											(0.51)	0.038
0.001		0.01	-0.01		0.02	-0.02		0.03				
(1.05)		(0.72)	(-0.03)		(1.08)	(-1.01)		(2.80)				0.264
0.002		0.03	-2.45		0.04	-0.02			-0.001			
(1.03)		(1.21)	(-1.10)		(1.07)	(-0.85)			(-0.02)			0.248
0.001		0.04	0.78		0.09	-0.05				0.18		
(0.02)		(1.14)	(0.69)		(1.29)	(-1.54)				(1.22)		0.246
0.002		0.00	-0.16		0.00	-0.03					0.10	
(-0.64)		(-0.24)	(-0.39)		(-0.12)	(-1.46)					(0.88)	0.247
0.001		0.01	-0.40		0.00	0.04		0.02	0.08	-0.13	-0.13	
(0.57)		(1.10)	(-0.95)		(-0.07)	(0.82)		(1.57)	(1.63)	(-1.07)	(-1.11)	0.321
								0.01	0.06			
								(1.45)	(3.18)			0.108
								0.01	0.05	0.04		
								(1.30)	(3.26)	(0.88)		0.138
								0.01	0.06	0.04	-0.03	
								(1.37)	(3.28)	(1.01)	(-0.75)	0.162

Table 4 (C) – Cross-Sectional Regressions – Small Stocks

In each month from January 1990 to December 2011, we run a firm-level cross-sectional regression of the monthly stock return in that month on the stock return predictors in the previous month. In each row the table reports the time-series averages of the cross-sectional regression slope coefficients and their associated Newey-West (1987) adjusted t-statistics (in parenthesis). Corresponding R^2 value is reported in the last column. BETA, SD, SEE are computed using daily returns over the past month.

SIZE	PRICE	BETA	SD	SEE	STREV	MOM1	MOM2	BKMT	CFPR	EPR	DY	R2
-0.01 (-1.45)												0.049
	-0.002 (-1.66)											0.062
		0.00 (0.43)										0.052
			0.15 (0.63)									0.056
				0.41 (0.97)								0.052
					-0.001 (-0.19)							0.055
						-0.01 (-1.23)						0.053
							0.00 (-0.17)					0.052
								0.02 (2.79)				0.061
									0.19 (3.50)			0.053
										0.04 (1.09)		0.034
											-0.02 (-0.43)	0.030
-0.01 (-2.68)		0.00 (-0.17)	-1.11 (-3.21)		0.06 (2.59)	0.00 (0.56)		0.03 (2.52)				0.237
-0.01 (-3.17)		0.00 (0.20)	-1.08 (-1.70)		0.06 (1.70)	0.00 (0.30)			0.15 (3.24)			0.228
-0.01 (-2.75)		0.00 (0.34)	-1.08 (-2.49)		0.04 (2.20)	0.00 (0.54)				0.01 (0.11)		0.218
-0.01 (-2.28)		0.00 (0.32)	-0.93 (-1.80)		0.06 (2.33)	-0.01 (-0.62)					-0.02 (-0.27)	0.217
-0.02 (-1.98)		-0.03 (-1.30)	-1.36 (-1.37)		0.25 (1.02)	-0.07 (-1.48)		0.04 (0.64)	0.15 (3.05)	0.08 (0.28)	0.04 (0.42)	0.299
								0.02 (2.21)	0.13 (3.43)			0.104
								0.01 (1.54)	0.13 (3.13)	0.01 (0.20)		0.128
								0.01 (1.83)	0.13 (3.23)	0.03 (0.74)	-0.03 (-0.47)	0.152

Table 5 Returns on Portfolios of All Stocks Sorted into Quintiles based on "Cheapness" Variables in Earlier Months.

Table reports returns of the equal-weighted (EQW) and value-weighted (VW) portfolio quintiles, which are formed every month (t) based on all stocks from January 1990 to December 2011, sorted into quintiles based on four variables related to cheapness of stocks (BKMT, CFPR, EP, DY) as of t-3, t-6, t-9, and t-12. Q1 (5) is the portfolio of stocks with the highest quintile of the signed predictor. Return and alpha spreads and their Newey-West (1987) t-statistics in parentheses are reported in **boldface.**

All Stocks	EQW	VW	EQW	VW	EQW	VW	EQW	VW
Sorted by BMKT	**t-3**		**t-6**		**t-9**		**t-12**	
Q1	0.36	0.76	0.40	0.80	0.47	0.84	0.41	0.66
2	0.62	0.64	0.70	0.71	0.77	0.73	0.79	0.82
3	0.96	1.08	0.83	0.93	0.86	0.94	0.84	0.84
4	1.18	1.14	1.00	0.93	1.25	1.08	1.44	1.25
5	1.78	1.43	1.62	1.39	1.37	1.25	1.27	1.29
5-1	**1.42**	**0.67**	**1.22**	**0.59**	**0.90**	**0.41**	**0.86**	**0.63**
t	**(3.17)**	**(1.35)**	**(2.86)**	**(1.22)**	**(2.06)**	**(0.86)**	**(2.07)**	**(1.36)**
alpha	**1.44**	**0.72**	**1.24**	**0.63**	**0.91**	**0.42**	**0.85**	**0.60**
t	**(3.31)**	**(1.49)**	**(3.03)**	**(1.36)**	**(2.16)**	**(0.93)**	**(2.15)**	**(1.34)**
Sorted by CFPR	**t-3**		**t-6**		**t-9**		**t-12**	
Q1	-0.25	-0.16	0.00	0.12	0.44	0.55	0.75	0.59
2	0.28	0.41	0.55	0.54	0.75	0.93	0.54	0.52
3	0.77	0.63	0.62	0.41	0.66	0.41	0.66	0.55
4	1.49	1.18	1.31	1.12	1.17	1.06	1.10	1.13
5	2.61	1.60	2.06	1.36	1.71	1.27	1.64	1.20
5-1	**2.86**	**1.77**	**2.06**	**1.24**	**1.27**	**0.72**	**0.89**	**0.61**
t	**(8.26)**	**(4.28)**	**(5.98)**	**(2.93)**	**(3.99)**	**(1.77)**	**(2.54)**	**(1.64)**
alpha	**2.91**	**1.84**	**2.13**	**1.33**	**1.32**	**0.78**	**0.93**	**0.63**
t	**(8.55)**	**(4.53)**	**(6.44)**	**(3.28)**	**(4.41)**	**(2.06)**	**(2.77)**	**(1.75)**
Sorted by EPR	**t-3**		**t-6**		**t-9**		**t-12**	
Q1	0.90	0.51	0.57	0.05	0.77	0.58	0.58	0.19
2	0.98	0.87	0.92	0.97	0.82	0.69	0.62	0.78
3	0.84	0.60	0.78	0.72	0.79	0.77	1.00	0.85
4	1.18	0.92	0.93	0.90	1.15	0.98	1.17	1.12
5	1.03	1.11	1.31	1.27	1.19	1.11	1.35	1.24
5-1	**0.13**	**0.60**	**0.73**	**1.22**	**0.42**	**0.53**	**0.78**	**1.05**
t	**(0.43)**	**(1.52)**	**(2.57)**	**(3.20)**	**(1.48)**	**(1.20)**	**(2.28)**	**(2.39)**
alpha	**0.16**	**0.66**	**0.77**	**1.28**	**0.44**	**0.58**	**0.79**	**1.08**
t	**(0.52)**	**(1.67)**	**(2.73)**	**(3.43)**	**(1.58)**	**(1.34)**	**(2.42)**	**(2.55)**
Sorted by DY	**t-3**		**t-6**		**t-9**		**t-12**	
Q1	1.20	0.89	1.00	0.76	0.77	0.58	0.58	0.19
2	0.87	0.67	0.78	0.67	0.82	0.69	0.62	0.78
3	1.07	0.95	0.76	0.58	0.79	0.77	1.00	0.85
4	0.81	0.71	0.91	0.98	1.15	0.98	1.17	1.12
5	1.00	0.78	0.95	0.76	1.19	1.11	1.35	1.24
5-1	**-0.20**	**-0.11**	**-0.06**	**0.00**	**0.42**	**0.53**	**0.78**	**1.05**
t	**(-0.72)**	**(-0.26)**	**(-0.20)**	**(0.00)**	**(1.48)**	**(1.20)**	**(2.28)**	**(2.39)**
alpha	**-0.11**	**0.05**	**0.03**	**0.15**	**0.44**	**0.58**	**0.79**	**1.08**
t	**(-0.50)**	**(0.13)**	**(0.13)**	**(0.40)**	**(1.58)**	**(1.34)**	**(2.42)**	**(2.55)**

Table 6 - Sign Consistency Comparison for *Statistically Significant* Predictors

In this table, portfolio method coefficients are compared with the cross-sectional regressions with BETA, SD, and SEE computed using the past month's data.
+ (-) shows a positive (negative) relationship. (Statistically significant at 5 percent level or better)

	Portfolio			Cross Sections		
	All Stocks	Large Stocks	Small Stocks	All Stocks	Large Stocks	Small Stocks
SIZE			–			–
SD				–	–	–
STREV				+		+
BKTM	+	+	+	+	+	+
CFPR	+	+	+	+	+	+
EPR	+	+	+	+	+	+