LONG- TERM PRIOR RETURN PATTERNS IN STOCK RETURNS: EVIDENCE FROM EMERGING MARKETS

Sanjay Sehgal, University of Delhi
Sakshi Jain, University of Delhi
Pr Laurence the Porteu de la Morandiere, Group ESC Pau

ABSTRACT

In this paper, we identify long-term prior return patterns in stock returns for Brazil, Russia, India, China, South Korea, and South Africa (BRICKS) markets from January 1993 to February 2008. While Brazil, Russia and South Africa report momentum behavior, India, China and South Korea exhibit contrarian patterns for long-term prior return (24-60 months) as well as company characteristic(s) and prior return based portfolios. The CAPM is a poor descriptor of asset pricing as it doesn't explain abnormal returns on these trading strategies for India and South Korea. It works well for other markets only for 24 and 36 months portfolio formation windows. The Fama-French (FF) model is able to explain most of the abnormal returns except 24-12-12 strategy for China and South Africa and 36-12-12 strategy for India. We find long-term prior return patterns in sector returns and that our augmented FF model, which contains a prior return sector factor, does a better job than the FF model. The research contributes to asset pricing and behavioral finance literature for emerging markets. Our findings shall be useful for global portfolio managers who analyze emerging markets, to combine them with mature markets for achieving risk diversification benefits.

JEL: C51, C52, G12, G14, G15

KEYWORDS: CAPM, Momentum, Contrarian, Fama French model, and behavioral finance.

INTRODUCTION

Goldman Sachs in 2001 gave the acronym BRICs for the countries Brazil, Russia, India and China. The growth projections for these countries suggest they will become a world economic force. Goldman Sachs forecast that BRICs economies combined GDP can become larger than G7 economies (US, Japan, UK, France, Germany, Italy and Canada) by 2039. Recently, the investment banking industry has expanded the emerging markets basket from BRICs to BRICKS, by including South Korea (K) and South Africa (S). BRICKS represent one of the most active segments of emerging markets. They are on the radar of portfolio managers because emerging markets exhibit a low co-relation with mature markets. These markets have a history of providing high returns while ensuring risk diversification. Investment managers are continuously on the lookout for trading strategies that provide abnormal returns and analyze stock characteristics and return patterns for this purpose.

In this paper, we extend the work of Sehgal and Jain (2010) from India to BRICKS capital markets. The study period is from January 1993 to February 2008 for all countries except Russia where the sample period is from January 2000 to February 2008 due to non-availability of data. The paper is motivated by the work of DeBondt and Thaler (1985, 1987) where the portfolio formation windows are greater than 12 months. We work on 24-60 month portfolio formation windows and skip 12 months between portfolio formation and holding windows to control for any short-term momentum effects on the lines of Fama and French (1996).

Predicting returns on assets based on past returns has gained importance in recent years. Trading strategies have been developed to predict returns on stock that could lead to abnormal profits. Broadly,

there are two trading strategies based on prior returns, one in which returns exhibit continuation (momentum) and the other in which returns have a tendency towards fundamental reversion in the long run (contrarian). These strategies have been found to be time dependent. Contrarian strategies perform well for very short term (up to 3 months), see Lo and MacKinlay (1990) and long term (3 years - 5 years), see De Bondt and Thaler, (1985, 1987) while momentum strategies perform well for short term (between 3months - 12 months), see Jegadeesh and Titman, (1993).

Some researchers show that risk factors such as size, book-to-market equity, past sales growth, cash flow/price are related to firm's average stock returns. Asset pricing models such as CAPM and Fama French three-factor model account for some of these risk factors, however others suggest that these abnormal returns have a behavioral explanation, that is, investors underreact or overreact to firm specific information.

In the world of diversification managers are interested in holding portfolios across mature as well as emerging markets because of risk differentials in these markets. The asset pricing anomalies help managers develop trading strategies that provide extra normal returns and thus fund managers chase them to gain from these trading strategies.

In this study, we test for abnormal returns for portfolios formed on the basis of long-term past returns (Return Portfolios) and company characteristic (Size, P/B, P/E, Dividend Yield and Past sales growth) as well as long-term past returns (Double Sorted Portfolios). The study also considers Triple Sorted Portfolios based on size and Price to Book (P/B) ratio and size and Price to Earnings (P/E) ratio characteristics and past returns. The paper also examines if the single factor (CAPM) or multi-factor (Fama-French three-factor) models are able to explain prior return patterns. Further, we test if the observed stock prior return effect is an outcome of sector prior return effect and can we use the sector information as a risk factor to form a four-factor model that it is able to explain returns.

The research contributes to asset pricing anomaly literature for emerging markets. We find Brazil, Russia and South Africa report momentum behavior while India, China and South Korea show contrarian behavior for characteristic and long-term prior return based portfolios. The CAPM is a poor descriptor of cross-section of average returns in case of India and South Korea, for other BRICKS economies, explains for 24 and 36 portfolio formation windows. The Fama French model explains almost all the long-term prior return patterns in stock returns with the exception of China and South Africa for 24-12-12 strategy and India for 36-12-12 strategy. Employing an additional sector factor along with Fama French factors, we observe that the average returns are explained for 36-12-12 strategy in case of India and 24-12-12 strategy in case of South Africa. However, the abnormal returns for China in case of 24-12-12 strategy persist and remain an asset pricing puzzle.

The remainder of the paper is organized as follows: Section 2 gives review of literature. Section 3 contains description of data and the methodology employed along with the empirical tests carried out. Section 4 summarizes the results and the interpretations. Section 5 provides concluding comments.

LITERATURE REVIEW

Two prior return patterns in stock returns namely contrarian and momentum have been empirically observed by researchers. While contrarian, implies return reversals, generally observed in long-term portfolio formation windows (24 months or more), momentum, implies continuation of returns, which has been observed for short-term portfolio windows (3-12 months). DeBondt and Thaler (1985, 1987) were first to document contrarian strategies. They report that individuals over react to information and subsequent price corrections lead to return reversals. This may imply a contrarian investment strategy based on buying past losers and selling past winners. For U.S. market, DeBondt and Thaler find that

portfolios of losers provide large returns even for more than five year portfolio formation windows. Chan (1988), Ball and Kothari (1989), Chopra, Lakonishok and Ritter (1992) have argued that systematic risk of contrarian portfolios can be attributed to the size effect. Conrad and Kaul (1993) examine the contrarian strategy and find that contrarian profits exist in long periods and tend to increase over time. Kaul and Nimalendran (1990) and Jegadeesh and Titman (1995) document that bid-ask spreads can explain short-term reversals which arise due to stock price over reaction to firm specific information.

Return reversals may not be the only cause of contrarian profits. Both over-reaction and under-reaction (delayed reaction) of price to information can lead to contrarian profits; see Lo and MacKinlay (1990). Ball, Kothari and Shanken (1995) indicate that long-term reversals are based on microstructure biases, especially for low-priced stocks. The phenomenon of microstructure biases is related to book-to-market (B/M effects) as discussed by Chan, Hamao, and Lakonishok (1991), Fama and French (1992). Lakonishok, Shliefer and Vishny (1994), Schiereck, DeBondt and Weber (1999) report contrarian profits exist for long-term windows i.e. investing for 3 years to 5 years; earn excess returns of approximately 8 percent per annum.

Momentum strategies have also attracted attention of investors because they exploit continuation patterns in stock returns. Jegadeesh and Titman (1993) document that in this strategy investors buy the decile of stocks with highest past returns and sell the decile of stocks with the lowest past returns. Stock momentum remains one of the most puzzling asset pricing anomalies. Chan, Jegadeesh and Lakonishok (1996) attribute momentum to market underreaction to firm specific information. Several behavioral theories have been developed to explain the momentum phenomenon suggesting that investors initially underreact and eventually overreact to firm specific news (Barberis, Shliefer and Vishny, 1998; Daniel, Kent and Subrahmanayam, 1998; and Hong and Stein, 1999). Hong Lim and Stein (2000) report that profitability of momentum strategies declines sharply with firm size and profitability has a positive impact for stocks that have low analyst coverage. Jegadeesh and Titman (2001) document that positive momentum returns may or may not be associated with post holding period reversals, suggesting that behavioral models provide partial explanation to behavioral theories.

Fama and French (1996) argue that some other missing risk factor(s) may be the cause of profitability of momentum strategies. Conrad and Kaul (1998) argue that profitability of momentum strategies is due to cross-sectional variation in mean returns of individual securities. (Berk, Green and Naik, 1999; Chordia and Shivkumar, 2000) show that momentum profits are generated by time-varying expected returns. Lee and Swaminathan (2000) find price momentum strategy and volume based momentum strategy for American securities to be profitable over various portfolio formations and holding periods. Chan, Hameed and Tong (2000) find strong continuation in stock returns following an increase in trading volume and suggest that momentum profits arise from time-series predictability in stock market and very little from predictability in currency markets.

Jegadeesh and Titman (2002) empirically demonstrate that cross-sectional differences in expected returns explain very little of momentum profits. Lewellen (2002) finds that momentum is explained by excess co-variance and not underreaction. Ahn, Conrad and Dittmar (2003) show their non-parametric adjustment of risk accounts for half the momentum profits. Scott, Stump and Xu (2003) document that after controlling for earnings-related news and stock's growth rates, interaction between momentum and volume largely disappears. Kent, Hirshleifer and Subrahmanayam (2004) propose a theory based on overconfidence and biased self-attribution to explain several securities return patterns. Antoniou, Lam and Paudyal (2007) report that some missing risk factor related to business cycle can probably explain momentum in European markets and behavioral models do not explain much of momentum. Chen, Chen, Hsin, and Lee (2010) examine relationship between price (return) momentum, earnings momentum and revenue momentum using US market data, and find all the three strategies to be profitable. Profits from price momentum strategy are largest and persistent followed by earnings momentum and revenue momentum.

A number of authors have examined the behavior of foreign investors in emerging markets and conclude that investors in general adopt momentum based strategies, see Frankel and Schmukler (1996, 1998), Froot, Conell and Seaholes (2001), Richards (2002) and Kaminsky, Lyons and Schmukler (2002). Chui, Titman, and Kim (2000) document that momentum strategies are highly profitable when applied to eight Asian markets outside Japan. Kim and Wei (2002) find that foreign investors living outside Korea are more likely to employ momentum and herding trading than foreign individuals living in Korea as a result of information asymmetry. Hameed and Kusnadi (2002) report little evidence that momentum strategy when applied to individual stocks in six Asian markets yield significant profits. Lin and Swanson (2004) find evidence that foreign inflows have short-term positive impacts on local market returns, but find only minimal evidence that foreign investors employ momentum trading. Swanson and Lin (2005) investigate eighteen emerging markets (which include all the BRICKS countries) and eighteen developed markets over the period 1992 -2003. They conclude that U.S. investors tend to employ winners-momentum trading strategy (buy past winners) in emerging markets, developed markets and global market and employ losers-contrarian trading (buy past losers) in all the three markets segments.

If abnormal returns are caused by time-series or cross-sectional patterns in expected returns then some asset pricing theory should be able to absorb the extra normal profits. The CAPM of Sharpe (1964) and Lintner (1965), and Fama French three-factor model (1993) are two theories, which try to explain cross section of average stock returns. The CAPM provides the linear relationship between expected return and risk of a financial asset. CAPM was unable to explain the market anomalies and hence Fama French (1993) developed three-factor model which states that the expected returns on a portfolio in excess of the risk free rate are explained by the sensitivity to three factors (market, size and value). Carhart (1997) employ a four-factor model to explain returns with an additional factor of one-year stock momentum along with Fama French factors, to capture cross-sectional return patterns as the Fama-French three-factor model could not explain the momentum anomaly.

The average returns which are missed by standard asset pricing models could be explained by additional risk factor(s) or they may have a behavioral explanation. Many academicians have observed sector/industry and country patterns in stock returns and the fact that they may explain prior return patterns in individual security returns.

Recently, research analysts have focused on specializing in economic sectors than individual companies (within a size/style bucket) as companies within a sector have much more in common in terms of their business model. Many studies have been conducted to understand whether the prior return effects can be attributed to companies belonging to winner sectors/industry or loser sectors/industry. Moskowitz and Grinblatt (1999) document strong momentum effect in industry components of stock returns. The industry momentum investment strategies appear to be profitable even after controlling for size, book-to-market equity, individual stock momentum, cross-sectional dispersion in mean returns and potential microstructure influences. Nijman, Swinkels and Verbeek (2004) investigate whether individual stock momentum in Europe is subsumed by country or industry momentum and suggest that positive expected excess returns are primarily driven by individual stock effects, while industry momentum plays a less important role, country momentum is even weaker. Scowcroft and Sefton (2005) analyze the value-weighted large-capitalization universe and find that price momentum is driven by industry momentum and not individual stock momentum whereas in the small-cap universe, stock-specific effects assume greater importance.

Boni and Wamock (2006) report industry-based recommendation strategies and the short-term industry price momentum are explained by firms with more analyst coverage than firms with low analyst coverage. Menzly and Ozbas (2006) find strong cross-industry momentum for industries related to each other through supply chain. Chen, Benett and Zhang (2006) suggest investors should emphasize a sector based approach in developed countries but continue country-based allocation strategies for emerging

markets. Safieddine and Sonti (2007) report firms with the highest industry growth quintile have significantly higher momentum compared to industries in the lowest growth quintile. Liu and Zhang (2008) document the growth rate of industrial production is a risk factor in asset pricing tests that explains more than half of momentum profits.

DATA AND METHODOLOGY

Data comprises of monthly share prices adjusted for stock splits, stock dividends and rights issues for BRICKS markets and has been obtained from Thomson Reuters *Datastream* software. The sample period of the study is January 1993 to February 2008 except for Russia where the sample period is January 2000 to February 2008 due to paucity of data. Exhibit A shows the number of securities used for analysis along with market indices and their description for the sample countries. The companies account for a reasonable part of market capitalization and trading activity in their respective markets. Hence, the data set fairly represents market performance.

Exhibit A: Data Description for Sample Countries

Country	No. of Securities	Market Index	Index Description
Brazil	195	BRAZIL BOVESPA	BM&FBOVESPA S.A. is a security market index with base year 1968 and base value of 100. It is a total return index and handles about 85% of the total volume traded on country's nine stock exchanges.
Russia	75	RUSSIA RTS INDEX	The Russian Trading System Index is a capitalization-weighted index. The index was developed with a base value of 100 in 1995. It uses free float adjusted weights.
India	450	INDIA BSE-200 (SENSEX)	BSE-200 index is a free-float value weighted index that represents nearly 93% of the total market capitalization on the Bombay Stock Exchange. The financial year 1989-90 has been chosen as the base year.
China	600	SHANGHAI SE A SHARE	The Shanghai A-Share Stock Price Index is a market capitalization-weighted index. The index was developed with a base value of 100 on December 19, 1990. It comprises of all the A-shares which are restricted to trading by local investors and qualified institutional foreign investors.
South Korea	500	KOREA SE COMPOSITE (KOSPI)	The KOSPI 200 index consists of 200 Korean stocks which constitute 93% of the total market value on the Korea Stock Exchange. The index was developed with base value of 100 in the year 1990.
South Africa	250	FTSE/JSE Africa ALL SHARE	The FTSE/JSE All Africa Index Series is designed to represent the performance of the top African companies listed on Johannesburg Stock Exchange. Companies included consist of top 99% of the total pre-free float market capitalization. The FTSE/JSE Africa Index Series replaced the JSE Actuaries indices on the 24th of June 2002.

This table provides a data description for the sample countries.

Monthly share prices for estimation purposes and further analysis have been converted to percentage monthly return series. Stylized portfolios are formed on the basis of past percentage returns (Percentage Returns estimation is based on capital gains component. There is no dividend component as in India, dividend yields of companies are very low, Gupta (2000). Also, all the Bombay Stock Exchange (BSE)-500 index series do not include dividends while computing index values. Hence, dividend inclusion in individual stock returns may bias the estimators of our proposed time series regressions) and characteristics such as the company Size, Price to Book (P/B) ratio, Price to Earnings (P/E) ratio, Dividend Yield and Past Sales Growth. Past Sales Growth is estimated as three year compounded growth rate in sales using the formula $S_{t+3} = S_t (1+r)^3$, where S_{t+3} and S_t are sales revenue in year t+3 and t respectively whereas r is compounded growth rate in sales. Annualized implicit yields on 91-day t-bills for each country available for all weekly auctions over the study period have been used. We select the implicit yield for the last week of each month to match month end closing prices of sample stocks. The end of month annualized implicit yield is divided by 12 to generate approximate monthly risk free yields.

Value-weighted market index is used as surrogate for aggregate economic wealth. Data for above said firm characteristics and market index has also been obtained from Thomson Reuters *DataStream*.

Global Industry Classification System (GICS) was used for sector classification. GICS comprises of 10 sectors, 24 Industry groups, 68 industries and 154 Sub-industries. The data for sector and industry classification were taken from World Scope, Reuters Financials & Compustat Global. It was developed in response to the financial community's need for one complete, consistent set of global sector and industry definitions. The GICS standard can be applied to companies globally, in both developed and developing markets. In our work, only information for sectors has been used. The 10 prominent sectors are Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Health Care, Financials, Information Technology, Telecommunication Services and Utilities.

Methodology

We explore long term prior return patterns in asset returns, by forming three types of portfolios: 1) On the basis of average past returns of 24, 36, 48 and 60 months (single sorted portfolios), 2) On the basis of firm characteristics such as market capitalization, price to book (P/B) ratio, price to earnings (P/E) ratio, dividend yield and past sales growth (PSG) and average past returns of 24-60 months (double sorted portfolios), and 3) On the basis of size and price to book (P/B) ratio / size and price to earnings (P/E) ratio and prior returns of 24-60 months (triple sorted portfolios). Past sales growth (PSG) is computed as compounded growth rate in net sales three years prior to portfolio formation. For ranking we use size characteristic measured by market capitalization (Banz, 1981), and value characteristic measured by P/B (Chan, Hamao and Lakonishok, 1991), P/E (Basu, 1983) and PSG (Fama French, 1996). While the first two measures are scaled price variables, the third measure is a fundamental based proxy. We also sort securities on dividend yield as it may affect stock returns owing to differential treatment of dividend and capital gain income (Litzenberger and Ramaswamy, 1979). Jung and Shiller (2005) find that dividend yield ratios of individual companies have considerable ability to predict the future growth rate of real dividends (higher yields go together with lower future growth rates)

The portfolios were formed on basis of (i months-j months-k months) strategy where i months involve portfolio formation period, ranging from 24-60 months, j months represent the 12 months that we skip between portfolio formation and portfolio holding period, while k is fixed at 12 months as portfolio holding period. We skip 12 months between portfolio formation and holding windows, as suggested by Fama and French (1996), to control for short-term momentum patterns that may hamper any clear discerning of long-term prior return patterns. We follow calendar year i.e. from January to December.

The portfolio formation process of single sorted portfolios for 24 months-12 months-12 months (24-12-12) strategy is done as follows: In December of year t-2, the individual securities are ranked on the basis of past twenty four month's average monthly past excess returns. The ranked securities are then classified into quintiles, P1 to P5. P1 and P5 comprises of bottom and top 20% stocks respectively, on basis of average past period returns. Equally weighted returns are then estimated for sample portfolios leaving a 12 month gap between portfolio formations and holding windows (i.e. January to December of year t-1). The portfolios are rebalanced in December of year t-1 and portfolio returns are estimated for year t. The process is repeated through the end of our sample period. Our single sorted portfolios are non-overlapping by construction. However, based on previous literature, we believe results for non-overlapping portfolios will not significantly differ from overlapping portfolios (Jegadeesh and Titman, 1993).

Next, we sort sample companies on different company characteristics and observe prior return patterns within each characteristic group. Our analysis is inspired by past research which indicates the relationship between company characteristics and returns. We construct double sorted portfolios based on firm characteristics and long-term past excess returns for 24-12-12 investment strategy. In December of year t-

2, the sample securities are sorted into two groups, Small or S (bottom 50%) and Big or B (upper 50%) in case of company Size (measured by market capitalization) and Low or L (bottom 50%) and High or H (top 50%) in case of other company characteristics i.e. P/B ratio, P/E ratio, dividend yield and past sales growth. Within each characteristic group we construct three momentum portfolios i.e. (bottom (33⅓ %), middle (between 33⅓ % and 66 ^{2}/₃%) and top (greater than 66 ^{2}/₃%)) based on twenty-four months average past returns (t-2 and t-1 years). Equally weighted excess returns are estimated for sample portfolios skipping 12 months between portfolio formation and holding windows (i.e. January to December of year t-1) and the portfolios are rebalanced every 12 months based on double sorting criteria for the year t. The sub-portfolios are labeled as S1, S2, S3 and B1, B2, B3 for company size criteria and L1, L2, L3 and H1, H2, H3 for other company characteristics.

Finally, we form Triple sorted portfolios based on size and price to book (P/B) ratio / Size and price to earnings (P/E) ratio and prior returns based on 24 months prior returns. The triple sorting procedure is done as follows: in December of year t-2, the sample securities are sorted on basis of company size into two groups, Small (S) and Big (B). Next, we regroup our sample stocks on basis of value factor ((P/B)/ (P/E)) and form two groups, Low (L) and High (H). We use intersection between the two criteria to form four portfolios, SL, SH, BL and BH. Within each four groups, we again construct three momentum portfolios as described for double sorted portfolios. The portfolios are labeled as SL1, SL2, SL3, SH1, SH2, SH3, BL1, BL2, BL3 and BH1, BH2, BH3. Estimation of 36 months-12months-12months (36-12-12), 48 months-12 months-12months (48-12-12) and 60months-12months-12months (60-12-12) investment strategies are done in similar manner.

Average returns on sample portfolios are estimated to evaluate any discernible long-term prior return patterns in stock returns. The prior return patterns may be due to risk differences between the winners and the losers' portfolios and hence any such abnormal profits should be explained by asset pricing model (s). If these abnormal returns persist even after risk compensation, they may warrant a behavioral explanation. Standard Risk models such as the one-factor Capital Asset Pricing model (CAPM) and three-factor Fama French model are used to predict relationship between returns on a portfolio and returns on the risk factor (s). CAPM provides linear relationship between returns on a financial asset and its sensitivity to returns on a broad based market portfolio. The excess return version of the market model is as follows:

$$R_{Pt} - R_{Ft} = \alpha + \beta(R_{Mt} - R_{Ft}) + e_i \qquad (1)$$

Where,
$R_{Pt} - R_{Ft} = Excess\ Return\ on\ a\ portfolio,$
$R_{Mt} - R_{Ft} = Excess\ return\ on\ the\ market\ factor,$
$\alpha = Measure\ of\ abnormal\ profits,$
$\beta = Sensitivity\ measures\ of\ stock\ returns\ to\ the\ market\ returns,$
$e_i = Error\ term.$

Alternatively, Fama French in 1993 developed a multi-factor model to explain CAPM anomalies. The model states that expected returns on a portfolio in excess of the risk free rate are explained by three factors: market, size and value. The size and value factors[11] are constructed using the methodology given in Fama French (1993) paper.

The Fama French Model is given as:

$$R_{Pt} - R_{Ft} = \alpha + \beta(R_{Mt} - R_{Ft}) + sSMB_t + lHML_t + e_i \qquad (2)$$

Where:

$SMB =$ Difference between returns on portfolio of small stocks firms and returns on portfolio of big stocks firm,

$HML =$ Difference between returns on a portfolio of high-book-to- market stocks and returns on a portfolio of low-book-to-market stocks,

$s\ and\ h =$ Sensitivity coefficients of SMB and HML respectively.

All other terms are same as equation (1). We use LMH factor instead of Fama-French HML factor as we are using P/B as a value factor and not book to market, hence our interpretation of value factor shall be inverse to that of Fama French.

SMB_t is constructed such that it is independent of value factor:

$$\frac{\frac{S}{L}+\frac{S}{M}+\frac{S}{H}}{3} - \frac{\frac{B}{L}+\frac{B}{M}+\frac{B}{H}}{3} \qquad (3)$$

LMH_t is constructed such that it is independent of size factor:

$$\frac{\frac{S}{L}+\frac{B}{L}}{2} - \frac{\frac{S}{H}+\frac{B}{H}}{2} \qquad (4)$$

The double sorted size-value portfolios for calculating SMB and LMH are formed from intersection of the two size groups, small or S, (bottom 50%) and big or B, (top 50%) and three value groups, low or L bottom (33⅓ %), medium or M (between 33⅓ % and 66 $^2/_3$%) and high or H (greater than 66 $^2/_3$%). We regress, the excess returns on test portfolios on the excess return on market factor (CAPM specification) and returns on market, size and value factors (Fama French three model specification).

Next, we evaluate any prior return patterns in sector data and whether the sector prior return factor is able to absorb past return patterns for China and South Africa 24-12-12 strategy and India, 36-12-12 strategy which are missed by Fama French three-factor model. For 24-12-12 strategies, in December of year t-2, we categorize the sample securities into 10 sectors according to Global Industry Classification System (GICS). The excess monthly return for each sector is then calculated from January to December by taking the simple average of returns on securities that form part of each of these sectors. The individual sectors are then ranked on the basis of past twenty four month's average monthly past excess returns. The ranked sectors are then classified into quintiles, K1 to K5. K1 and K5 comprise sectors with the lowest and highest average past returns respectively. Equally weighted excess returns are then estimated for sample portfolios by skipping 12 months between portfolio formations and holding windows (i.e. January to December of year t). The portfolios are then rebalanced until we reach the end of sample period. A similar construction procedure is followed for other long-term portfolio formation strategies.

We form a sector prior return factor to test whether patterns observed in sectors can explain prior return patterns in stocks. The sector factor is formed on the arguments of Liu and Zhang (2008) who report that recent winners have temporarily higher loadings for growth rate of industrial production than recent losers, and the combined effect of growth rate of industrial production loadings and risk premiums account for more than half of momentum profits. They also suggest that expected-growth risk is priced and that the expected-growth risk increases with expected growth. Carhart (1997) augmented the F-F model by adding a stock momentum factor; following Fama French (1996) in which the three factors (market, size and value) could not explain momentum profits. However, the Carhart stock momentum

factor has a weak economic foundation and hence we augment the FF model with a sector prior return factor which is constructed by taking the difference in returns between the winner and loser sector portfolios on period to period basis.

The four factor model is as follows:

$$R_{Pt} - R_{Ft} = \alpha + \beta(R_{Mt} - R_{Ft}) + sSMB_t + lLMH_t + wWML_t + e_i \tag{5}$$

$WML = Difference\ between\ firms\ of\ winner\ sector\ and\ firms\ of\ loser\ sector,$

$w = factor\ sensitivity\ of\ WML\ factor.$

EMPIRICAL RESULTS

Table 1 reports average unadjusted returns estimated as excess returns (portfolio returns minus risk free rate) for winner and loser portfolios (henceforth, to be referred as corner portfolios) for different portfolio formation periods. A positive value for a return differential implies momentum whereas a negative differential means contrarian. For prior return portfolios, we observe momentum behavior for Brazil, Russia and South Africa and this pattern persists even as we elongate the portfolio formation windows and it only dissipates for 60-12-12 strategies. On the other hand, India, China and South Korea report contrarian behavior and the long term contrarian patterns become stronger for China as we elongate the formation windows. The highest returns of 3.95% are reported by Russia for 48-12-12 strategies.

For characteristic sorted portfolios, half of the BRICKS baskets (Brazil, Russia and South Africa) reports momentum behavior while the remaining markets (India, China and South Korea) exhibit contrarian behavior. Contrarian patterns however become dominant for all the sample countries as we elongate the formation windows beyond 24 months. Next, we evaluate if these long-term prior return patterns can be explained by standard risk models.

Tables 2 and 3 provide results of CAPM and Fama French model respectively for test portfolios. The CAPM is able to explain most of the prior return patterns in case of Brazil, Russia, China and South Africa for 24 and 36 months portfolio formation strategies but it doesn't do a good job for longer term portfolio formation strategies i.e. 48 and 60 months. In case of India and South Korea, the CAPM seems to be a poor descriptor of prior return patterns across all long-term portfolio formation strategies. For India and South Korea, we further observe that momentum patterns exist for many trading strategies involving long-term portfolio formation windows which are contradictory to DeBondt and Thaler (1985) evidence which shows that U.S. market generally follows long-term reversals.

The Fama French model is expected to capture most of the returns that are missed by CAPM. In the FF model, besides market, size (SMB) and value (LMH) are the two underlying risk factors of special hedging concern to investors. We find the FF model is able to explain long-term prior return patterns in stock returns for BRICKS countries with the exception of China 24-and South Africa for 24-12-12 strategy and India for 36-12-12 strategy. While in Brazil, China and South Africa, portfolio returns mainly load on the size factor, in case of India and South Korea the value factor plays a dominant role and the size factor doesn't explain cross-section of average returns. Both size and value factors absorb prior return patterns in the case of Russia. Thus, the FF model does a better job than CAPM in explaining long-term prior return patterns for BRICKS markets. However, given the few anomalies in case of India, China and South Africa, we construct a sector prior return factor in the next section and evaluate if it can explain returns that are missed by the FF model.

Table 1: Average Unadjusted Returns Estimated as Excess Returns

	BRAZI	RUSS	IND	CHI	S.KOR	S.AFRI		BRAZI	RUSS	IND	CHI	S.KOR	S.AFRI
Panel A: Mean Excess Return on 24-12-12 Stylized Portfolios							**Panel B: Mean Excess Return on 36-12-12 Stylized Portfolios**						
Return Portfolios							**Return Portfolios**						
P1	0.020	0.016	0.04	0.026	0.033	0.023	P1	0.023	0.013	0.04	0.032	0.028	0.025
P5	0.034	0.018	0.12	0.023	0.022	0.014	P5	0.035	0.019	0.07	0.026	0.019	0.016
P5-	0.014	0.082	-.004	-	-0.003	0.011	P5-	0.012	0.038	-.007	-	-0.002	0.013
Characteristic Sorted Portfolios							**Characteristic Sorted Portfolios**						
SIZE							**SIZE**						
S1	0.019	0.011	0.03	0.034	0.029	0.008	S1	0.025	0.036	0.03	0.030	0.028	0.010
S3	0.031	0.090	0.03	0.027	0.022	0.018	S3	0.029	0.058	0.03	0.024	0.022	0.016
B1	0.006	0.032	0.01	0.028	0.016	0.002	B1	0.005	0.030	0.02	0.021	0.017	0.005
B3	0.003	0.034	0.01	0.019	0.009	0.000	B3	0.004	0.031	0.01	0.016	0.012	-0.001
S3-	0.012	0.080	-.002	-	-0.006	0.010	S3-	0.003	0.022	-.003	-	-0.006	0.006
H3-	-0.003	0.002	-.003	-	-0.007	-0.002	H3-	-0.001	0.001	-.004	-	-0.005	-0.006
PB							**PB**						
L1	0.016	0.035	0.02	0.024	0.026	0.009	L1	0.023	0.032	0.03	0.023	0.030	0.015
L3	0.032	0.036	0.02	0.024	0.023	0.015	L3	0.031	0.032	0.02	0.016	0.028	0.015
H1	0.008	0.032	0.01	0.030	0.011	-0.001	H1	0.011	0.037	0.01	0.021	0.013	-0.001
H3	-0.002	0.037	0.01	0.015	0.004	0.002	H3	0.000	0.031	0.01	0.013	0.008	0.004
L3-	0.016	0.001	-.002	0.000	-0.003	0.005	L3-	0.008	0.000	-.004	-	-0.003	0.000
H3-	-0.010	0.005	-.001	-	-0.007	0.003	H3-	-0.011	-0.006	0.00	-	-0.005	0.005
PE							**PE**						
L1	0.020	0.038	0.03	0.032	0.025	0.011	L1	0.021	0.041	0.03	0.027	0.028	0.014
L3	0.027	0.057	0.02	0.022	0.016	0.013	L3	0.030	0.051	0.03	0.016	0.020	0.018
H1	0.006	0.026	0.01	0.026	0.015	-0.002	H1	0.011	0.027	0.02	0.021	0.018	0.001
H3	0.005	0.019	0.01	0.015	0.009	0.000	H3	0.003	0.018	0.01	0.012	0.012	0.002
L3-	0.007	0.019	-.007	-	-0.009	0.002	L3-	0.009	0.010	-.002	-	-0.008	0.004
H3-	-0.001	-0.007	0.00	-	-0.006	0.002	H3-	-0.008	-0.010	-.003	-	-0.006	0.001
DYIELD							**DYIELD**						
L1	0.008	0.029	0.01	0.023	0.013	-0.004	L1	0.008	0.043	0.01	0.018	0.013	0.000
L3	0.000	0.033	0.01	0.014	0.009	-0.001	L3	0.003	0.027	0.01	0.013	0.013	0.000
H1	0.010	0.031	0.02	0.029	0.020	0.008	H1	0.014	0.031	0.02	0.023	0.024	0.012
H3	0.008	0.044	0.02	0.030	0.015	0.009	H3	0.008	0.054	0.02	0.021	0.017	0.009
L3-	-0.008	0.004	0.00	-	-0.003	0.003	L3-	-0.005	-0.017	-.001	-	0.000	-0.001
H3-	-0.002	0.013	-.006	0.001	-0.005	0.001	H3-	-0.006	0.023	0.00	-	-0.006	-0.003
SALES							**SALES**						
L1	0.020	0.041	0.02	0.029	0.024	0.015	L1	0.020	0.029	0.02	0.031	0.022	0.016
L3	0.007	0.037	0.02	0.018	0.017	0.020	L3	0.009	0.023	0.02	0.015	0.018	0.015
H1	0.010	0.028	0.02	0.031	0.021	0.012	H1	0.011	0.031	0.02	0.029	0.021	0.015
H3	0.006	0.036	0.02	0.018	0.018	0.010	H3	0.004	0.023	0.02	0.019	0.019	0.010
L3-	-0.014	-0.005	0.00	-	-0.006	0.005	L3-	-0.010	-0.005	-.003	-	-0.004	-0.001
H3-	-0.003	0.008	-.005	-	-0.003	-0.001	H3-	-0.007	-0.009	-.007	-	-0.002	-0.005
SIZE PB							**SIZE PB**						
SL1	0.027	–	0.03	0.024	0.033	0.023	SL1	0.040	–	0.04	0.031	0.036	0.029
SL3	0.069	–	0.03	0.020	0.029	0.038	SL3	0.059	–	0.04	0.018	0.034	0.036
SH1	0.026	–	0.03	0.017	0.018	0.004	SH1	0.019	–	0.04	0.019	0.023	0.001
SH3	-.001	–	0.02	0.021	0.009	0.007	SH3	0.000	–	0.03	0.017	0.010	0.005
BL1	0.005	–	0.01	0.017	0.022	0.004	BL1	0.005	–	0.02	0.021	0.026	0.007
BL3	0.003	–	0.01	0.016	0.015	0.004	BL3	0.010	–	0.02	0.016	0.024	0.002
BH1	-.003	–	0.00	0.015	0.012	-0.006	BH1	0.003	–	0.01	0.018	0.014	-0.003
BH3	0.000	–	0.01	0.006	0.005	-0.008	BH3	0.000	–	0.01	0.011	0.008	-0.006
SL3-	0.042	–	0.00	-	-0.004	0.015	SL3-	0.019	–	0.00	-	-0.003	0.007
SH3-	-.027	–	-.006	0.005	-0.009	0.003	SH3-	-.020	–	-.007	-	-0.013	0.004
BL3-	-.003	–	-.004	-	-0.007	0.000	BL3-	0.005	–	-.005	-	-0.002	-0.005
BH3-	-.003	–	0.00	-	-0.008	-0.002	BH3-	-.010	–	-.002	0.003	-0.005	-0.003
SIZE PE							**SIZE PE**						
SL1	0.018	–	0.04	0.026	0.029	0.028	SL1	0.025	–	0.05	0.029	0.027	0.029
SL3	0.057	–	0.03	0.016	0.025	0.032	SL3	0.059	–	0.04	0.017	0.027	0.033
SH1	0.020	–	0.02	0.022	0.027	0.007	SH1	0.013	–	0.02	0.021	0.030	0.009
SH3	0.014	–	0.02	0.017	0.016	0.003	SH3	0.009	–	0.02	0.018	0.015	0.002
BL1	0.010	–	0.02	0.018	0.022	0.006	BL1	0.009	–	0.02	0.022	0.024	0.012
BL3	0.005	–	0.01	0.017	0.009	0.003	BL3	0.007	–	0.02	0.016	0.014	0.001
BH1	-.002	–	0.01	0.022	0.011	-0.008	BH1	-.002	–	0.01	0.020	0.014	-0.004
BH3	0.001	–	0.01	0.006	0.010	0.000	BH3	0.004	–	0.01	0.008	0.013	-0.004
SL3-	0.039	–	-.001	-	-0.005	0.003	SL3-	0.034	–	-.005	-	0.000	0.004
SH3-	-.006	–	-.001	-	-0.011	-0.005	SH3-	-.004	–	-.003	-	-0.015	-0.007
BL3-	-.005	–	-.009	-	-0.012	-0.004	BL3-	-.002	–	-.007	-	-0.010	-0.011
BH3-	-.010	–	0.00	0.016	-0.001	0.008	BH3-	-.030	–	-.001	0.015	-0.001	-0.001

Table 1: Continued

Table 1: Panel C: Mean Excess Return on **48-12-12** Stylized

	BRAZIL	RUSSIA	INDIA	CHINA	S.KOREA	S.AFRICA
			Return Portfolios			
P1	0.030	0.018	0.038	0.035	0.028	0.035
P5	0.043	0.012	0.077	0.030	0.015	0.026
P5-P1	0.012	0.039	-.005	-0.013	-0.003	0.003
			Characteristic Sorted Portfolios			
			SIZE			
S1	0.031	0.042	0.038	0.029	0.036	0.014
S3	0.035	0.052	0.038	0.022	0.034	0.013
B1	0.005	0.032	0.024	0.021	0.032	0.006
B3	0.004	0.034	0.022	0.013	0.020	-0.002
S3-S1	0.005	0.010	0.000	-0.007	-0.002	-0.001
H3-H1	-0.001	0.002	-.002	-0.007	-0.011	-0.008
			PB			
L1	0.026	0.028	0.036	0.029	0.043	0.016
L3	0.038	0.028	0.033	0.018	0.039	0.017
H1	0.009	0.037	0.019	0.021	0.026	0.002
H3	0.005	0.029	0.022	0.011	0.017	0.001
L3-L1	0.012	0.000	-.003	-0.010	-0.004	0.001
H3-H1	-0.004	-0.008	0.002	-0.010	-0.009	-0.001
			PE			
L1	0.020	0.041	0.039	0.030	0.041	0.015
L3	0.037	0.044	0.040	0.015	0.033	0.017
H1	0.012	0.027	0.021	0.022	0.030	0.002
H3	0.004	0.026	0.019	0.012	0.020	-0.001
L3-L1	0.017	0.003	0.001	-0.015	-0.008	0.002
H3-H1	-0.009	-0.001	-.002	-0.010	-0.011	-0.003
			DYIELD			
L1	0.011	0.044	0.021	0.019	0.026	0.003
L3	0.005	0.023	0.020	0.010	0.021	0.000
H1	0.012	0.042	0.033	0.026	0.037	0.015
H3	0.014	0.037	0.033	0.019	0.028	0.012
L3-L1	-0.005	-0.021	-0.001	-0.009	-0.004	-0.003
H3-H1	0.002	-0.005	0.000	-0.007	-0.009	-0.003
			SALES			
L1	0.020	0.024	0.028	0.036	0.035	0.021
L3	0.014	0.025	0.022	0.016	0.028	0.015
H1	0.015	0.025	0.031	0.033	0.032	0.014
H3	0.017	0.027	0.026	0.017	0.027	0.007
L3-L1	-0.006	0.001	-.006	-0.019	-0.008	-0.005
H3-H1	0.002	0.002	-.005	-0.016	-0.005	-0.007
			SIZE PB			
SL1	0.041	–	0.046	0.033	0.047	0.028
SL3	0.069	–	0.048	0.021	0.044	0.033
SH1	0.027	–	0.041	0.022	0.029	0.003
SH3	0.006	–	0.032	0.018	0.022	0.002
BL1	0.006	–	0.029	0.023	0.039	0.005
BL3	0.008	–	0.030	0.013	0.031	0.004
BH1	0.004	–	0.016	0.017	0.024	0.004
BH3	0.009	–	0.019	0.008	0.015	-0.008
SL3-SL1	0.028	–	0.002	-0.012	-0.003	0.004
SH3-SH1	-0.021	–	-.009	-0.004	-0.007	-0.001
BL3-BL1	0.002	–	0.001	-0.009	-0.008	-0.001
BH3-BH1	-0.002	–	0.003	0.002	-0.009	-0.011
			SIZE PE			
SL1	0.030	–	0.053	0.032	0.037	0.028
SL3	0.071	–	0.052	0.019	0.042	0.025
SH1	0.034	–	0.036	0.025	0.040	0.008
SH3	0.010	–	0.026	0.018	0.023	0.001
BL1	0.008	–	0.032	0.022	0.038	0.010
BL3	0.009	–	0.028	0.013	0.024	0.002
BH1	-0.003	–	0.015	0.019	0.024	0.001
BH3	0.004	–	0.018	0.008	0.020	-0.002
SL3-SL1	0.041	–	-.001	-0.013	0.004	-0.003
SH3-SH1	-0.024	–	-.010	-0.007	-0.016	-0.008
BL3-BL1	0.001	–	-.004	-0.009	-0.014	-0.008
BH3-BH1	-0.023	–	0.002	0.017	-0.004	-0.004

Table 1: Panel D: Mean Excess Return on **60-12-12** Stylized

	BRAZIL	RUSSIA	INDIA	CHINA	S.KOREA	S.AFRICA
			Return Portfolios			
P1	0.028	0.021	0.054	0.038	0.030	0.022
P5	0.049	0.011	0.083	0.032	0.015	0.017
P5-P1	0.022	0.029	-.006	-0.016	-0.001	0.000
			Characteristic Sorted Portfolios			
			SIZE			
S1	0.036	0.042	0.043	0.031	0.024	0.019
S3	0.052	0.054	0.040	0.020	0.023	0.014
B1	0.010	0.036	0.028	0.023	0.018	0.012
B3	0.008	0.034	0.022	0.014	0.012	-0.001
S3-S1	0.017	0.012	-.003	-0.011	-0.001	-0.005
H3-H1	-0.002	-0.002	-.006	-0.010	-0.006	-0.013
			PB			
L1	0.032	0.029	0.039	0.035	0.025	0.021
L3	0.049	0.028	0.036	0.021	0.028	0.020
H1	0.017	0.037	0.025	0.022	0.016	0.008
H3	0.009	0.029	0.022	0.013	0.010	-0.004
L3-L1	0.017	-0.001	-.003	-0.013	0.003	-0.002
H3-H1	-0.007	-0.008	-.002	-0.009	-0.006	-0.012
			PE			
L1	0.025	0.039	0.043	0.034	0.023	0.021
L3	0.047	0.041	0.040	0.020	0.021	0.018
H1	0.016	0.026	0.025	0.025	0.019	0.008
H3	0.009	0.026	0.019	0.012	0.012	-0.005
L3-L1	0.022	0.002	-.003	-0.014	-0.002	-0.003
H3-H1	-0.008	0.000	-.005	-0.013	-0.007	-0.013
			DYIELD			
L1	0.016	0.041	0.027	0.023	0.016	0.007
L3	0.005	0.026	0.019	0.012	0.014	0.003
H1	0.018	0.032	0.033	0.032	0.026	0.022
H3	0.021	0.038	0.034	0.022	0.017	0.015
L3-L1	-0.011	-0.015	-0.008	-0.011	-0.002	-0.005
H3-H1	0.003	0.005	0.001	-0.010	-0.009	-0.007
			SALES			
L1	0.024	0.036	0.033	0.041	0.016	0.026
L3	0.021	0.023	0.023	0.018	0.016	0.015
H1	0.023	0.026	0.035	0.037	0.019	0.023
H3	0.023	0.027	0.030	0.018	0.018	0.007
L3-L1	-0.002	-0.014	-.010	-0.023	0.001	-0.011
H3-H1	0.000	0.000	-.005	-0.019	0.000	-0.016
			SIZE PB			
SL1	0.046	–	0.047	0.039	0.026	0.031
SL3	0.092	–	0.050	0.024	0.036	0.030
SH1	0.031	–	0.049	0.024	0.021	0.008
SH3	0.009	–	0.040	0.021	0.014	0.000
BL1	0.011	–	0.033	0.025	0.020	0.012
BL3	0.012	–	0.028	0.016	0.018	0.009
BH1	0.013	–	0.019	0.018	0.014	0.007
BH3	0.009	–	0.020	0.010	0.008	-0.007
SL3-SL1	0.046	–	0.003	-0.015	0.009	-0.001
SH3-SH1	-.022	–	-.009	-0.003	-0.007	-0.007
BL3-BL1	0.000	–	-.005	-0.009	-0.001	-0.003
BH3-BH1	-.006	–	0.001	0.002	-0.006	-0.013
			SIZE PE			
SL1	0.033	–	0.060	0.038	0.021	0.028
SL3	0.092	–	0.059	0.023	0.029	0.027
SH1	0.039	–	0.039	0.026	0.026	0.013
SH3	0.018	–	0.031	0.021	0.018	-0.001
BL1	0.019	–	0.035	0.023	0.022	0.016
BL3	0.013	–	0.030	0.017	0.012	0.008
BH1	0.004	–	0.019	0.022	0.013	0.003
BH3	0.006	–	0.018	0.007	0.011	-0.004
SL3-SL1	0.059	–	-.001	-0.015	0.008	0.000
SH3-SH1	-.021	–	-.008	-0.005	-0.008	-0.014
BL3-BL1	-.006	–	-.005	-0.006	-0.010	-0.009
BH3-BH1	-.022	–	-.002	0.022	-0.002	-0.007

The table shows mean excess returns on the stylized portfolios. We construct four sets of quintile portfolios based on portfolio formation windows of 24, 36, 48, and 60 months and estimate for 12 months holding period after skipping one year between portfolio formations and holding windows to control for any short-term prior-return effects.

Table 2: CAPM Model for Test Portfolios.

	CAPM Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + e_t$																		
	Panel A: Mean Excess Return on **24-12-12** Stylized Portfolios Regressed on the Excess Return on the Market Factor																		
	BRAZIL			**RUSSIA**			**INDIA**			**CHINA**			**S.KOREA**			**S.AFRICA**		
	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$
RETURN PORTFOLIOS																		
P1	0.01	1.70*	0.36	0.03	2.38**	0.50	0.03	2.59**	0.00	0.02	2.90**	0.54	0.02	1.97**	0.56	0.01	1.16	0.18
P5	0.03	2.05**	0.21	0.10	1.39	0.02	0.02	2.41**	0.00	0.01	1.58	0.74	0.01	1.22	0.65	0.01	0.97	0.29
SIZE																		
S1	0.01	1.73*	0.34	-.02	-1.11	0.23	0.02	2.25**	0.23	0.02	2.78**	0.48	0.02	2.26**	0.44	0.00	0.00	0.17
S3	0.03	1.84*	0.13	0.07	1.52	0.01	0.02	2.25**	0.27	0.01	2.00**	0.60	0.02	1.99**	0.49	0.01	0.89	0.23
B1	0.00	0.08	0.51	0.01	1.88*	0.62	0.01	1.53	0.35	0.01	2.32**	0.64	0.01	1.35	0.69	-.01	-1.58	0.34
B3	0.00	-0.49	0.57	0.01	2.21**	0.72	0.01	1.03	0.48	0.00	1.16	0.77	0.00	0.51	0.76	-.01	-2.4**	0.46
PB																		
L1	0.01	1.32	0.36	0.01	0.90	0.46	0.02	2.03**	0.27	0.01	1.36	0.31	0.02	2.02**	0.53	0.00	-0.06	0.25
L3	0.03	1.64*	0.16	0.01	0.67	0.48	0.02	1.77*	0.28	0.01	1.36	0.43	0.02	2.19**	0.58	0.00	0.43	0.35
H1	0.00	0.36	0.42	0.01	1.72*	0.45	0.01	1.77*	0.39	0.01	2.24**	0.58	0.00	0.72	0.66	-.01	-1.88*	0.30
H3	-.01	-1.15	0.58	0.01	1.66*	0.69	0.01	1.41	0.48	0.00	0.39	0.68	0.00	-0.28	0.72	-.01	-1.64*	0.35
PE																		
L1	0.01	1.66*	0.37	0.01	1.63	0.58	0.02	2.49**	0.26	0.02	2.39**	0.41	0.02	1.86*	0.55	0.00	0.37	0.23
L3	0.02	1.28	0.17	0.02	0.94	0.36	0.02	1.77*	0.32	0.01	1.55	0.53	0.01	1.30	0.59	0.00	0.24	0.35
H1	0.00	0.17	0.47	0.01	0.58	0.32	0.01	0.90	0.36	0.01	1.70*	0.54	0.01	1.32	0.65	-.01	-2.0**	0.28
H3	0.00	-0.14	0.51	0.01	0.52	0.19	0.01	1.29	0.46	0.00	0.09	0.64	0.00	0.62	0.74	-.01	-1.94*	0.33
DYIELD																		
L1	0.00	0.42	0.44	0.01	1.01	0.48	0.01	1.09	0.40	0.01	1.59	0.62	0.01	1.15	0.69	-.01	-2.4**	0.31
L3	-.01	-0.86	0.54	0.01	0.85	0.64	0.01	1.24	0.49	0.00	0.07	0.73	0.00	0.63	0.73	-.01	-2.1**	0.35
H1	0.01	0.74	0.48	0.01	1.07	0.41	0.02	2.75**	0.28	0.02	2.15**	0.42	0.01	1.90*	0.61	0.00	-0.08	0.24
H3	0.00	0.40	0.51	0.02	2.63**	0.49	0.01	1.76*	0.39	0.02	2.51**	0.48	0.01	1.53	0.64	0.00	-0.21	0.31
SALES																		
L1	0.02	1.88*	0.39	0.02	1.66*	0.27	0.01	1.10	0.28	0.02	2.17	0.41	0.01	1.28	0.58	0.01	0.78	0.16
L3	0.00	0.29	0.44	0.01	1.31	0.46	0.01	1.37	0.32	0.01	0.79	0.48	0.01	1.07	0.64	0.01	1.24	0.26
H1	0.01	0.68	0.47	0.00	0.32	0.57	0.02	2.72**	0.35	0.02	2.11**	0.41	0.01	1.12	0.56	0.00	0.17	0.31
H3	0.00	0.17	0.46	0.02	1.98**	0.39	0.01	1.65*	0.35	0.01	1.08	0.60	0.01	1.20	0.77	0.00	-0.32	0.36
SIZE PB																		
SL1	0.02	1.96**	0.26	–	–	–	0.03	2.21**	0.19	0.02	1.49	0.27	0.03	2.02**	0.35	0.02	1.64*	0.05
SL3	0.06	1.83*	0.05	–	–	–	0.03	1.83*	0.10	0.01	1.01	0.40	0.02	2.20**	0.42	0.03	2.82**	0.07
SH1	0.02	2.15**	0.28	–	–	–	0.02	2.02**	0.23	0.01	1.02	0.51	0.01	1.24	0.50	0.00	-0.47	0.05
SH3	-.01	-0.59	0.26	–	–	–	0.02	1.71*	0.32	0.01	0.88	0.49	0.00	0.49	0.51	0.00	-0.52	0.14
BL1	0.00	-0.01	0.44	–	–	–	0.01	1.37	0.30	0.01	1.78*	0.59	0.01	2.02**	0.68	-.01	-1.07	0.30
BL3	0.00	-0.44	0.53	–	–	–	0.01	0.85	0.41	0.00	1.01	0.69	0.01	1.28	0.71	-.01	-1.45	0.42
BH1	-.01	-1.13	0.49	–	–	–	0.00	0.34	0.36	0.00	0.80	0.63	0.01	0.95	0.73	-.02	-2.6**	0.27
BH3	-.01	-0.80	0.55	–	–	–	0.01	1.34	0.50	0.00	-0.44	0.72	0.00	-0.24	0.77	-.02	-2.9**	0.30
SIZE PE																		
SL1	0.01	1.16	0.21	–	–	–	0.03	2.46**	0.18	0.01	1.51	0.30	0.02	1.72*	0.39	0.02	1.91*	0.06
SL3	0.05	1.57	0.06	–	–	–	0.03	1.79*	0.10	0.00	0.48	0.47	0.02	1.69*	0.41	0.02	2.19**	0.07
SH1	0.02	1.77*	0.35	–	–	–	0.02	1.70*	0.24	0.01	1.11	0.50	0.02	2.12**	0.44	0.00	-0.32	0.12
SH3	0.01	0.93	0.14	–	–	–	0.01	1.54	0.31	0.00	0.65	0.46	0.01	1.62	0.56	-.01	-0.83	0.11
BL1	0.00	0.59	0.50	–	–	–	0.02	2.22**	0.29	0.01	1.38	0.61	0.01	1.85*	0.66	0.00	-0.84	0.34
BL3	0.00	-0.17	0.53	–	–	–	0.01	1.03	0.44	0.01	1.77*	0.78	0.00	0.47	0.71	-.01	-1.59	0.37
BH1	-.01	-1.12	0.54	–	–	–	0.00	0.73	0.35	0.01	1.62	0.59	0.00	0.75	0.70	-.02	-2.4**	0.18
BH3	-.01	-0.74	0.57	–	–	–	0.01	1.18	0.50	0.00	-1.09	0.65	0.00	0.63	0.78	-.01	-1.66*	0.27

Table 2: Continued

		BRAZIL			**RUSSIA**			**INDIA**			**CHINA**			**S.KOREA**			**S.AFRICA**	
	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$
							RETURN PORTFOLIOS											
P1	0.02	1.99**	0.39	0.03	2.46**	0.45	0.03	3.11**	0.00	0.02	2.45**	0.50	0.02	1.61	0.55	0.01	0.81	0.17
P5	0.03	1.97**	0.18	0.05	1.76*	0.19	0.03	2.59**	0.00	0.01	1.89*	0.72	0.01	0.99	0.65	0.01	1.00	0.28
							SIZE											
S1	0.02	2.54**	0.36	0.01	0.75	0.45	0.02	2.29**	0.25	0.02	2.53**	0.45	0.02	1.75*	0.43	0.00	0.35	0.15
S3	0.03	1.55	0.11	0.04	1.67*	0.03	0.02	2.25**	0.26	0.01	2.21**	0.58	0.01	1.55	0.48	0.00	0.65	0.23
B1	0.00	0.04	0.51	0.01	1.65*	0.64	0.01	1.77*	0.37	0.01	1.79*	0.65	0.01	1.01	0.66	-.01	-1.02	0.35
B3	0.00	-0.12	0.56	0.01	1.89*	0.72	0.01	1.06	0.47	0.00	1.07	0.77	0.00	0.41	0.77	-.01	-2.4**	0.44
							PB											
L1	0.02	2.27**	0.41	0.01	0.93	0.45	0.02	2.09**	0.28	0.01	1.30	0.36	0.02	1.96**	0.52	0.01	0.98	0.19
L3	0.03	1.46	0.13	0.01	0.59	0.42	0.02	1.71*	0.27	0.00	0.64	0.55	0.02	2.23**	0.59	0.00	0.45	0.37
H1	0.01	0.77	0.42	0.01	2.08**	0.52	0.01	1.69*	0.43	0.01	1.50	0.55	0.00	0.54	0.64	-.01	-1.9**	0.31
H3	0.00	-0.61	0.55	0.00	0.73	0.63	0.01	1.28	0.48	0.00	0.52	0.70	0.00	-0.16	0.74	-.01	-1.30	0.34
							PE											
L1	0.02	1.84*	0.39	0.01	2.23**	0.63	0.02	2.36**	0.28	0.02	1.81*	0.40	0.02	1.58	0.52	0.00	0.69	0.22
L3	0.03	1.33	0.14	0.01	0.69	0.35	0.02	2.23**	0.29	0.00	0.90	0.60	0.01	1.36	0.58	0.00	0.77	0.37
H1	0.01	0.93	0.49	0.01	0.54	0.31	0.01	1.54	0.39	0.01	1.38	0.54	0.01	1.28	0.63	-.01	-1.47	0.28
H3	0.00	-0.18	0.52	0.00	-0.68	0.68	0.01	0.97	0.48	0.00	0.14	0.62	0.00	0.58	0.74	-.01	-1.56	0.34
							DYIELD											
L1	0.00	0.56	0.46	0.02	1.99**	0.45	0.01	1.28	0.42	0.01	1.30	0.60	0.00	0.67	0.67	-.01	-1.75*	0.33
L3	0.00	-0.17	0.51	0.00	0.32	0.59	0.01	0.85	0.50	0.00	0.42	0.72	0.00	0.63	0.75	-.01	-1.78*	0.31
H1	0.01	1.35	0.46	0.01	1.03	0.46	0.02	2.58**	0.30	0.01	1.46	0.41	0.01	1.92*	0.62	0.00	0.61	0.21
H3	0.00	0.62	0.50	0.03	3.24**	0.46	0.02	2.30**	0.37	0.01	1.84*	0.62	0.01	1.22	0.63	0.00	-0.32	0.34
							SALES											
L1	0.02	1.74*	0.40	0.01	1.32	0.24	0.01	1.49	0.28	0.02	1.97**	0.34	0.01	1.03	0.55	0.01	0.86	0.15
L3	0.01	0.67	0.41	0.01	0.76	0.31	0.01	1.30	0.33	0.00	0.71	0.57	0.01	1.15	0.67	0.00	0.45	0.25
H1	0.01	0.69	0.41	0.00	0.58	0.70	0.03	3.16**	-.01	0.02	1.88*	0.39	0.01	1.17	0.55	0.00	0.68	0.30
H3	0.00	-0.04	0.41	0.00	0.40	0.38	0.01	1.11	0.32	0.01	1.31	0.64	0.01	1.54	0.80	0.00	-0.46	0.36
							SIZE PB											
SL1	0.04	3.08**	0.26	–	–	–	0.04	2.80**	-.01	0.02	1.75*	0.27	0.03	1.84*	0.36	0.02	2.28**	0.05
SL3	0.05	1.46	0.05	–	–	–	0.05	2.86**	0.03	0.01	0.67	0.47	0.03	2.33**	0.39	0.02	2.59**	0.11
SH1	0.02	1.67*	0.25	–	–	–	0.04	2.77**	-.01	0.01	0.79	0.53	0.01	1.14	0.47	-.01	-0.72	0.05
SH3	0.00	-0.41	0.28	–	–	–	0.03	2.58**	-.01	0.01	0.75	0.48	0.00	0.16	0.52	-.01	-0.67	0.12
BL1	0.00	0.13	0.44	–	–	–	0.03	2.50**	-.01	0.01	1.78*	0.59	0.01	1.88*	0.67	0.00	-0.61	0.29
BL3	0.01	0.74	0.50	–	–	–	0.02	2.11**	-.01	0.00	1.08	0.69	0.01	1.77*	0.74	-.01	-1.63	0.38
BH1	0.00	-0.09	0.43	–	–	–	0.02	2.51**	-.01	0.01	1.19	0.59	0.00	0.52	0.71	-.01	-1.71*	0.21
BH3	-.01	-0.59	0.53	–	–	–	0.01	1.66*	-.01	0.00	-0.07	0.69	0.00	-0.31	0.79	-.02	-2.5**	0.31
							SIZE PE											
SL1	0.02	1.82*	0.22	–	–	–	0.05	3.10**	-.01	0.02	1.73*	0.28	0.02	1.12	0.37	0.02	2.46**	0.05
SL3	0.06	1.53	0.04	–	–	–	0.05	2.58**	0.03	0.01	0.91	0.48	0.02	1.62	0.42	0.02	2.06**	0.14
SH1	0.01	1.24	0.31	–	–	–	0.03	2.53**	-.01	0.01	0.89	0.49	0.02	1.95*	0.45	0.00	0.01	0.10
SH3	0.01	0.55	0.20	–	–	–	0.02	2.07**	-.01	0.01	0.83	0.49	0.01	1.04	0.52	-.01	-0.84	0.10
BL1	0.00	0.53	0.50	–	–	–	0.03	2.82**	-.01	0.01	2.01**	0.61	0.01	1.42	0.62	0.00	0.04	0.35
BL3	0.00	0.25	0.44	–	–	–	0.02	2.15**	-.01	0.01	1.50	0.75	0.00	0.58	0.73	-.01	-1.75*	0.37
BH1	-.01	-0.78	0.47	–	–	–	0.02	1.89**	-.01	0.01	1.33	0.59	0.00	0.67	0.67	-.01	-1.86*	0.19
BH3	0.00	-0.13	0.60	–	–	–	0.01	1.56	-.01	0.00	-0.71	0.65	0.00	0.48	0.78	-.02	-2.3**	0.31

CAPM Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + e_t$

Panel B: Mean Excess Return on **36-12-12** Stylized Portfolios Regressed on the Excess Return on the Market Factor

Table 2: Continued

	BRAZIL			RUSSIA			INDIA			CHINA			S.KOREA			S.AFRICA		
CAPM Results : $R_{Pt} - R_{Ft} = α + β (R_{Mt} - R_{Ft}) + e_t$
Panel C: Mean Excess Return on **48-12-12** Stylized Portfolios Regressed on the Excess Return on the Market Factor
	BRAZIL			**RUSSIA**			**INDIA**			**CHINA**			**S.KOREA**			**S.AFRICA**		
	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$
RETURN PORTFOLIOS
P1	0.03	2.87**	0.39	0.03	2.28**	0.33	0.03	3.12**	3.11**	0.02	2.51**	0.48	0.02	1.99**	0.52	0.01	1.24	0.15
P5	0.04	2.12**	0.18	0.05	2.02**	0.31	0.03	2.81**	2,59**	0.00	0.97	0.72	0.01	1.68*	0.66	0.00	-0.31	0.36
SIZE
S1	0.03	3.21**	0.36	0.01	0.89	0.26	0.03	2.33**	0.24	0.02	2.43**	0.43	0.02	1.97**	0.41	0.01	0.72	0.15
S3	0.03	1.77*	0.10	0.04	1.45	0.03	0.03	2.57**	0.26	0.01	2.02**	0.54	0.02	2.34**	0.46	0.00	0.07	0.26
B1	0.00	0.20	0.49	0.01	2.02**	0.69	0.01	2.05**	0.36	0.01	1.77*	0.64	0.02	2.19**	0.69	-.01	-0.93	0.33
B3	0.00	0.04	0.57	0.01	2.16**	0.64	0.01	1.71*	0.48	0.00	0.61	0.76	0.01	1.00	0.78	-.02	-2.6**	0.42
PB
L1	0.02	2.69**	0.39	0.00	0.04	0.56	0.02	2.37**	0.28	0.02	1.92*	0.40	0.03	2.40**	0.48	0.01	0.93	0.17
L3	0.03	1.69*	0.13	0.00	0.48	0.45	0.02	2.13**	0.27	0.01	1.11	0.57	0.02	3.06**	0.59	0.00	0.47	0.38
H1	0.01	0.64	0.42	0.01	2.18**	0.53	0.01	1.65*	0.40	0.01	1.57	0.56	0.01	1.42	0.66	-.01	-1.54	0.31
H3	0.00	0.19	0.56	0.00	0.75	0.62	0.01	1.58	0.49	0.00	0.27	0.65	0.00	0.46	0.73	-.01	-1.69*	0.31
PE
L1	0.02	1.77*	0.36	0.02	2.04**	0.55	0.03	2.67**	0.28	0.02	2.24**	0.43	0.02	2.02**	0.50	0.00	0.63	0.21
L3	0.03	1.77*	0.16	0.02	1.83*	0.51	0.03	2.89**	0.30	0.00	0.72	0.62	0.02	2.35**	0.60	0.00	0.51	0.37
H1	0.01	1.25	0.49	0.01	0.70	0.30	0.01	1.58	0.38	0.01	1.53	0.56	0.02	2.23**	0.65	-.01	-1.41	0.27
H3	0.00	0.04	0.55	0.00	0.07	0.59	0.01	1.20	0.49	0.00	0.30	0.62	0.01	1.05	0.74	-.02	-2.2**	0.35
DYIELD
L1	0.01	1.02	0.44	0.02	2.35**	0.47	0.01	1.67*	0.42	0.01	1.40	0.56	0.01	1.86*	0.69	-.01	-1.45	0.31
L3	0.00	0.23	0.50	0.00	-0.51	0.61	0.01	1.25	0.51	0.00	0.12	0.67	0.01	1.28	0.76	-.01	-2.0**	0.35
H1	0.01	1.14	0.47	0.02	2.28**	0.46	0.02	3.13**	0.28	0.02	1.87*	0.42	0.02	3.03**	0.63	0.01	0.85	0.20
H3	0.01	1.46	0.52	0.02	1.77*	0.31	0.02	2.95**	0.38	0.01	1.42	0.62	0.01	2.28**	0.67	0.00	-0.07	0.33
SALES
L1	0.02	2.04**	0.41	0.00	0.59	0.52	0.02	1.81*	0.29	0.02	2.53**	0.41	0.02	1.56	0.53	0.01	1.34	0.11
L3	0.01	1.19	0.49	0.01	0.83	0.23	0.01	1.44	0.35	0.01	0.99	0.57	0.01	1.85*	0.69	0.00	0.25	0.37
H1	0.01	1.43	0.48	0.00	0.29	0.53	0.02	2.67**	0.36	0.02	2.44**	0.41	0.02	1.69*	0.53	0.00	0.26	0.27
H3	0.01	1.26	0.37	0.01	0.89	0.37	0.02	1.82*	0.33	0.01	1.24	0.62	0.01	2.10**	0.79	-.01	-0.99	0.34
SIZE PB
SL1	0.04	3.38**	0.26	–	–	–	0.03	2.22**	0.18	0.02	2.04**	0.32	0.03	1.96**	0.34	0.02	2.29**	0.03
SL3	0.07	1.63	0.06	–	–	–	0.04	2.26**	0.08	0.01	1.19	0.47	0.03	3.10**	0.40	0.02	2.65**	0.12
SH1	0.02	2.36**	0.27	–	–	–	0.03	2.02**	0.20	0.01	1.09	0.50	0.01	1.26	0.48	-.01	-0.66	0.08
SH3	0.00	0.46	0.25	–	–	–	0.02	2.12**	0.32	0.01	0.90	0.48	0.01	1.11	0.50	-.01	-1.04	0.13
BL1	0.00	0.25	0.43	–	–	–	0.02	2.19**	0.34	0.01	1.96**	0.58	0.02	2.34**	0.60	-.01	-0.88	0.27
BL3	0.00	0.56	0.50	–	–	–	0.02	2.47**	0.40	0.00	0.56	0.67	0.01	1.96**	0.73	-.01	-1.54	0.40
BH1	0.00	0.06	0.44	–	–	–	0.01	1.37	0.41	0.01	1.16	0.63	0.01	1.25	0.71	-.01	-1.20	0.29
BH3	0.00	0.52	0.51	–	–	–	0.01	1.24	0.51	0.00	-0.41	0.67	0.00	-0.05	0.79	-.02	-2.9**	0.31
SIZE PE
SL1	0.03	2.25**	0.17	–	–	–	0.04	2.58**	0.22	0.02	2.06**	0.32	0.02	1.24	0.31	0.02	2.12**	0.04
SL3	0.07	1.69*	0.05	–	–	–	0.04	2.22**	0.07	0.01	1.37	0.51	0.03	2.38**	0.44	0.01	1.64*	0.13
SH1	0.03	3.22**	0.33	–	–	–	0.03	2.25**	0.21	0.01	1.37	0.51	0.03	2.46**	0.47	0.00	-0.17	0.11
SH3	0.01	0.74	0.20	–	–	–	0.01	1.47	0.33	0.01	1.01	0.47	0.01	1.58	0.50	-.01	-1.21	0.12
BL1	0.00	0.49	0.47	–	–	–	0.02	2.58**	0.33	0.01	2.10**	0.58	0.02	2.18**	0.63	.00	-0.38	0.32
BL3	0.01	0.59	0.49	–	–	–	0.02	2.23**	0.41	0.00	0.69	0.73	0.01	1.27	0.72	-.01	-1.91*	0.39
BH1	-.01	-0.82	0.48	–	–	–	0.01	1.00	0.36	0.01	1.27	0.61	0.01	1.47	0.67	-.01	-1.24	0.15
BH3	0.00	0.03	0.59	–	–	–	0.01	1.08	0.52	0.00	-0.57	0.65	0.00	0.74	0.78	-.02	-2.0**	0.28

Table 2: Continued

	CAPM Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + e_t$
	Panel D: Mean Excess Return on 60-12-12 Stylized Portfolios Regressed on the Excess Return on the Market Factor

	BRAZIL			RUSSIA			INDIA			CHINA			S.KOREA			S.AFRICA		
	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$
RETURN PORTFOLIOS
P1	0.02	2.19**	0.45	0.03	2.01**	0.44	0.04	2.98**	0.01	0.02	2.36**	0.47	0.01	2.04**	0.48	0.01	1.93*	0.06
P5	0.04	2.05**	0.18	0.04	1.23	0.20	0.03	2.76**	0.00	0.00	0.54	0.68	0.01	1.26	0.58	0.00	-0.53	0.27
SIZE
S1	0.03	3.01**	0.37	0.01	0.92	0.26	0.03	2.27**	0.22	0.02	2.22**	0.42	0.02	2.13**	0.37	0.01	1.37	0.07
S3	0.04	2.09**	0.12	0.04	1.50	0.03	0.03	2.41**	0.25	0.01	1.28	0.57	0.02	2.05**	0.32	0.00	0.30	0.12
B1	0.00	0.20	0.51	0.02	2.50**	0.67	0.02	2.06**	0.33	0.01	1.76*	0.63	0.01	1.68*	0.63	0.00	0.17	0.23
B3	0.00	-0.25	0.52	0.01	2.06**	0.62	0.01	1.29	0.47	0.00	0.27	0.74	0.00	0.45	0.74	-.01	-2.1**	0.25
PB
L1	0.02	2.87**	0.45	0.00	0.40	0.53	0.03	2.29**	0.24	0.02	2.40**	0.47	0.02	2.31**	0.42	0.01	1.86*	0.08
L3	0.04	1.84*	0.13	0.00	0.52	0.44	0.02	2.08**	0.24	0.01	1.12	0.63	0.02	2.80**	0.44	0.01	1.16	0.21
H1	0.01	0.91	0.41	0.01	1.89*	0.48	0.01	1.97**	0.38	0.01	1.30	0.54	0.01	1.18	0.58	0.00	-0.40	0.19
H3	0.00	-0.01	0.55	0.00	0.67	0.59	0.01	1.27	0.48	0.00	0.17	0.65	0.00	0.13	0.67	-.02	-2.1**	0.18
PE
L1	0.02	1.65*	0.39	0.01	1.66*	0.62	0.03	2.64**	0.26	0.02	2.38**	0.48	0.02	1.98**	0.46	0.01	1.51	0.11
L3	0.04	1.81*	0.17	0.01	1.61	0.50	0.03	2.59**	0.26	0.01	1.29	0.67	0.01	1.84*	0.49	0.00	0.59	0.25
H1	0.01	1.02	0.50	0.01	0.83	0.24	0.01	1.67*	0.35	0.01	1.59	0.54	0.01	2.01**	0.60	0.00	-0.31	0.15
H3	0.00	-0.01	0.47	0.00	0.18	0.50	0.01	0.90	0.48	0.00	-0.04	0.62	0.00	0.76	0.67	-.02	-2.3**	0.17
DYIELD
L1	0.01	1.11	0.48	0.02	1.81*	0.49	0.01	2.00**	0.39	0.01	1.62	0.59	0.01	1.45	0.59	0.00	-0.46	0.18
L3	0.00	-0.41	0.50	0.00	0.02	0.54	0.01	0.75	0.50	0.00	0.16	0.66	0.00	1.01	0.73	-.01	-1.21	0.18
H1	0.01	1.16	0.45	0.01	1.24	0.53	0.02	2.80**	0.23	0.02	2.58**	0.51	0.02	3.03**	0.54	0.01	1.90*	0.13
H3	0.01	1.55	0.42	0.02	1.65*	0.31	0.02	2.69**	0.38	0.01	1.87*	0.68	0.01	1.60	0.54	0.01	0.76	0.15
SALES
L1	0.01	1.76*	0.49	0.02	1.98**	0.41	0.02	1.96**	0.24	0.03	2.55**	0.38	0.01	1.02	0.49	0.02	2.10**	0.03
L3	0.01	1.38	0.44	0.01	0.99	0.21	0.01	1.32	0.29	0.01	0.94	0.62	0.01	1.41	0.62	0.00	0.56	0.22
H1	0.01	1.59	0.46	0.00	0.45	0.62	0.02	2.52**	0.30	0.02	2.51**	0.41	0.01	1.60	0.53	0.01	1.99**	0.15
H3	0.01	1.18	0.36	0.01	0.54	0.42	0.02	1.89*	0.34	0.01	1.01	0.64	0.01	1.54	0.76	0.00	-0.61	0.17
SIZE PB
SL1	0.04	3.07**	0.24	–	–	–	0.03	2.02**	0.17	0.03	2.41**	0.38	0.02	1.94*	0.23	0.02	2.59**	0.03
SL3	0.08	1.86*	0.05	–	–	–	0.04	2.11**	0.07	0.01	1.18	0.51	0.03	3.01**	0.25	0.02	2.19**	0.16
SH1	0.02	2.28**	0.32	–	–	–	0.03	2.42**	0.20	0.01	1.17	0.50	0.01	1.70*	0.42	0.00	-0.27	0.09
SH3	0.00	0.27	0.33	–	–	–	0.03	2.37**	0.28	0.01	1.17	0.53	0.01	0.88	0.31	-.01	-1.13	0.10
BL1	0.00	0.29	0.49	–	–	–	0.02	2.28**	0.30	0.01	1.87*	0.60	0.01	1.85*	0.60	0.00	0.25	0.19
BL3	0.00	0.29	0.48	–	–	–	0.02	1.92*	0.36	0.00	0.80	0.70	0.01	1.44	0.68	0.00	-0.61	0.25
BH1	0.00	0.47	0.44	–	–	–	0.01	1.42	0.33	0.01	1.01	0.63	0.01	0.89	0.61	-.01	-0.77	0.22
BH3	0.00	-0.11	0.51	–	–	–	0.01	0.96	0.50	0.00	-0.37	0.68	0.00	-0.37	0.78	-.02	-2.4**	0.19
SIZE PE
SL1	0.02	1.92*	0.28	–	–	–	0.04	2.49**	0.21	0.03	2.44**	0.37	0.01	1.30	0.24	0.02	2.26**	0.03
SL3	0.08	1.87*	0.05	–	–	–	0.05	2.34**	0.05	0.01	1.28	0.54	0.02	2.23**	0.24	0.02	1.80*	0.13
SH1	0.03	3.31**	0.42	–	–	–	0.03	2.22**	0.18	0.01	1.17	0.52	0.02	2.60**	0.42	0.00	0.38	0.11
SH3	0.01	1.06	0.22	–	–	–	0.02	1.57	0.37	0.01	1.18	0.52	0.01	1.46	0.32	-.01	-1.35	0.11
BL1	0.01	1.03	0.01	–	–	–	0.02	2.48**	6.68	0.01	1.87*	0.58	0.01	2.09**	0.63	0.00	0.65	0.24
BL3	0.00	0.33	0.49	–	–	–	0.02	2.09**	8.34	0.00	1.30	0.76	0.00	0.47	0.66	-.01	-0.90	0.27
BH1	0.00	-0.49	0.47	–	–	–	0.01	1.22	1.66	0.01	1.28	0.62	0.01	0.88	0.60	-.01	-1.11	0.18
BH3	0.00	-0.43	0.56	–	–	–	0.00	0.69	1.07	0.00	-0.82	0.62	0.00	0.21	0.76	-.02	-2.2**	0.20

*This table reports Capital Asset Pricing model (CAPM) results. Excess returns on sample portfolios are regressed on excess returns of the market factor in the CAPM framework. Alpha (α) is a measure of extra normal performance whereas adjusted R-square is the goodness of fit measure. ** t -statistics are tested for significance at 5% level on 2-tail basis, *t-statistics are tested for significance at 10% level on 2-tail basis.*

Table 3: Fama French model for Test Portfolios.

	BRAZIL			RUSSIA			INDIA			CHINA			S.KOREA			S.AFRICA		
	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$	α	t(α)	$\bar{R}^2$
RETURN PORTFOLIOS
P1	0.01	0.64	0.42	0.01	0.85	0.40	0.03	2.60**	-.01	0.02	2.79**	0.56	0.00	0.08	0.79	0.00	-0.49	0.24
P5	0.00	-.14	0.55	0.12	0.95	-.03	0.02	2.42**	-.01	0.01	1.53	0.77	0.00	-.13	0.78	0.00	0.61	0.35
SIZE
S1	0.00	0.26	0.49	0.00	-0.12	0.26	0.01	1.22	0.72	0.02	2.63**	0.55	0.00	0.50	0.83	-.01	-1.95*	0.29
S3	-.01	-.87	0.61	0.08	1.16	-.01	0.01	1.24	0.73	0.01	1.89*	0.65	0.00	0.51	0.79	0.00	-0.09	0.30
B1	0.00	-.37	0.51	0.01	1.61	0.47	0.00	0.38	0.59	0.01	2.33**	0.64	0.00	-.22	0.76	-.01	-1.60	0.34
B3	-.01	-.91	0.58	0.01	2.00**	0.68	0.00	0.20	0.57	0.00	1.14	0.80	0.00	-.16	0.77	-.01	-1.41	0.50
PB
L1	0.00	-.14	0.49	0.00	0.34	0.37	0.00	0.79	0.72	0.00	0.83	0.76	0.00	-.63	0.84	-.01	-2.2**	0.35
L3	-.01	-1.3	0.66	0.01	1.54	0.48	0.00	0.35	0.72	0.00	0.92	0.80	0.00	0.28	0.79	0.00	-0.48	0.36
H1	0.00	-.16	0.46	0.02	2.15**	0.42	0.00	0.94	0.51	0.01	2.43**	0.64	0.00	-.23	0.72	-.01	-1.37	0.33
H3	-.01	-1.5	0.61	0.01	1.66*	0.65	0.00	0.84	0.53	0.00	0.35	0.72	0.00	-.86	0.77	-.01	-0.75	0.46
PE
L1	0.00	0.48	0.46	0.02	1.90*	0.53	0.01	1.54	0.69	0.01	2.29**	0.71	0.00	-.47	0.82	-.01	-1.57	0.34
L3	-.02	-1.7*	0.65	0.03	1.26	0.36	0.00	0.49	0.67	0.00	1.30	0.81	0.00	-.65	0.79	0.00	-0.36	0.37
H1	-.01	-.78	0.52	0.01	1.13	0.39	0.00	-0.19	0.54	0.01	1.66*	0.56	0.00	-.07	0.74	-.01	-1.79*	0.27
H3	-.01	-0.7	0.53	0.02	2.05**	0.15	0.00	0.65	0.52	0.00	-0.06	0.69	0.00	-.05	0.77	-.01	-1.53	0.43
DYIELD
L1	0.00	-.53	0.49	0.01	0.74	0.47	0.00	0.17	0.53	0.01	1.51	0.66	0.00	0.46	0.72	-.01	-2.1**	0.30
L3	-.01	-1.1	0.54	0.01	0.76	0.60	0.00	0.65	0.54	0.00	-0.06	0.76	0.00	0.18	0.75	-.01	-1.55	0.38
H1	0.00	0.13	0.50	0.01	1.28	0.35	0.01	1.92*	0.55	0.01	1.86*	0.61	0.00	0.37	0.71	0.00	-0.74	0.25
H3	0.00	-.21	0.53	0.01	1.59	0.51	0.00	0.80	0.58	0.01	2.62**	0.74	0.00	0.50	0.69	0.00	-0.27	0.30
SALES
L1	0.01	0.82	0.48	0.02	1.53	0.25	0.00	-0.76	0.66	0.01	1.90*	0.62	0.00	-.59	0.76	0.00	-0.42	0.20
L3	-.01	-.93	0.50	0.02	1.45	0.46	0.00	0.10	0.54	0.00	0.18	0.69	0.00	-.57	0.78	0.01	0.65	0.27
H1	0.00	-.27	0.51	0.00	0.12	0.56	0.01	1.63	0.62	0.01	1.95*	0.70	-.01	-1.1	0.77	0.00	0.00	0.30
H3	0.00	-.31	0.48	0.01	1.55	0.47	0.00	0.29	0.60	0.00	0.70	0.73	0.00	0.42	0.78	0.00	-0.02	0.39
SIZE PB
SL1	0.00	0.43	0.42	–	–	–	0.01	1.07	0.70	0.01	1.12	0.77	-.01	-1.0	0.86	-.01	-1.37	0.27
SL3	-.03	-1.3	0.67	–	–	–	0.00	0.61	0.77	0.00	0.27	0.82	0.00	0.14	0.77	0.01	0.61	0.16
SH1	0.01	1.43	0.44	–	–	–	0.01	0.77	0.66	0.00	0.84	0.73	0.00	0.03	0.75	-.01	-0.72	0.18
SH3	-.01	-1.4	0.39	–	–	–	0.00	0.46	0.63	0.00	0.53	0.69	0.00	-.57	0.72	0.00	-0.12	0.33
BL1	0.00	-0.5*	0.45	–	–	–	0.00	0.38	0.58	0.01	1.64*	0.62	0.00	0.08	0.80	-.01	-1.01	0.31
BL3	-.01	-1.1	0.54	–	–	–	0.00	-0.13	0.59	0.00	0.76	0.72	0.00	-.27	0.77	-.01	-1.02	0.41
BH1	-.01	-1.7*	0.53	–	–	–	0.00	-0.34	0.44	0.00	0.67	0.68	0.00	0.07	0.76	-.01	-2.0**	0.26
BH3	-.01	-.93	0.57	–	–	–	0.01	0.97	0.51	0.00	-0.58	0.74	0.00	-.51	0.78	-.01	-2.1**	0.35
SIZE PE
SL1	0.00	-.22	0.34	–	–	–	0.01	1.39	0.70	0.01	1.15	0.77	0.00	-.68	0.82	-.01	-1.03	0.29
SL3	-.03	-1.5	0.65	–	–	–	0.01	0.55	0.69	0.00	-0.27	0.77	0.00	-.14	0.78	0.01	0.54	0.15
SH1	0.00	0.52	0.47	–	–	–	0.00	0.32	0.65	0.00	0.84	0.76	0.00	0.28	0.75	-.01	-1.24	0.14
SH3	0.00	-.09	0.21	–	–	–	0.00	0.33	0.58	0.00	0.23	0.69	0.00	0.73	0.70	-.01	-0.81	0.23
BL1	0.00	0.00	0.51	–	–	–	0.01	1.49	0.56	0.01	1.24	0.64	0.00	0.07	0.77	-.01	-0.95	0.35
BL3	-.01	-.86	0.55	–	–	–	0.00	0.27	0.54	0.01	1.63	0.78	0.00	-.75	0.75	0.00	-0.59	0.38
BH1	-.01	-1.3	0.54	–	–	–	0.00	-0.02	0.47	0.01	1.51	0.63	0.00	-.21	0.73	-.02	-2.4**	0.17
BH3	-.01	-.93	0.58	–	–	–	0.00	0.68	0.52	0.00	-1.45	0.71	0.00	0.33	0.79	-.01	-1.02	0.31

FF Three Factor Model Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + s\ SMB_t + l\ LMH_t + e_t$

Panel A: Excess Return on **24-12-12** Stylized Portfolios Regressed on the Excess Return on the Market (R_M-R_F) Factor and Two Proxy Portfolios that Relate to Size (SMB) and (LMH) Factors

Table 3: Continued

	BRAZIL			RUSSIA			INDIA			CHINA			S.KOREA			S.AFRICA		
	α	t(α)	$\bar{R}^2$	α	t(α)		α	t(α)		α	t(α)		α	t(α)		α	t(α)	
							RETURN PORTFOLIOS											
P1	0.01	1.03	0.44	0.02	1.69*	0.57	0.03	3.21	0.00	0.01	2.25**	0.62	0.00	-.37	0.78	-.01	-0.73	0.23
P5	0.00	-0.30	0.56	0.05	1.02	0.08	0.03	2.66	0.00	0.01	1.75*	0.76	0.00	-.23	0.78	0.01	0.96	0.35
							SIZE											
S1	0.01	1.10	0.49	0.01	0.97	0.55	0.00	0.77	0.74	0.01	2.39**	0.63	0.00	-.10	0.80	-.01	-1.6*	0.30
S3	-.02	-1.58	0.65	0.04	1.19	0.04	0.00	0.77	0.72	0.01	2.09**	0.67	0.00	0.21	0.78	0.00	0.46	0.33
B1	0.00	-0.36	0.51	0.01	1.78*	0.54	0.00	0.61	0.60	0.01	1.71*	0.68	0.00	-.61	0.75	-.01	-1.02	0.35
B3	0.00	-0.53	0.58	0.01	1.24	0.72	0.00	0.18	0.56	0.00	0.97	0.81	0.00	-.17	0.79	-.01	-1.31	0.48
							PB											
L1	0.01	0.75	0.54	0.01	1.03	0.44	0.00	0.58	0.73	0.00	0.79	0.79	0.00	-.38	0.81	-.01	-1.05	0.31
L3	-.02	-1.6*	0.66	0.01	1.11	0.40	0.00	0.01	0.73	0.00	-0.15	0.80	0.00	0.76	0.77	0.00	-0.51	0.39
H1	0.00	0.33	0.46	0.02	2.50**	0.51	0.00	0.77	0.53	0.01	1.47	0.67	0.00	-.45	0.71	-.01	-1.54	0.33
H3	-.01	-1.18	0.59	0.01	1.15	0.56	0.00	0.61	0.52	0.00	0.36	0.75	0.00	-.80	0.79	0.00	-0.59	0.45
							PE											
L1	0.01	0.72	0.45	0.02	2.97**	0.60	0.01	0.99	0.72	0.01	1.61	0.77	0.00	-.62	0.77	-.01	-1.27	0.33
L3	-.02	-1.8*	0.66	0.02	0.82	0.34	0.01	0.98	0.66	0.00	0.35	0.76	0.00	-.19	0.78	0.00	0.22	0.40
H1	0.00	-0.17	0.55	0.00	0.38	0.41	0.00	0.48	0.55	0.01	1.20	0.63	0.00	-.21	0.73	-.01	-1.41	0.27
H3	-.01	-0.70	0.54	0.00	0.01	0.55	0.00	0.20	0.54	0.00	-0.19	0.71	0.00	0.10	0.77	-.01	-1.08	0.42
							DYIELD											
L1	0.00	-0.51	0.51	0.02	1.64*	0.44	0.00	0.39	0.53	0.01	1.16	0.65	0.00	-.07	0.70	-.01	-1.42	0.32
L3	0.00	-0.30	0.50	0.00	0.54	0.51	0.00	0.15	0.54	0.00	0.30	0.75	0.00	0.19	0.76	-.01	-1.45	0.35
H1	0.01	0.71	0.50	0.01	1.06	0.40	0.01	1.45	0.59	0.01	1.04	0.76	0.00	0.44	0.72	0.00	-0.18	0.22
H3	0.00	0.18	0.51	0.02	2.57**	0.44	0.01	1.17	0.59	0.01	1.65*	0.77	0.00	0.50	0.67	0.00	-0.47	0.34
							SALES											
L1	0.01	0.90	0.46	0.01	1.03	0.21	0.00	-0.05	0.63	0.01	1.68*	0.62	-.01	-1.0	0.74	0.00	-0.47	0.19
L3	0.00	-0.54	0.55	0.01	0.97	0.31	0.00	0.11	0.52	0.00	0.09	0.74	0.00	-.38	0.80	0.00	-0.03	0.25
H1	0.00	0.04	0.51	0.01	0.73	0.69	0.03	3.37**	0.03	0.01	1.65*	0.73	-.01	-1.0	0.75	0.00	0.58	0.29
H3	-.01	-0.52	0.44	0.00	0.03	0.42	0.00	-0.24	0.59	0.00	1.00	0.74	0.01	0.90	0.81	0.00	-0.39	0.40
							SIZE PB											
SL1	0.02	1.85*	0.44	–	–	–	0.04	2.47**	-.01	0.01	1.65*	0.80	-.01	-.96	0.84	-.01	-0.97	0.30
SL3	-.04	-2.**	0.69	–	–	–	0.04	2.54**	0.02	0.00	-0.29	0.81	0.00	0.73	0.78	0.00	0.39	0.20
SH1	0.01	0.65	0.40	–	–	–	0.04	2.41**	0.00	0.00	0.49	0.74	0.00	-.28	0.75	-.01	-1.19	0.25
SH3	-.01	-1.28	0.38	–	–	–	0.03	2.39**	-.02	0.00	0.37	0.69	0.00	-.75	0.73	0.00	-0.07	0.30
BL1	0.00	-0.37	0.45	–	–	–	0.02	2.23**	-.01	0.01	1.64*	0.62	0.00	-.01	0.80	0.00	-0.68	0.30
BL3	0.00	0.20	0.51	–	–	–	0.02	2.03**	-.03	0.00	0.84	0.72	0.00	0.61	0.78	-.01	-1.24	0.37
BH1	0.00	-0.55	0.45	–	–	–	0.02	2.31**	-.02	0.01	1.17	0.64	0.00	-.31	0.74	-.01	-1.31	0.20
BH3	-.01	-0.74	0.55	–	–	–	0.02	1.74*	-.02	0.00	-0.13	0.72	0.00	-.68	0.81	-.01	-1.8*	0.36
							SIZE PE											
SL1	0.01	0.48	0.35	–	–	–	0.05	2.71**	-.01	0.01	1.58	0.79	-.01	-1.5	0.79	0.00	-0.01	0.29
SL3	-.04	-1.9*	0.70	–	–	–	0.05	2.23**	0.02	0.00	0.22	0.75	0.00	0.02	0.81	0.00	0.39	0.21
SH1	0.00	0.45	0.38	–	–	–	0.03	2.18**	-.01	0.00	0.46	0.78	0.00	0.11	0.77	-.01	-0.96	0.15
SH3	-.01	-0.79	0.32	–	–	–	0.02	1.91*	-.02	0.00	0.43	0.70	0.00	0.47	0.65	-.01	-0.68	0.19
BL1	0.00	-0.05	0.50	–	–	–	0.02	2.56**	0.00	0.01	1.90*	0.63	0.00	-.29	0.73	0.00	-0.41	0.37
BL3	0.00	-0.51	0.47	–	–	–	0.02	2.05**	-.03	0.00	1.32	0.76	0.00	-.44	0.76	-.01	-0.85	0.38
BH1	-.01	-0.99	0.47	–	–	–	0.02	1.73*	-.02	0.01	1.21	0.64	0.00	-.46	0.72	-.01	-1.8*	0.19
BH3	0.00	-0.22	0.61	–	–	–	0.01	1.66*	-.02	0.00	-1.03	0.70	0.00	0.15	0.79	-.01	-1.91*	0.32

Table heading (spanning the table):

FF Three Factor Model Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + s\,SMB_t + l\,LMH_t + e_t$

Panel B: Excess Return on **36-12-12** Stylized Portfolios Regressed on the Excess Return on the Market $(R_M\text{-}R_F)$ Factor and Two Proxy Portfolios that Relate to Size (SMB) and (LMH) Factors

Table 3: Continued

	BRAZIL			RUSSIA			INDIA			CHINA			S.KOREA			S.AFRICA		
FF Three Factor Model Results : $R_{Pt} - R_{Ft} = α + β (R_{Mt} - R_{Ft}) + s\,SMB_t + l\,LMH_t + e_t$																		
Panel C: Excess Return on **48-12-12** Stylized Portfolios Regressed on the Excess Return on the Market (R_M-R_F) Factor and Two Proxy Portfolios that Relate to Size (SMB) and (LMH) Factors																		
	BRAZIL			**RUSSIA**			**INDIA**			**CHINA**			**S.KOREA**			**S.AFRICA**		
	α	t(α)	$\bar{R}^2$	α	t(α)		α	t(α)		α	t(α)		α	t(α)	$\bar{R}^2$	α	t(α)	
							RETURN PORTFOLIOS											
P1	0.02	1.88*	0.44	0.02	1.45	0.37	0.04	3.07**	-.02	0.01	2.01**	0.63	0.00	-0.03	0.79	0.00	-0.12	0.20
P5	0.00	-0.22	0.56	0.04	1.22	0.14	0.03	2.82**	-.02	0.00	0.63	0.74	0.00	0.72	0.80	0.00	-0.09	0.44
								SIZE										
S1	0.01	1.79*	0.48	0.01	0.86	0.27	0.00	0.46	0.75	0.01	1.89*	0.63	0.00	-0.08	0.83	-.01	-1.15	0.28
S3	-.02	-1.42	0.66	0.04	1.13	0.04	0.01	0.89	0.73	0.01	1.57	0.62	0.01	1.37	0.80	0.00	-0.16	0.33
B1	0.00	-0.26	0.50	0.01	2.05**	0.60	0.00	0.54	0.62	0.01	1.59	0.68	0.00	0.60	0.77	-.01	-0.91	0.32
B3	0.00	-0.40	0.60	0.01	1.62	0.59	0.00	0.70	0.57	0.00	0.43	0.79	0.00	0.38	0.79	-.01	-1.04	0.46
								PB										
L1	0.01	1.44	0.49	0.00	0.21	0.53	0.00	0.59	0.71	0.01	0.94	0.78	0.00	0.07	0.83	-.01	-1.10	0.27
L3	-.02	-1.66*	0.69	0.01	0.63	0.41	0.00	0.27	0.69	0.00	-0.05	0.77	0.01	1.77*	0.78	0.00	-0.42	0.39
H1	0.00	0.11	0.46	0.02	3.06**	0.55	0.00	0.42	0.54	0.01	1.46	0.68	0.00	0.39	0.73	-.01	-0.94	0.34
H3	0.00	-0.33	0.61	0.01	1.16	0.54	0.00	0.75	0.53	0.00	0.03	0.72	0.00	0.16	0.78	0.00	-0.37	0.43
								PE										
L1	0.01	0.71	0.42	0.02	2.91**	0.53	0.01	1.02	0.73	0.01	1.48	0.76	0.00	-0.16	0.80	-.01	-1.31	0.32
L3	-.02	-1.42	0.68	0.01	1.84*	0.54	0.01	1.46	0.67	0.00	-0.12	0.74	0.01	1.16	0.79	0.00	-0.13	0.40
H1	0.00	0.28	0.53	0.00	0.00	0.46	0.00	0.05	0.60	0.01	1.21	0.69	0.00	0.69	0.76	-.01	-1.43	0.26
H3	-.01	-0.73	0.59	0.01	0.66	0.51	0.00	0.36	0.54	0.00	-0.17	0.70	0.00	0.62	0.77	-.01	-1.43	0.40
								DYIELD										
L1	0.00	0.13	0.47	0.02	1.89*	0.46	0.00	0.43	0.57	0.01	1.29	0.62	0.01	1.07	0.72	-.01	-1.16	0.30
L3	0.00	-0.06	0.51	0.00	-0.48	0.54	0.00	0.48	0.55	0.00	-0.03	0.70	0.00	0.80	0.78	-.01	-1.07	0.37
H1	0.00	0.42	0.50	0.02	2.48**	0.42	0.01	1.90*	0.55	0.00	0.84	0.75	0.01	1.51	0.75	0.00	0.24	0.19
H3	0.01	0.95	0.53	0.02	1.83*	0.41	0.01	1.82*	0.56	0.00	0.55	0.78	0.01	1.20	0.73	0.00	-0.01	0.32
								SALES										
L1	0.01	1.05	0.46	0.00	0.54	0.50	0.00	-0.11	0.67	0.01	1.89*	0.76	0.00	-0.40	0.74	0.00	0.19	0.13
L3	0.00	-0.23	0.58	0.01	1.06	0.23	0.00	0.10	0.52	0.00	-0.04	0.73	0.00	0.64	0.79	0.00	-0.22	0.37
H1	0.00	0.58	0.52	0.00	0.08	0.52	0.01	1.28	0.62	0.01	1.75*	0.72	0.00	-0.41	0.74	0.00	-0.05	0.27
H3	0.01	0.78	0.39	0.01	0.56	0.41	0.00	0.31	0.58	0.00	0.50	0.73	0.01	1.50	0.80	0.00	-0.53	0.39
								SIZE PB										
SL1	0.02	1.95*	0.45	–	–	–	0.00	0.34	0.74	0.01	1.12	0.79	-.01	-0.82	0.85	-.01	-0.73	0.27
SL3	-.05	-2.**	0.72	–	–	–	0.00	0.52	0.74	0.00	-0.30	0.80	0.01	2.03**	0.74	0.00	0.45	0.21
SH1	0.02	1.60	0.39	–	–	–	0.01	0.99	0.58	0.00	0.60	0.75	0.00	-0.27	0.77	0.00	-0.46	0.28
SH3	0.00	-0.44	0.33	–	–	–	0.01	1.47	0.54	0.00	0.30	0.73	0.00	0.55	0.74	-.01	-0.87	0.29
BL1	0.00	-0.17	0.43	–	–	–	0.01	0.99	0.58	0.01	1.70*	0.61	0.00	0.40	0.76	-.01	-0.78	0.26
BL3	0.00	-0.03	0.51	–	–	–	0.01	1.47	0.54	0.00	0.11	0.70	0.00	0.70	0.77	-.01	-0.93	0.39
BH1	-.01	-0.65	0.48	–	–	–	0.00	0.42	0.49	0.01	1.12	0.68	0.00	0.55	0.72	0.00	-0.58	0.29
BH3	0.00	0.42	0.52	–	–	–	0.00	0.66	0.53	0.00	-0.48	0.70	0.00	-0.35	0.81	-0.0	1.64*	0.37
								SIZE PE										
SL1	0.01	0.83	0.31	–	–	–	0.01	0.86	0.72	0.01	1.17	0.75	-.01	-1.56	0.80	0.00	-0.47	0.28
SL3	-.04	-1.9*	0.73	–	–	–	0.01	0.52	0.67	0.00	0.33	0.71	0.01	1.64*	0.81	0.00	0.01	0.20
SH1	0.02	1.95*	0.42	–	–	–	0.00	0.45	0.66	0.00	0.78	0.79	0.00	0.62	0.80	-.01	-0.94	0.14
SH3	-.01	-0.56	0.32	–	–	–	0.00	-0.22	0.62	0.00	0.39	0.66	0.01	0.97	0.65	-.01	-1.09	0.23
BL1	0.00	-0.11	0.49	–	–	–	0.01	1.44	0.57	0.01	1.89*	0.60	0.00	0.48	0.75	-.01	-0.73	0.33
BL3	0.00	-0.13	0.52	–	–	–	0.01	1.35	0.50	0.00	0.18	0.76	0.00	0.30	0.75	-.01	-0.70	0.41
BH1	-.01	-1.05	0.48	–	–	–	0.00	-0.22	0.52	0.01	1.09	0.67	0.00	0.07	0.73	-.01	-0.97	0.14
BH3	0.00	-0.30	0.62	–	–	–	0.00	0.43	0.55	0.00	-0.86	0.70	0.00	0.45	0.79	-.01	-1.01	0.31

Table 3 Continued

	FF Three Factor Model Results : $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + s\,SMB_t + l\,LMH_t + e_t$																	
	Panel D: Excess Return on **60-12-12** Stylized Portfolios Regressed on the Excess Return on the Market (R_M-R_F) Factor																	
	and Two Proxy Portfilios that Relate to Size (SMB) and (LMH) Factors																	
	BRAZIL			**RUSSIA**			**INDIA**			**CHINA**			**S.KOREA**			**S.AFRICA**		
	α	t(α)		α	t(α)		α	t(α)	$\bar{R}^2$	α	t(α)		α	t(α)		α	t(α)	$\bar{R}^2$
							RETURN PORTFOLIOS											
P1	0.01	1.34	0.48	0.03	1.81*	0.26	0.04	3.10**	0.02	0.01	1.54	0.63	0.00	0.47	0.69	0.00	0.46	0.14
P5	0.00	-0.29	0.58	0.05	1.01	0.10	0.03	2.74**	0.01	0.00	0.00	0.71	0.00	0.32	0.72	0.00	-.45	0.29
							SIZE											
S1	0.01	1.64*	0.48	0.02	0.93	0.27	0.00	0.32	0.76	0.01	1.28	0.65	0.00	0.39	0.75	-.01	-.66	0.27
S3	-.01	-1.02	0.71	0.04	1.18	0.04	0.00	0.62	0.72	0.00	0.68	0.64	0.01	1.05	0.69	-.01	-.50	0.15
B1	0.00	-0.03	0.51	0.02	2.50**	0.58	0.00	0.43	0.63	0.01	1.53	0.66	0.00	0.78	0.64	0.00	-.06	0.21
B3	-.01	-0.66	0.55	0.01	1.48	0.56	0.00	0.21	0.56	0.00	-0.02	0.77	0.00	-0.01	0.75	0.00	-.56	0.28
							PB											
L1	0.01	1.69*	0.51	0.01	0.63	0.50	0.00	0.37	0.73	0.01	1.30	0.75	0.00	-0.01	0.73	0.00	-.51	0.20
L3	-.02	-1.37	0.71	0.01	0.62	0.40	0.00	0.15	0.69	0.00	-0.04	0.77	0.01	1.05	0.68	0.00	0.05	0.21
H1	0.01	0.61	0.43	0.02	2.56**	0.57	0.00	0.67	0.56	0.01	1.17	0.66	0.01	0.98	0.61	0.00	0.04	0.27
H3	0.00	-0.42	0.59	0.01	0.94	0.51	0.00	0.40	0.53	0.00	0.01	0.71	0.00	-0.11	0.75	-0.0	-.95	0.25
							PE											
L1	0.01	0.78	0.43	0.02	2.51**	0.62	0.01	0.93	0.74	0.01	1.34	0.74	0.00	0.12	0.71	-.01	-.67	0.27
L3	-.02	-1.34	0.70	0.01	1.52	0.50	0.01	0.98	0.67	0.00	0.46	0.75	0.00	0.48	0.70	0.00	-.19	0.25
H1	0.00	0.33	0.52	0.00	0.29	0.38	0.00	0.10	0.59	0.01	1.08	0.66	0.01	1.04	0.63	0.00	-.49	0.15
H3	-.01	-0.67	0.52	0.00	0.40	0.39	0.00	0.00	0.54	0.00	-0.58	0.70	0.00	0.24	0.71	-.01	-1.2	0.23
							DYIELD											
L1	0.00	0.39	0.50	0.01	1.33	0.49	0.00	0.67	0.57	0.01	1.31	0.65	0.00	0.62	0.60	0.00	-.45	0.17
L3	-.01	-0.60	0.51	0.00	-0.06	0.45	0.00	-0.03	0.54	0.00	0.06	0.69	0.00	0.57	0.75	0.00	-.12	0.22
H1	0.01	0.73	0.49	0.02	1.96**	0.48	0.01	1.37	0.59	0.01	1.53	0.71	0.01	1.76*	0.59	0.01	1.30	0.11
H3	0.01	1.06	0.44	0.02	1.61	0.40	0.01	1.50	0.58	0.00	0.95	0.77	0.00	0.57	0.59	0.00	0.52	0.14
							SALES											
L1	0.01	0.85	0.52	0.01	1.40	0.42	0.00	0.02	0.67	0.01	1.36	0.74	0.00	-0.71	0.67	0.01	0.77	0.05
L3	0.00	-0.19	0.55	0.01	1.28	0.20	0.00	-0.15	0.51	0.00	-0.13	0.74	0.00	0.44	0.69	0.00	0.47	0.21
H1	0.01	0.99	0.49	0.00	0.46	0.61	0.01	0.94	0.66	0.01	1.40	0.70	0.00	0.52	0.56	0.01	1.30	0.14
H3	0.01	0.93	0.38	0.00	0.21	0.42	0.00	0.46	0.57	0.00	0.00	0.73	0.00	0.87	0.77	0.00	0.13	0.19
							SIZE PB											
SL1	0.02	1.64*	0.38	–	–	–	0.00	0.11	0.70	0.01	1.24	0.76	-.01	-0.87	0.78	0.00	-.29	0.26
SL3	-.04	-1.68*	0.74	–	–	–	0.00	0.28	0.72	0.00	-0.26	0.75	0.01	1.15	0.72	0.00	0.21	0.22
SH1	0.02	1.69*	0.40	–	–	–	0.01	0.64	0.73	0.00	0.70	0.72	0.01	1.20	0.67	-.01	-.57	0.31
SH3	0.00	-0.43	0.38	–	–	–	0.01	0.87	0.63	0.00	0.71	0.71	0.00	0.68	0.58	-.01	-1.1	0.22
BL1	0.00	-0.02	0.49	–	–	–	0.01	1.07	0.59	0.01	1.60	0.62	0.00	0.58	0.64	0.00	0.19	0.18
BL3	0.00	-0.11	0.50	–	–	–	0.01	0.82	0.53	0.00	0.58	0.71	0.00	0.34	0.70	0.00	-.09	0.24
BH1	0.00	0.11	0.46	–	–	–	0.00	0.30	0.48	0.01	1.06	0.69	0.00	0.70	0.60	0.00	-.16	0.23
BH3	0.00	-0.16	0.52	–	–	–	0.00	0.37	0.52	0.00	-0.36	0.72	0.00	-0.51	0.79	-.01	-.93	0.24
							SIZE PE											
SL1	0.01	0.74	0.36	–	–	–	0.01	0.74	0.71	0.01	1.30	0.70	-.01	-0.94	0.71	0.00	0.00	0.26
SL3	-.04	-1.56	0.73	–	–	–	0.01	0.72	0.66	0.00	0.08	0.71	0.01	1.03	0.74	0.00	0.15	0.20
SH1	0.02	2.12**	0.50	–	–	–	0.00	0.38	0.68	0.00	0.30	0.79	0.01	1.23	0.68	0.00	-.48	0.14
SH3	0.00	-0.17	0.33	–	–	–	0.00	-0.19	0.65	0.00	0.50	0.69	0.01	0.76	0.51	-.01	-.97	0.20
BL1	0.01	0.67	0.52	–	–	–	0.01	1.26	0.59	0.01	1.77*	0.59	0.01	0.99	0.65	0.00	0.33	0.24
BL3	0.00	-0.34	0.53	–	–	–	0.01	1.11	0.51	0.00	1.09	0.76	0.00	-0.25	0.67	0.00	-.19	0.26
BH1	0.00	-0.59	0.46	–	–	–	0.00	-0.11	0.54	0.01	1.13	0.68	0.00	0.29	0.60	-.01	-1.1	0.17
BH3	0.00	-0.55	0.57	–	–	–	0.00	0.01	0.55	0.00	-0.86	0.68	0.00	-0.08	0.77	-.01	-.75	0.25

The table reports Fama French three-factor model results. Excess returns on the sample portfolios are regressed on the returns on market, size and value factor in the Fama French frame work. Alpha (α), the intercept term, shows risk adjusted returns while adjusted R-square is the goodness of fit measure. ** t -statistics are tested for significance at 5% level on 2-tail basis and *t-statistics are tested for significance at 10% level on 2-tail basis.

Next, the results for mean excess returns on sectoral portfolios have been reported in Table 4. Russia and India exhibit strong momentum patterns for all portfolio formation (24-60 months) strategies. While Brazil reports weak momentum patterns for 24-48 months portfolio formation windows and weak contrarian patterns for 60 months formation windows. China and South Africa show weak contrarian patterns for all portfolio formation windows. There are no clear prior return patterns for South Korea. The highest momentum returns are reported by Russia of 4.14% for 36-12-12 strategies.

Table 4: Mean Excess Returns on Sectoral Portfolios

Mean Excess Returns on Sectoral Momentum Portfolios						
Panel A: 24-12-12 Stylized Portfolios						
COUNTRY	**BRAZIL**	**RUSSIA**	**INDIA**	**CHINA**	**S.KOREA**	**S.AFRICA**
K1	0.0195	0.0509	-0.0052	0.0234	0.0174	0.0162
K2	0.0190	0.0390	0.0062	0.0193	0.0201	0.0200
K3	0.0147	0.2456	0.0093	0.0179	0.0283	0.0025
K4	0.0127	0.0546	0.0129	0.0192	0.0159	0.0112
K5	0.0256	0.0738	0.0247	0.0195	0.0117	0.0092
K5 - K1	0.0062	0.0229	0.0299	-0.0040	-0.0057	-0.0071
EWI	0.0183	0.0928	0.0096	0.0199	0.0187	0.0118
Panel B: 36-12-12 Stylized Portfolios						
K1	0.0173	0.0358	-0.0055	0.0221	0.0286	0.0156
K2	0.0216	0.3585	0.0056	0.0152	0.0323	0.0192
K3	0.0181	0.0456	0.0084	0.0205	0.0234	0.0159
K4	0.0177	0.0341	0.0112	0.0200	0.0267	0.0048
K5	0.0279	0.0772	0.0220	0.0184	0.0296	0.0158
K5 - K1	0.0106	0.0414	0.0276	-0.0037	0.0010	0.0002
EWI	0.0205	0.1102	0.0083	0.0192	0.0281	0.0143
Panel C: 48-12-12 Stylized Portfolios						
K1	0.0140	0.0454	-0.0029	0.0221	0.0283	0.0213
K2	0.0265	0.0430	0.0058	0.0194	0.0320	0.0167
K3	0.0249	0.2240	0.0085	0.0164	0.0391	0.0058
K4	0.0130	0.0384	0.0108	0.0198	0.0214	0.0111
K5	0.0253	0.0809	0.0217	0.0171	0.0199	0.0114
K5 - K1	0.0113	0.0356	0.0245	-0.0050	-0.0084	-0.0098
EWI	0.0207	0.0863	0.0088	0.0190	0.0281	0.0133
Panel D: 60-12-12 Stylized Portfolios						
K1	0.0245	0.0525	-0.0004	0.0211	0.0116	0.0186
K2	0.0245	0.5795	0.0061	0.0231	0.0206	0.0169
K3	0.0299	0.0470	0.0084	0.0166	0.0152	0.0180
K4	0.0330	0.0441	0.0108	0.0183	0.0159	0.0117
K5	0.0189	0.0563	0.0202	0.0201	0.0257	0.0148
K5 - K1	-0.0056	0.0038	0.0207	-0.0010	0.0142	-0.0038
EWI	0.0262	0.1559	0.0090	0.0199	0.0178	0.0160

The table shows mean excess returns on sectoral momentum portfolios. We form five sectoral portfolios for each of the long-term portfolio formation windows (24,36, 48, and 60 months) and then estimate 12 month holding period returns for the sample portfolios after skipping one year between portfolio formation and holding windows for any short-term prior return effects.

The empirical results based on four-factor model are given in Table 5. We find that the sector factor is able to capture average returns for 36-12-12 in case of India and 24-12-12 in case of South Africa. However, the abnormal returns for China in case of 24-12-12 strategy persist and hence continue to be an asset pricing puzzle. The Chinese anomaly may be an aberration or perhaps require some behavioral explanation. To conclude, our four-factor model does a better job than CAPM and the FF model in explaining prior return patterns in stock returns and hence it should be used as a baseline for evaluating investment strategies.

Table 5: Four Factor Model Results

Four Factor Model Results: RPt - RFt = α + β (RMt - RFt)+ s SMBt + l LMHt + w WMLt + et								
Excess Return on Stylized Portfolios Regressed on the Excess Return on the Market (RM-RF) Factor								
and Three Proxy Portfilios that Relate to Size (SMB), (LMH) and Sector (WML) Factors								
Strategy	24-12-12			24-12-12			36-12-12		
	INDIA			S.AFRICA			CHINA		
	α	t(α)		α	t(α)		α	t(α)	
	RETURN PORTFOLIOS								
P1	0.03	3.05**	0.01	0.00	0.02	0.26	0.01	1.51	0.77
P5	0.03	2.96**	0.02	0.01	0.67	0.35	0.00	1.02	0.73
	SIZE								
S1	0.01	1.26	0.72	-0.01	-1.64*	0.29	0.01	2.30**	0.63
S3	0.01	1.07	0.74	0.00	0.15	0.30	0.01	2.02**	0.67
B1	0.00	0.46	0.59	-0.01	-1.27	0.34	0.01	1.86*	0.68
B3	0.00	0.02	0.58	-0.01	-1.31	0.49	0.00	1.14	0.81
	PB								
L1	0.00	0.82	0.71	-0.01	-1.89*	0.35	0.00	0.69	0.79
L3	0.00	0.21	0.72	0.00	-0.26	0.36	0.00	-0.21	0.79
H1	0.01	0.99	0.51	-0.01	-0.89	0.35	0.01	1.60	0.67
H3	0.00	0.62	0.54	0.00	-0.64	0.46	0.00	0.73	0.76
	PE								
L1	0.01	1.64*	0.69	-0.01	-1.18	0.34	0.01	1.51	0.77
L3	0.00	0.31	0.68	0.00	-0.10	0.37	0.00	0.23	0.76
H1	0.00	-0.09	0.54	-0.01	-1.44	0.28	0.01	1.41	0.64
H3	0.00	0.43	0.54	-0.01	-1.41	0.42	0.00	0.15	0.72
	DYIELD								
L1	0.00	0.28	0.53	-0.01	-1.82*	0.30	0.01	1.38	0.66
L3	0.00	0.40	0.56	-0.01	-1.24	0.39	0.00	0.50	0.75
H1	0.01	1.91*	0.55	0.00	-0.43	0.25	0.00	0.88	0.76
H3	0.00	0.72	0.58	0.00	-0.15	0.30	0.01	1.69	0.77
	SALES								
L1	0.00	-0.73	0.66	0.00	0.28	0.24	0.01	1.75*	0.62
L3	0.00	0.06	0.54	0.01	0.73	0.26	0.00	0.26	0.74
H1	0.01	1.65*	0.62	0.00	0.27	0.30	0.01	1.50	0.73
H3	0.00	-0.09	0.66	0.00	0.31	0.39	0.01	1.18	0.74
	SIZE PB								
SL1	0.01	1.10	0.70	-0.01	-1.18	0.27	0.01	1.67*	0.80
SL3	0.00	0.31	0.79	0.01	0.79	0.16	0.00	-0.20	0.81
SH1	0.01	0.80	0.65	0.00	-0.36	0.19	0.00	0.63	0.74
SH3	0.00	0.44	0.63	0.00	0.25	0.35	0.00	0.63	0.70
BL1	0.00	0.45	0.58	0.00	-0.53	0.33	0.01	1.71*	0.62
BL3	0.00	-0.20	0.59	0.00	-0.75	0.42	0.00	1.01	0.72
BH1	0.00	-0.24	0.44	-0.01	-1.48	0.29	0.01	1.45	0.66
BH3	0.00	0.73	0.54	-0.01	-1.98**	0.35	0.00	0.22	0.73
	SIZE PE								
SL1	0.01	1.40	0.70	-0.01	-0.65	0.31	0.01	1.73*	0.79
SL3	0.00	0.30	0.70	0.01	0.81	0.16	0.00	0.27	0.75
SH1	0.00	0.37	0.65	-0.01	-1.28	0.14	0.00	0.53	0.78
SH3	0.00	0.22	0.58	0.00	-0.46	0.24	0.00	0.69	0.71
BL1	0.01	1.61	0.56	0.00	-0.73	0.35	0.01	1.94*	0.63
BL3	0.00	0.15	0.55	0.00	-0.34	0.39	0.01	1.48	0.76
BH1	0.00	0.04	0.47	-0.01	-1.85*	0.21	0.01	1.43	0.64
BH3	0.00	0.42	0.55	-0.01	-1.04	0.31	0.00	-0.65	0.72

The table shows the excess returns on the sample portfolios (that are not explained by the Fama French model) are regressed on the four risk factors including an additional sector prior return factor. Alpha (α) is a measure of extra normal performance and adjusted R-square is the goodness of fit measure. ** t -statistics are tested for significance at 5% level on 2-tail basis. *t-statistics are tested for significance at 10% level on 2-tail basis.

CONCLUDING COMMENTS

There is a large body of empirical research that deals with prominent asset pricing anomalies for both mature and emerging markets. Amongst the pricing anomalies, long-term mean reversal (contrarian) and short-term continuation (momentum) have received much attention over the last three decades. Academicians are still inconclusive about the sources of momentum/reversal profits. While some attribute it to risk factors, others believe that these extra normal returns are driven by some kind of behavioral biases.

In this paper, we examine for long-term prior return patterns in stock returns for BRICKS markets and whether they can be explained by standard asset pricing models such as the CAPM or the Fama French three-factor model. We form portfolios based on 24-60 months past returns and skip one year between formation and holding windows to control for any short-term momentum effects in these markets as documented by Sehgal and Jain, 2011. Four key propositions have been examined: (1) Do long-term portfolio formation strategies provide abnormal profits?, (2) Can these profits be absorbed by standard risk models like the CAPM or the Fama-French three-factor model?, (3) Are there any long-term prior return patterns in sector returns and (4) Can the prior returns patterns in stock returns that are missed by CAPM and the Fama French model be absorbed by introducing an additional sector prior return factor.

For long-term prior return based portfolios, we observe momentum behavior for Brazil, Russia and South Africa and this pattern persists even as we elongate the formation windows whereas India, China and South Korea report contrarian behavior. For double and triple sorted portfolios (based on company characteristics and long-term prior returns), similar patterns are reported by the above mentioned countries.

The CAPM is able to explain most prior return patterns in Brazil, Russia, China and South Africa for 24 and 36 months portfolio formation strategies but it doesn't do a good job for longer term portfolio formation strategies i.e. 48 and 60 months. In case of India and South Korea, the CAPM seems to be a poor descriptor of prior return patterns across all long-term portfolio formation strategies. The Fama French model is able to capture long-term prior return patterns in stock returns for BRICKS countries that are missed by the CAPM, with the exception of China and South Africa for 24-12-12 strategy and India for 36-12-12 strategy.

We explore if there are any prior return patterns in sector returns as was observed in case of stock returns. We find that Russia and India exhibit strong momentum patterns in sector for all portfolio formation windows (24-60 months) strategies. While Brazil reports weak momentum patterns for 24-48 months portfolio formation windows and weak contrarian patterns for 60 months formation windows. China and South Africa show weak contrarian patterns for all portfolio formation windows. There are no clear prior return patterns for South Korea.

Given the few anomalies in case of India, China and South Africa, we augment the F-F model by including a sector prior return factor which is formed on the economic argument of Liu and Zhang (2008). The sector factor is able to capture average returns for 36-12-12 strategy in case of India and 24-12-12 strategy in case of South Africa. However, the abnormal returns for China in case of 24-12-12 strategy persist and hence continue to be an asset pricing puzzle. The unexplained returns even after controlling for sector factor in case of China may warrant a behavioral explanation or there may be some other missing risk factor(s) which may explain returns.

Our findings are pertinent for portfolio managers and investment analysts who are continuously in pursuit of trading strategies that provide extra normal returns. From an academic point of view, we suggest that a sector factor should be used in the multi factor framework for explaining asset returns. Our research contributes to the asset pricing and behavioral finance literature for emerging markets.

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BIOGRAPHY

Sanjay Sehgal is Ph.D. finance from Delhi School of Economics and post doctoral commonwealth research fellow from London School of Economics, UK. He is professor of Finance at Department of Financial Studies, South Campus, and University of Delhi, India, sanjayfin15@gmail.com.

Sakshi Jain is Master's in sciences graduate from Loughborough University and is currently pursuing doctoral research at Department of Financial Studies, South Campus, and University of Delhi, India, sak1787.sakshi@gmail.com.

Pr Laurence the PORTEU de LA MORANDIERE is a professor of Finance, Groupe ESC Pau, Campus Universitaire - 3, Rue Saint John Perse, BP 7512 - 64075 PAU Cedex, FRANCE, laurence.porteu@esc-pau.fr.