“Short-term prior return patterns in stocks and sector returns: evidence for BRICKS markets”

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Abstract

This paper examines if there are any prior return patterns in stock returns for BRIC markets. Employing 6-6 portfolio formation/holding strategies, the paper observes strong momentum patterns for the sample markets with the exception of China. These momentum patterns disappear and in fact there are return reversals for some countries, as one elongates portfolio formation and holding windows to 12 months except for Indian market. Prior return patterns are not fully captured by CAPM as well as the Fama-French three-factor model, especially for 6-6 strategy. There are prior return patterns in sector returns as was observed in case of stock returns. Hence, the authors augment the F-F model by including a sector momentum factor which is formed on basis of economic argument of Liu and Zhang (2008). The four-factor model is found to be a better descriptor of asset pricing but some unexplained returns may warrant a behavioral explanation for India and Russia. The findings are relevant for global portfolio managers who are on the look out for portfolio trading strategies especially for emerging markets given their low degree of co-relation with the mature markets. The study contributes to the asset pricing anomaly literature especially for emerging markets.

Keywords: trading strategies, CAPM, Fama-French model, prior return profits, behavioral finance, BRIC, sector factor.
JEL Classification: C51, C52, G12, G14, G15.

Introduction

Competition in capital markets requires continuous and cost effective trading strategies. The emerging markets play an increasingly important role in global economic development and financial systems. In the last decade, BRICKS countries have taken advantage of their abundant natural and human resources on the whole achieving very high growth rates, thus attracting investors to these prominent economies other than developed countries.

BRICKS, is the extended notion for BRIC, an acronym given by Goldman Sachs in 2001 for the developing economies of Brazil, Russia, India, and, China. More recently, the investment banking industry has expanded the emerging markets basket from BRIC to BRICKS which now also includes the countries of South Korea (K) and South Africa (S). Korea is an industrial leader in electronics, ship-building and global trading and South Africa is the economic force of the African continent and hence are important emerging markets. BRICKS have emerged as an economic force challenging the TRIAD (Japan, the USA and Germany) and have become as important as the G7 group of developed nations.

BRICKS countries have high potential growth: they cover 30% of land area of world, 44% of world population and have a combined GDP at purchasing power parity (PPP) of approximately $18 trillion. The study of BRICKS focuses on the most populous countries, and their combined economies, which are likely to be the world's six most influential countries. These economies have strong growth potential in view of large and young population; however they also face the challenge of maintaining high growth rates and improving their living standard in order to reduce the gap with mature markets. Owing to there strong growth potential and increasing global presence, BRICKS capital markets are on the radar of investment analysts and fund managers who are continuously look out for trading strategies that can exploit observable market inefficiencies and generate extra normal returns.

Predicting returns on assets based on past returns has gained importance in the 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 time dependent. The contrarian strategies perform well for very short term (up to 3 months), see Lo and MacKinlay (1990) and long term (3-5 years), see De Bondt and Thaler (1985, 1987) while momentum strategies perform well for short term (between 3-12 months), see Jegadeesh and Titman (1993).

DeBondt and Thaler (1985, 1987) were first to document reversals in long-term returns i.e. stocks with low past returns tend to have higher future returns. On the other hand, Jegadeesh and Titman (1993) find that short-term returns tend to continue, hence

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suggesting momentum profits. Other researchers show that average stock returns are related to size (Banz, 1981), value (P/B or P/E) (Chan, Lakonishok and Hamao, 1991), earnings/price (E/P), (Basu, 1977, 1983), leverage (Bhandari and Weiss, 1996), book-to-market-equity (Rosenberg, Reid and Lanstien (1985) and past sales growth (Lakonishik, Shliefer and Vishny, 1994), dividend yield (Litzenberg and Ramaswamy, 1979).

Momentum strategies are used to exploit short-term persistence in stock returns. Many studies have accounted for profitability of momentum strategies. Jegadeesh and Titman (1993) report positive auto correlations of 3-12 months investment horizon, suggesting strong momentum profits for the U.S. market. Rouwenhorst (1998) find that momentum strategies are profitable for equities in 12 European markets. Moskowitz and Grinblatt (1999) suggest that momentum returns are primarily driven by industry factors whereas Grundy and Martin (2001) show that momentum strategies have been profitable in the U.S. market since 1920's and industry momentum is not a cause for their profitability. Lewellen (2002) finds that size and B/M portfolios formed on industries as well as individual stocks show momentum profits.

The source driving momentum profits remains a puzzle; many researchers believe that they owe a behavioral explanation. Daniel, Hirshliefer, and Subrahmanyam (1998), Barberis, Shliefer and Vishny (1999) and Hong and Stein (2000) provide behavioral theories to explain momentum phenomenon. Profitability of momentum strategies may have a rationale source and could be explained by missing risk factor (s), Fama and French (1996). 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) and 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. Jegadeesh and Titman (2002) empirically demonstrate that cross-sectional differences in expected returns explain very little of momentum profits.

Recent studies by Torsten, Lukas, and Ulrich (2003) find that contrarian traders show signs of overconfidence, disposition effect and reliance on non fundamental information, whereas momentum traders appear as least risk taking professionals who may aim for exploiting sub-optimal behavior of others. Kent, Hirshleifer and Subrahmanayam (2004) propose a theory based on overconfidence and biased self-attribution to explain several securities return patterns. Gabbi G. (2005) provides evidence on correlation dynamics among geographic areas and business sectors under the assumption that they are linked to international correlations. Shen, Szakmary, and Sharma (2005) find that momentum strategies earn significant profits in commodity futures market. Miffre and Rallis (2007) show presence of short-term continuation in US commodity futures market generating momentum profits of 9.38% per annum on an average. 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.

Dapaah and Peiying (2009) show that contrarian and momentum strategies provide superior performance using data for REITS stocks traded on NYSE. In case of momentum strategies, the superior performance is limited to 12 months period and declines afterwards. Chen, Chen, Hsin, and Lee (2010) examine relationship between price (return) momentum, earnings momentum and revenue momentum[1] using US market data, and find all the three strategies profitable. Profits from price momentum strategy are the largest and persistent followed by earnings momentum and revenue momentum.

Over the last decade, foreign institutional investors have focused on emerging markets. Many studies have been conducted to understand the trading rules and activity in these markets. The studies have been carried out by Claessens, Dasgupta and Glen (1998), Fama and French (1998), Patel (1998), Rouwenhorst (1999), Barry, Goldreyer, Lockwood and Rodriguez (2002) and Vander Hart, Slagter and VanDijk (2003). In general they conclude that stock selection strategies that work well in developed markets also provide extra normal returns for emerging markets. Other studies by Frankel and Schmukler (1996, 1998), Froot, Conell and Seaholes (2001), Richards (2002) and Kaminsky, Lyons and Schmukler (2002) show that foreign investors in emerging markets tend to employ momentum strategies. Hameed and Kusnadi (2002) document that momentum trading strategies applied to six Asian markets do not yield significant returns. Swanson and Lin (2005) investigated 18 developed and 18 emerging markets (including all BRICKS countries out of 18 emerging markets basket) and conclude that markets reflect winners-momentum trading and losers-contrarian trading.

[1] The price (return), earnings and revenue momentum strategies use different measures of short-term performance for ranking companies and portfolio formation. In price (return) momentum, we rank the sample securities on the basis of short-term past returns. In case of earnings and revenue momentum strategies, the ranking is done on the basis of short-term earnings surprises and revenue surprises variables respectively. Generally, the surprise element in these corporate fundamentals is estimated by taking the difference between realized and expected value of these fundamentals.

Prior return strategies in order to provide abnormal profits must outperform standard risk factor models. Capital asset pricing model (CAPM)[1] developed by Sharpe (1964) and Lintner (1965), with market returns as a risk factor try to explain abnormal returns, however it was unable to explain the set of stylized facts. Fama and French (1993) developed a three-factor model[2] comprising of market, size and value factors, which explain cross-section of average stock returns better than CAPM. Fama and French (1996) show that their multifactor model could explain almost all CAPM anomalies[3] with the exception of momentum behavior. Carhart (1997) employs 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. Naranjo and Porter (2007) show standard risk factor models explain a significant portion of the cross-country co-movement of momentum returns.

Portfolio selection can be pursued at country as well as sectoral level. Moskowitz and Grinblatt (1999) attribute the observed momentum in intermediate-term stock returns to industry momentum. 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 and country momentum is even weaker. Menzly and Ozbas (2006) find strong cross-industry momentum for industries related to each other through supply chain. Liu and Zhang (2008) document that growth rate of industrial production is a risk factor in asset pricing tests and can explain more than half of momentum profits. The importance of stock selection on basis of sectors or industry classification may be as important as considering the past excess returns of stocks when investing in a foreign market.

The paper extends the work of Sehgal and Jain (2011) by expanding the data base from India to BRICKS for the sample period of January 1993 to February 2008. The study period used for Russia is from January 2000 to February 2008 owing to non-availability of data for a longer period. In the study, we test if there are any abnormal returns for portfolios formed on basis of past returns (Return portfolios) and company characteristic and 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. We also examine if risk models can explain these momentum profits. The paper *inter alia* evaluates if there are any prior return effects in sector data and whether the sector factor formed on these prior return effects, can possibly explain a part of extra normal returns for sample portfolios. We modify the Carhart four-factor model by replacing the stock momentum factor with sector momentum factor and hope that our version provides a better explanation of the cross-section of average stock returns.

We examine if there are any prior return patterns in stock returns for BRICKS markets. Employing 6-6 portfolio formation/holding strategies, we observe strong momentum patterns for the sample markets with the exception of China. These momentum patterns disappear and in fact there are return reversals for some countries, as one elongates portfolio formation and holding windows to 12 months except India. Portfolios formed on company characteristics such as size, value and dividend yield as well as prior returns does provide better profits than single-sorted portfolios (based only on prior returns).

The CAPM is able to capture most of the prior return profits for Brazil, China and South Africa but not for other countries. The Fama French size and value factors do not adequately explain returns that are missed by CAPM in case of 6-6 strategies. There are prior return patterns in sector returns as was observed in case of stock returns. Hence, we augment the F-F model by including a sector momentum factor which is formed on the economic argument of Liu and Zhang (2008). The four-factor model is found to be a better descriptor of asset pricing but some unexplained returns may warrant a behavioral explanation for India and Russia. Our findings are relevant for global portfolio managers who look out for portfolio trading strategies especially for emerging markets given their low degree of co-relation with the mature markets. The study contributes to the asset pricing anomaly literature.

The paper is organized as follows. Section 1 gives a brief description of data and their sources. Section 2 discusses the methodology employed and empirical results relating to stock momentum portfolios for BRICKS markets. Section 3 covers the asset pricing tests that have been employed to explain risk. In Section 4 we test, for any prior return effects in sector data and examine evidence

[1] Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) and Lintner (1965) gives the linear relationship between expected return and risk of a financial asset.

[2] Fama and French (1993) developed F-F three-factor model, which states that expected returns on a portfolio in excess of the risk-free rate $[R_{Pt} - R_{Ft}]$ are explained by sensitivity to market, size and value factors.

[3] Market anomalies such as size effect (Banz, 1981), value effect (Chan, Lakonishok, Hamao, 1991), earnings to price (E/P) effect (Basu, 1977, 1983), leverage effect (Bhandari and Weiss, 1996), contrarian returns (De Bondt and Thaler, 1985, 1987) and momentum returns (Jegadeesh and Titman, 1993) could not be explained by CAPM.

for four factor model comprising of Fama-French factors and an additional sector factor. The final section concludes the paper with a brief summary.

1. Data and its sources

Data is comprised 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 is from January 1993 to February 2008 except for Russia where the sample period is January 2000 to February 2008 due to paucity of data. Table 1 gives the number of securities that have been 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, our data set fairly represents market performance.

Table 1. Data description for sample countries

Country	No. of securities	Market index	Index description
Brazil	195	BRAZIL BOVESPA	BM & FBOVESPA S.A. ia a security market index with base year of 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.
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.

Monthly share prices for estimation purposes and further analysis have been converted to percentage monthly return series. The stylized portfolios are formed on basis of past percentage returns[1] 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[2] (estimated as compounded value of Net Sales). 91-day[3] treasury bills for each country have been used as risk free proxy. Value-weighted market index has been 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[4] (GICS) has been used for sector classification. GICS is comprised of 10 sectors, 24 industry groups, 68 industries and 154 sub-industries. The data for sector and industry classification has been taken from World Scope, Reuters Financials & Compustat Global.

2. Short-term prior return patterns in stock returns

We sort individual securities in three ways, first on basis of past excess returns[5], Return Portfolios, second on basis of company characteristics such as size, P/B ratio, P/E ratio, dividend yield, past sales growth (PSG) and past excess returns, Double Sorted Portfolios and thirdly on basis of size and P/B ratio and past excess returns and, size and P/E ratio and past excess returns, Triple Sorted Portfo-

[1] 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 any dividends while computing index values. Hence, dividend inclusion in individual stock returns may bias the estimators of our proposed time series regressions.

[2] PSG 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. r is compounded growth rate in sales termed as PSG.

[3] Annualized implicit yields on 91-day T-bills 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 with month end closing prices of sample stocks. The end of month annualized implicit yields is divided by 12 to generate approximate monthly risk free yields.

[4] Global Industry Classification System (GICS) is an industry classification system, developed by Standard & Poor's (USA) in collaboration with Morgan Stanley Capital International (MSCI). It is comprised of 10 sectors, 24 industry groups, 68 industries and 154 sub-industries. GICS 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.

[5] Past excess returns has been calculated by taking the difference between stock return and T-bill return on month-by-month basis.

lios. We construct Triple Sorted Portfolios based on only size and value (measured by P/B or P/E ratio) characteristics as past literature has mainly concentrated on these two attributes, see Chordia and Shivkumar (2000) and Lewellen (2002). Data for firm characteristics are directly available with exception of past sales growth. PSG is computed as compounded growth rate in net sales three periods prior to portfolio formation.

The portfolios are based on (*i* months/*j* months) strategy where, *i* months involve portfolio formation and *j* months represent portfolio holding period. We follow calendar year from January to December. Two investment strategies namely 6 month-6 month (6-6) and 12 month-12 month (12-12) have been employed[1] for all the above three categories.

We begin by constructing prior return portfolios for 6 month-6-month strategies, in December of year *t*-1, the individual securities are ranked on basis of past six month's average monthly past excess returns. The ranked securities are then classified into quintiles, P1 to P5. P1 is comprised of bottom 20% stocks on basis of average past period returns and P5 is comprised of top 20% stocks on basis of average past period returns. Equally weighted excess returns are estimated for sample portfolios for the next six months (i.e., January to June of year *t*). The portfolios are then rebalanced in month of June for year *t*, based on ranking of six month's average monthly past returns from January to June of year *t*. The process is repeated till we reach the end of sample period.

We form Double Sorted Portfolios based on company characteristics and past excess returns. For 6-6 strategies, in December of year *t*-1, the sample securities are sorted into two groups, Small or S (bottom 50%) and big or B (upper 50%) in case of company size 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 PSG. Within each characteristic group we construct three momentum portfolios based on six months average past returns i.e. bottom (33,33%), middle (between 33,33% and 66,66%) and upper (greater than 66,66%). Equally weighted excess returns are estimated for our sample portfolios for the next six months (i.e., January to June of year *t*) and the portfolios are rebalanced every 6 months based on double sorting criteria. 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. 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).

We also construct Triple Sorted Portfolios for 6-6 strategies, in December of year *t*-1, sample securities are sorted on basis of company size into two groups, small and big. Next, we regroup our sample stocks on basis of value factor ((P/B)/(P/E)) and form two groups, low and high. We use intersection between our two criteria to form four portfolios, SL, SH, BL and BH. Within each four groups, we 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 12-12 strategies is done in similar manner, where portfolio formation and holding windows are both reset to 12 months. The same process of portfolio (single, double and triple) formation is repeated for each of the BRICKS countries.

Table 1A reports unadjusted returns on prior returns (single sorted) and company characteristics and prior returns (double and triple sorted) portfolios. Results for 6-6 and 12-12 strategies are shown in Panels A and B respectively. In case of 6-6 strategies, for return portfolios, it is observed that all the BRICKS markets, with the exception of China; provide monthly momentum profits greater than 1.5% per month (about 18% on annualized basis). Brazil has the highest returns of 6.46% per month followed by South Africa with 2.17% per month. Some of the trading strategies based on company characteristic and prior returns do report higher profits than single sorted portfolios. For Double and Triple Sorted Portfolios, momentum profits continue to be weak for China with BH3-BH1 of size-P/E strategy being an exception as it provides annual return of 9.6%.

For 12-12 strategies, the highest return of 1.1% per month is observed for Indian stock market. China and South Korea in fact experience return reversals. Company characteristics continue to impact return patterns. For instance, momentum profits are observed to be higher for small cap, low P/B, low P/E, low dividend yield and high PSG across the sample countries. One can provide a behavioral explanation to this observed phenomenon, small cap, low P/B, low P/E and low DYIELD stocks are generally neglected. The slow information adjustment process and higher cost of trading may result in stronger

[1] The portfolio-holding period for investment strategies is only two months i.e. January and February 2008 after the last rebalancing, owing to data limitation.

momentum patterns for these stocks. In case of high PSG stocks, the market may believe that there is a reversal in sales growth patterns. Market anticipation that high PSG stocks may perform badly in the future may induce the investors to ignore these securities. This may result in price adjustment delays causing stronger momentum for high PSG stocks compared to low PSG stocks (see Sehgal and Balakrishnan, 2010). However, returns on 12-12 Characteristic Sorted Portfolios are weaker compared to their 6-6 counterparts confirming that expansion of time-horizon weakens momentum profits.

3. Prior return profits and risk models

Large momentum returns may be an outcome of difference in corporate fundamentals across portfolios causing them to be in different systematic risk classes. We extend our analysis and verify if test portfolios continue to provide superior returns on risk adjusted basis. 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. CAPM of Sharpe (1964) and Lintner (1965), and Fama-French model (1993) are two theories, which try to explain cross section of average stock returns.

CAPM provides linear relationship between returns on a financial asset and its sensitivity to returns on a broad based market portfolio. CAPM is a one-factor model and can be estimated using the excess return version of the market model as shown below:

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

where $R_{Pt} - R_{Ft}$ is the excess return on a portfolio, $R_{Mt} - R_{Ft}$ is the excess return on market factor, α is the measure of abnormal profits, β is the sensitivity of stock returns to the market returns, e_i is the error term.

Table 2A (see Appendix) reports results for risk adjusted returns based on CAPM, where Panels A and B show results of 6-6 and 12-12 strategies respectively. For 6-6 strategies, the one-factor model is able to explain prior return patterns for most of the portfolios in case of Brazil, China and South Africa. In case of Russia (8 out of 11), India (17 out of 19) and South Korea (18 out of 19) alpha values for the winner portfolios are statistically significant implying that CAPM is not able to capture cross-section of returns for these countries. For 12-12 strategies, CAPM is able to capture much of the prior return profits except for India and Russia. This can be explained by the fact that prior return patterns tend to weaken for sample countries as one elongates the portfolio formation and holding windows from 6 to 12 months as discussed in the results of previous section.

On the other hand, Fama-French model states that expected returns on a portfolio is a function of three factors: market, size and value factors.

The Fama-French model is given as:

$$R_{Pt} - R_{Ft} = \alpha + \beta(R_{Mt} - R_{Ft}) + sSMB_t + lLMH_t + e_i, \quad (2)$$

where, SMB is the difference between returns on portfolio of small stocks firm and returns on portfolio of big stocks firm, HLM is the 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 are the sensitivity coefficients of SMB and HML, respectively.

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

SMB_t is constructed as independent of value factor:

$$\frac{S/L + S/M + S/H}{3} - \frac{B/L + B/M + B/H}{3}. \quad (3)$$

LMH_t is constructed as independent of size factor:

$$\frac{S/L + B/L}{2} - \frac{S/H + B/H}{2}. \quad (4)$$

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 (33,33%), medium or M (between 33,33 % and 66,66%) and high or H (greater than 66,66%). Table 3A (see Appendix) report returns of Fama-French three-factor model. Panel A and B show results of 6-6 and 12-12 strategies respectively.

The risk adjusted returns for the sample portfolios based on three-factor Fama-French model are reported in Table 3A. In case of 6-6 strategies, we find that size and value factors do not capture prior return profits which are missed by CAPM. For Brazil, Russia, China and South Korea, momentum profits actually increase for most of the sample portfolios casting a doubt on size and value to be true risk factors. However, F-F model does a better job than CAPM for Indian and South African markets, where future winners tend to load on value factor in both cases. Size factor does not significantly explain prior

return patterns for these countries. For other countries, profits for winner portfolios in fact expand when one uses the three factor specifications, thus casting a shadow on the risk story which is woven around size and value factors. For 12-12 strategies, F-F model does a better job and is able to explain extra normal returns on winner portfolios except in case of India and to some extent Russia.

We reconfirm our regression results in Table 4 by finding mean market capitalization and P/B ratio for all corner portfolios (winner and losers). Average market capitalization for corner portfolios is computed for each sample year and then we obtain the mean of these yearly average market capitalizations to get average market capitalization for each portfolio. Similarly mean P/B ratio has been estimated for all the sample countries. In case of India and South Korea, we observe that loser portfolios are comprised of small size and low P/B stocks compared to winner portfolios with a greater variation in the value (P/B) attribute, thus contradicting the risk story. In case of other markets, the difference in the size and value attribute is very small for most of the portfolios; hence there is an explanation why these factors lack the ability to explain returns.

Given the empirical failure of F-F model, we report results for long-short trading strategies based on one-factor CAPM. The long-short strategies have a zero outlay and involve buying past winners (losers) and selling past losers (winners) when there are any observable momentum (contrarian) prior return patterns. This strategy is generally adopted by hedge funds and global portfolio managers. Table 5 reports CAPM based alpha differentials and their t-statistics for zero-outlay investment strategies. For 6-6 strategies, 16, 5, 19, 8 (out of 19) alpha differentials for Brazil, India, South Korea and South Africa and 8 (out of 11) alpha differentials for Russia are statistically significantly at 5% level (1-tail basis). For China, the prior returns effects are very weak as none of the t-statistics of alpha differentials are statistically significant. In case of 12-12 strategies all the markets, except India report no significant alpha differential values and in fact reversal patterns emerge for these markets. In the Indian case, there are 6 (out of 19) alpha differentials which are statistically significant. This is possible due to strong momentum observed for Indian market (reported earlier in section 2) for 12-12 strategies.

Our results confirm that standard asset pricing models do not capture a major part of prior return patterns for BRICKS markets. This raises doubt about completeness of the factor structure as proposed by these models and this may imply that there is some other missing risk factor(s) which has not been taken into account to explain risk. We next verify if there are any prior return patterns in sector returns similar to those in stock returns and if this information can be used to form an additional risk factor.

4. Prior return patterns in sector returns and the four-factor model

In this section we evaluate if there are any prior return patterns in sector returns for the sample countries and whether they can absorb prior return patterns in stock returns. This may help us in building a sector prior return factor, which can be used to augment in the F-F three-factor model.

The importance of sector influences on international markets has been well documented. Our aim is to see if the sector factor plays an important role in explaining abnormal returns for our sample emerging markets. Moskowitz and Grinblatt (1999) attribute the observed momentum returns in intermediate-term stocks to industry momentum. 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 and country momentum is even weaker. 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 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 firms in the lowest industry growth quintile. Liu and Zhang (2008) document that growth rate of industrial production is a risk factor in asset pricing tests and can explain more than half of momentum profits.

We verify if there are any momentum patterns in sector return for BRICKS countries. For 6-6 investment strategies, in December of year t-1, 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 July 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 basis of past six month's average monthly past excess returns. The ranked sectors are then classified into quintiles, K1 to K5. K1 is comprised of sectors with the lowest average past returns and K5 is comprised of sectors with the highest average past returns. Equally weighted excess

returns are estimated for sector portfolios for the next six months (i.e. January to June of year *t*). The portfolios are then rebalanced in the month of June for year *t* based on ranking of six month's average monthly past sectoral returns i.e. January to June of year *t*. The process is repeated till we reach the end of our sample period. For 12-12 strategies, estimation has been done in similar manner except that portfolio formation and holding windows are reset to 12 months.

Prior return patterns for sectors are reported in Table 6A (see Appendix). For 6-6 strategies, we find there are strong momentum patterns with the exception of China. Korea provides highest sector momentum profits of 3.23% per month. However, these prior return profits seem to weaken substantially for 12-12 strategies and actually exhibit a reversal pattern for some of the sample countries. India is an exception where the sector momentum factor becomes stronger on expanding the portfolio formation and holding windows.

Carhart (1997) augmented the F-F model by adding a stock momentum factor, following Fama and French (1996) in which the three factors (market, size and value) could not explain momentum profits. Given the strong prior return patterns in sector returns, we believe that a sector prior return factor should do a better job than stock prior return factor in explaining cross-section of expected stock returns. Further, given the differences in growth potential of alternative sectors it may be easier to provide a rational explanation for our sector momentum factor as we shall verify later in this section. We use a four factor model comprising of the F-F factors and our prior return sector factor for explaining returns.

The four-factor model is as follows:

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

where WML is the difference between firms of winner sector and firms of loser sector, w is the factor sensitivity of WML factor.

The results of four-factor model are shown in Table 7A (see Appendix). In case of India and Korea the four factor model explains part of the abnormal returns that are missed by CAPM and F-F model for 6-6 strategy. This is on account of the fact that future winners tend to load on the sector factor for these countries. For 12-12 strategy, the four factor model explains returns on most of the portfolios for the Indian market. The results for other countries do not vary significantly across three and four factor models, this is expected as 12-12 strategies do not pose any challenge to the three-factor model and hence the fourth factor may actually be redundant in their case.

The explanation of returns by sector factor could be linked to the differences in growth rate of sectors of winners and losers. The sector growth rates may be able to explain risk; this is motivated by the work of Liu and Zhang (2008). They find 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.

In this paper, the sector growth rate has been estimated as follows. For 6-6 strategy, in December of year *t*-1, we categorize 10 sectors on basis of PSG according to Global Industry Classification System (GICS). These 10 sectors are then classified in to quintiles Q1 to Q5, where Q1 is comprised of bottom 20% sectors (loser sectors) and Q5 is comprised of top 20% sectors (winner sectors). Mean value of PSG is calculated for Q1 and Q5 using the sector following in these quintiles on period to period basis. The sector growth is then computed by taking the average over time. The estimation for 12-12 sector growth rate has been done in similar manner. These results are reported in Table 8 for all the BRICKS markets. For both 6-6 and 12-12 strategies, we observe that winner sectors (Q5) exhibit higher growth rates as they comprise of high growth companies compared to loser sector and hence they may be exposed to higher growth risk. Our results are consistent with Liu and Zhang (2008) and suggest that the sector factor proxies for a risk factor in returns.

The results for the four-factor model regression (Table 7A) imply that the growth risk differentials proxied by sector factor tend to explain prior return profits for India and South Korea that are missed by Fama-French three-factor model. However, the failure of sector factor in explaining some of the prior return effects in other sample countries suggest that probably one may need additional risk factor(s) or the persistent asset pricing anomalies may warrant a behavioral explanation.

Summary and conclusion

Prior return patterns in stock returns has been one of the most puzzling asset pricing anomalies in financial economics literature over the last three decades. In this paper, we study the prior return patterns for BRICKS capital markets, which is one of the most important segments of emerging market basket. The study period is from January 1993 to February 2008. We analyze short-term (6-6 and 12-12) portfolio formation and holding strategies based on Jegadeesh and Titman (1993). We use information about com-

pany characteristics such as size (measured by market capitalization), value (measured by P/B, P/E, PSG) and dividend yield (as a measure of tax differential effect) as well as prior returns to develop portfolios for the sample countries. In this paper, four key propositions are examined (1) Do momentum profits persist for long study periods (including more recent time period)? (2) Can these prior return profits be absorbed by standard risk models such as CAPM and Fama-French three-factor model? (3) Is stock momentum an outcome of sector momentum; and (4) Can the stock momentum that is missed by CAPM and Fama-French model be absorbed by introducing an additional sector momentum factor.

For prior return portfolios, in case of 6-6 strategies, we find strong momentum profits for all the BRICKS markets except China where the momentum returns are negligible. Sorting on the basis of company characteristics does enhance profits on prior return portfolios for these markets except Brazil and South Africa. The strong momentum profits erode for sample countries with exception of India, which still reports momentum returns of 1.1% per month, as one elongates the portfolio formation and holding windows from 6 months to 12 months. Double and Triple Sorted Portfolios (based on company characteristics and past returns) continue to provide better returns than Single Sorted Portfolios (based only on past returns) for 12-12 strategies. In general, weaker profits are reported for 12-12 compared to 6-6 strategies, thus implying that strategy returns erode over longer portfolio formation and holding windows.

We find for 6-6 strategies that one-factor CAPM is able to explain prior-return patterns for most of the portfolios in Brazil, China and South Africa. However it doesn't capture the cross-section of returns for other BRICKS countries. CAPM is able to explain returns on 12-12 portfolios for all the sample countries except India and Russia. Employing the Fama-French model, we find in case of 6-6 strategies, that size and value factors do not capture prior return profits which are missed by CAPM. It is observed in case of India and South Korea that loser portfolios comprise small size and low P/B stocks compared to winner portfolios with a greater variation in the value (P/B) attribute, thus contradicting the risk story. In case of other markets, the difference in the size and value attribute is very small for most of the portfolios, hence, there is an explanation why these factors lack the ability to explain returns. For 12-12 strategies, F-F model does a better job and is able to explain extra normal returns on winner portfolios for sample countries except in case of India and to some extent Russia.

We next test long-short trading strategies involving alpha values for winners and losers based on CAPM, given that size and value factors do not play an incremental role in explaining security returns for the sample data. Majority of alpha differentials are statistically significant thus providing support to the zero investment strategy.

We explore if there are any prior return patterns in sector returns. For 6-6 strategies, it is found that there are strong momentum profits with the exception of China. However, these prior return profits seem to weaken substantially for 12-12 strategies and actually exhibit a reversal pattern for some of the sample countries. We construct a sector momentum factor based on the arguments of Liu and Zhang (2008) and augment the Fama-French model with this factor to construct our four-factor asset pricing model. Thus we modify the Carhart four factor model by replacing the stock momentum factor with our sector momentum factor as the latter has a stronger economic foundation for developing a risk story. We observe that the four-factor model explains part of the abnormal returns that are missed by CAPM and F-F model for 6-6 strategies in case of India and South Korea. For 12-12 strategies, the four-factor model explains returns on most of the portfolios for the Indian market.

In sum, it can be concluded that the augmented F-F model is a better descriptor of asset returns compared to CAPM and standard F-F model and hence we recommend that it may be used as a base line for portfolio performance evaluation. Momentum profits are stronger for short-term portfolio windows (6-6 months) and tend to persist for some trading strategies in case of India and South Korea despite the use of multifactor models as performance benchmarks. These momentum profits may possibly warrant a behavioral explanation and till such time they are plugged, these markets shall provide attractive investment opportunities for global portfolio managers who are particularly interested in emerging markets basket such as BRICKS.

Our research contributes to asset pricing anomaly literature especially for emerging economies. It will also be interesting to evaluate what prior return patterns are exhibited by trading strategies based on long-term portfolio formation windows such as 24-60 months as suggested by DeBondt and Thaler (1985, 1987) and whether these long-term portfolio formation strategies outperform short-term portfolio formation strategies as discussed in our paper. Future research should examine these propositions for global markets including BRICKS economies.

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Appendix

Table 1A. Mean excess return

Panel A: Mean excess return on 6-6 stylized portfolios						
Return portfolios						
	Brazil	Russia	India	China	Korea	South Africa
P5-P1	0.0646	0.0192	0.0156	0.0011	0.0183	0.0217
Characteristic of Sorted Portfolios						
Size						
S3-S1	0.0219	0.0056	0.0116	-0.0046	0.0300	0.0130
H3-H1	0.0285	0.0385	0.0117	0.0041	0.0285	0.0153
P/B						
L3-L1	0.0465	0.0348	0.0157	0.0038	0.0341	0.0157
H3-H1	0.0327	0.0321	0.0157	0.0054	0.0294	0.0157

Table 1A (cont.). Mean excess return

	Brazil	Russia	India	China	Korea	South Africa
P/E						
L3-L1	0.0497	0.0521	0.0191	0.0036	0.0359	0.0069
H3-H1	0.0273	0.0221	0.0150	-0.0009	0.0238	0.0165
Dyield						
L3-L1	0.0288	0.0367	0.0037	-0.0029	0.0255	0.0137
H3-H1	0.0277	0.0303	0.0026	0.0116	0.0317	0.0125
Sales						
L3-L1	0.0203	0.0215	0.0114	0.0022	0.0243	0.0003
H3-H1	0.0374	0.0309	0.0209	-0.0019	0.0320	0.0220
Size_P/B						
SL3-SL1	0.0494	–	0.0153	0.0040	0.0430	0.0030
SH3-SH1	0.0338	–	0.0094	-0.0013	0.0297	0.0112
BL3-BL1	0.0247	–	0.0118	0.0060	0.0271	0.0111
BH3-BH1	-0.0047	–	0.0179	-0.0018	0.0309	0.0192
Size_P/E						
SL3-SL1	0.0526	–	0.0261	0.0048	-0.0065	-0.0051
SH3-SH1	0.0222	–	0.0099	-0.0006	-0.0054	0.0201
BL3-BL1	0.0304	–	0.0147	0.0062	0.0312	0.0082
BH3-BH1	-0.0144	–	0.0142	0.0086	0.0255	0.0124
Panel B: Mean excess return on 12-12 stylized portfolios						
Return portfolios						
	Brazil	Russia	India	China	Korea	South Africa
P5-P1	0.0063	0.0049	0.0110	-0.0027	-0.0076	0.0091
Characteristic of Sorted Portfolios						
Size						
S3-S1	0.0126	0.0154	0.0004	0.0021	-0.0091	0.0049
H3-H1	0.0016	0.0051	0.0123	0.0022	-0.0084	0.0059
P/B						
L3-L1	0.0135	0.0050	0.0128	-0.0033	-0.0075	0.0008
H3-H1	0.0018	0.0190	0.0143	-0.0047	-0.0045	0.0104
P/E						
L3-L1	0.0050	0.0200	0.0105	0.0057	-0.0069	0.0023
H3-H1	0.0036	0.0063	0.0145	-0.0073	-0.0095	0.0086
Dyield						
L3-L1	0.0018	0.0134	0.0186	-0.0006	-0.0050	0.0128
H3-H1	-0.0005	-0.0082	0.0139	0.0043	-0.0069	0.0051
Sales						
L3-L1	-0.0009	0.0184	0.0098	0.0086	-0.0138	-0.0076
H3-H1	0.0125	0.0163	0.0172	-0.0065	-0.0086	0.0061
Size_P/B						
SL3-SL1	0.0230	–	0.0153	-0.0008	0.0378	0.0084
SH3-SH1	0.0000	–	0.0113	-0.0060	0.0312	0.0037
BL3-BL1	0.0045	–	0.0125	0.0060	-0.0056	0.0004
BH3-BH1	-0.0157	–	0.0156	-0.0010	-0.0064	0.0131
Size_P/E						
SL3-SL1	-0.0033	–	0.0168	-0.0025	-0.0028	0.0010
SH3-SH1	0.0007	–	0.0106	-0.0075	-0.0046	0.0091
BL3-BL1	0.0010	–	0.0154	0.0037	-0.0053	-0.0027
BH3-BH1	-0.0125	–	0.0172	0.0120	-0.0096	0.0119

Table 2A. CAPM results: $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + e_t$

Panel A: Mean excess return on 6-6 stylized portfolios regressed on the excess return on the market factor																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	-0.02	-1.78	0.17	2.04	1.24	0.00	0.01	1.36	0.30	0.01	1.48	0.75	0.00	0.01	0.03	0.00	-0.15	0.23
P5	0.04	3.80	0.22	0.05	2.81	0.36	0.03	3.66	0.36	0.01	2.64	0.66	0.39	0.63	0.57	0.02	3.16	0.33
	Size																	
S1	0.02	0.90	-0.01	0.03	1.13	0.04	0.01	1.62	0.24	0.02	2.65	0.70	0.01	0.80	0.31	0.01	0.78	0.16
SB	0.04	2.52	0.12	0.00	-0.07	0.25	0.03	2.97	0.28	0.01	2.59	0.69	0.04	3.84	0.46	0.02	2.57	0.23
B1	-0.02	-2.43	0.22	-0.01	-0.97	0.66	0.00	0.60	0.38	0.01	1.11	0.76	-0.01	-1.43	0.66	-0.02	-3.14	0.37
B3	0.00	0.72	0.43	0.03	5.15	0.57	0.02	2.84	0.45	0.01	1.94	0.90	0.02	3.38	0.72	0.00	-0.06	0.39
	P/B																	
L1	-0.01	-0.80	0.16	0.01	0.78	0.39	0.01	1.40	0.29	0.01	0.84	0.58	0.00	0.52	0.41	0.00	0.64	0.21
L3	0.04	2.98	0.15	0.04	3.93	0.35	0.03	3.18	0.30	0.02	2.19	0.13	0.04	3.98	0.55	0.01	1.92	0.26
H1	-0.03	-3.23	0.17	-0.01	-1.48	0.43	0.00	0.60	0.39	0.01	1.00	0.79	-0.01	-1.78	0.63	-0.02	-3.69	0.29
HB	0.00	0.39	0.32	0.02	2.56	0.52	0.02	3.49	0.45	0.01	1.48	0.89	0.02	3.05	0.67	0.00	0.18	0.32
	P/E																	
L1	-0.01	-1.16	0.16	0.00	0.68	0.56	0.01	1.57	0.32	0.01	1.24	0.68	0.00	-0.17	0.43	0.00	0.77	0.20
L3	0.04	2.86	0.15	0.05	4.67	0.37	0.03	3.85	0.31	0.02	2.95	0.19	0.03	3.87	0.56	0.01	2.12	0.27
H1	-0.02	-2.56	0.20	0.00	-0.30	0.29	0.00	0.04	0.36	0.01	0.98	0.73	0.00	-0.68	0.63	-0.02	-3.50	0.30
HB	0.00	0.66	0.32	0.01	1.59	0.43	0.01	2.68	0.42	0.00	0.69	0.83	0.02	3.16	0.68	0.00	-0.45	0.32
	Dyield																	
L1	-0.02	-2.76	0.19	-0.01	-1.79	0.42	0.01	1.00	0.44	0.01	1.10	0.58	-0.01	-1.15	0.63	-0.01	-2.66	0.31
L3	0.00	0.58	0.35	0.01	1.60	0.40	0.01	1.75	0.40	0.00	0.69	0.71	0.02	3.06	0.68	0.00	-0.05	0.30
H1	-0.01	-0.90	0.11	0.01	1.00	0.35	0.02	2.88	0.32	0.01	1.40	0.36	0.00	0.62	0.57	0.00	-0.69	0.27
HB	0.01	2.32	0.47	0.03	3.76	0.52	0.02	3.35	0.32	0.02	3.39	0.48	0.03	4.79	0.63	0.01	1.74	0.25
	Sales																	
L1	0.00	0.16	0.34	0.00	0.36	0.41	0.01	0.70	0.29	0.01	1.05	0.44	0.00	-0.47	0.47	0.01	0.84	0.13
L3	0.02	2.94	0.36	0.04	3.20	-0.02	0.02	2.15	0.31	0.01	1.39	0.42	0.02	2.12	0.60	0.00	0.72	0.36
H1	-0.01	-1.40	0.45	0.00	-0.25	0.37	0.01	1.05	0.35	0.02	2.19	0.48	0.00	-0.14	0.58	-0.01	-0.84	0.28
H3	0.03	3.31	0.45	0.02	2.00	0.39	0.03	3.26	0.29	0.01	1.82	0.52	0.03	3.21	0.66	0.02	2.43	0.33
	Size P/B																	
SL1	0.01	0.63	0.16	-	-	-	0.02	1.48	0.22	0.01	1.16	0.37	0.01	0.77	0.22	0.04	2.98	-0.01
SL3	0.05	2.70	0.06	-	-	-	0.03	2.10	0.13	0.01	1.54	0.35	0.05	3.44	0.40	0.04	3.57	0.04
SH1	-0.02	-1.53	0.12	-	-	-	0.01	1.41	0.24	0.01	0.87	0.46	0.00	-0.11	0.47	-0.02	-1.73	0.14
SH3	0.01	1.25	0.16	-	-	-	0.02	2.64	0.33	0.01	1.26	0.51	0.03	2.92	0.50	0.00	-0.39	0.14
BL1	-0.02	-1.81	0.29	-	-	-	0.01	1.00	0.34	0.00	0.47	0.56	0.00	-0.03	0.62	-0.01	-2.25	0.32
BL3	0.01	1.03	0.45	-	-	-	0.02	2.97	0.38	0.01	2.06	0.70	0.03	3.70	0.69	0.00	-0.13	0.34
BH1	-0.03	-3.30	0.18	-	-	-	0.00	0.25	0.43	0.00	0.36	0.66	-0.01	-2.72	0.68	-0.02	-3.60	0.30
BH3	0.00	0.16	0.27	-	-	-	0.02	3.54	0.45	0.01	1.37	0.69	0.02	2.69	0.70	0.00	-0.30	0.35
	Size_P/E																	
SL1	0.00	-0.12	0.10	-	-	-	0.02	1.68	0.20	0.01	1.18	0.35	0.00	0.20	0.25	0.03	2.21	0.01
SL3	0.04	2.35	0.05	-	-	-	0.04	2.73	0.12	0.02	1.98	0.36	0.04	3.46	0.40	0.02	2.34	0.06
SH1	0.00	-0.47	0.21	-	-	-	0.00	0.45	0.25	0.01	0.81	0.46	0.00	0.51	0.42	-0.01	-1.74	0.09
SH3	0.01	1.39	0.12	-	-	-	0.01	1.75	0.31	0.01	1.18	0.52	0.04	3.51	0.43	0.00	0.46	0.17
BL1	-0.02	-1.91	0.24	-	-	-	0.01	1.27	0.35	0.01	1.04	0.63	-0.01	-0.85	0.60	-0.01	-1.61	0.34
BL3	0.01	1.30	0.39	-	-	-	0.02	3.85	0.41	0.01	3.07	0.73	0.02	3.71	0.70	0.00	0.09	0.31
BH1	-0.03	-3.08	0.22	-	-	-	0.00	-0.09	0.38	0.00	0.38	0.59	-0.01	-1.64	0.71	-0.02	-3.54	0.31
BH3	0.00	-0.07	0.39	-	-	-	0.01	2.47	0.43	0.00	0.16	0.62	0.02	2.86	0.71	-0.01	-1.43	0.35
Panel B: Mean excess return on 12-12 stylized portfolios regressed on the excess return on the market factor																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	0.01	0.94	0.15	0.03	2.15	0.47	0.01	1.55	0.31	0.01	2.02	0.73	0.02	2.03	0.48	0.00	0.40	0.32
P5	0.01	1.57	0.22	0.05	2.14	0.24	0.02	3.10	0.35	0.01	2.63	0.83	0.00	0.81	0.62	0.01	1.81	0.24

Table 2A (cont.). CAPM results: $R_{Pt} - R_{Ft} = \alpha + \beta\,(R_{Mt} - R_{Ft}) + e_t$

	Size																	
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
S1	0.01	0.88	0.19	0.02	1.55	0.05	0.02	1.97	0.26	0.01	2.15	0.70	0.02	2.32	0.39	0.00	0.57	0.23
S3	0.02	1.51	0.12	0.01	0.31	0.22	0.02	2.15	0.28	0.02	3.12	0.51	0.01	2.04	0.47	0.01	1.20	0.21
B1	-0.01	-1.22	0.30	0.01	1.20	0.67	0.00	0.36	0.40	0.00	0.86	0.81	0.01	153	0.72	-0.01	-2.42	0.43
B3	-0.01	-1.26	0.39	0.01	2.05	0.61	0.01	2.60	0.45	0.01	1.88	0.81	0.00	0.30	0.69	-0.01	-1.07	0.40
	P/B																	
L1	0.00	0.50	0.20	0.05	3.27	-0.01	0.02	1.97	0.26	0.01	1.54	0.42	0.02	2.25	0.49	0.00	0.22	0.28
L3	0.02	1.16	0.14	0.05	3.40	-0.01	0.02	2.70	0.27	0.01	1.74	0.14	0.01	2.30	0.63	0.00	0.56	0.27
H1	-0.01	-1.33	0.26	0.02	1.54	-0.01	0.00	0.60	0.39	0.01	1.66	0.78	0.00	0.84	0.68	-0.02	-3.22	0.32
H3	-0.01	-1.30	0.33	0.04	3.26	0.02	0.02	3.15	0.47	0.00	0.90	0.85	0.00	0.19	0.69	-0.01	-1.27	0.34
	P/E																	
L1	0.01	0.75	0.20	0.02	2.16	0.45	0.01	1.61	0.31	0.01	1.55	0.31	0.02	1.86	0.50	0.00	0.26	0.28
L3	0.01	0.76	0.13	0.03	1.50	0.40	0.02	2.79	0.29	0.01	2.69	0.65	0.01	1.87	0.63	0.01	1.01	0.27
H1	-0.01	-1.11	0.27	0.00	-0.36	0.40	0.00	-0.03	0.38	0.01	1.32	0.74	0.01	1.74	0.66	-0.02	-3.21	0.34
H3	-0.01	-0.86	0.36	0.00	0.62	0.58	0.01	2.58	0.46	0.00	0.64	0.74	0.00	0.24	0.69	-0.01	-1.43	0.32
	Dyield																	
L1	-0.01	-1.09	0.29	0.00	0.23	0.30	0.00	-0.18	0.41	0.00	0.88	0.62	0.01	1.28	0.69	-0.02	-3.03	0.31
L3	-0.01	-1.07	0.37	0.01	0.95	0.44	0.02	3.13	0.49	0.01	1.27	0.70	0.00	0.47	0.71	0.00	-0.63	0.32
H1	0.00	0.02	0.17	0.02	2.40	0.31	0.01	1.43	0.33	0.01	1.50	0.38	0.02	2.37	0.62	0.00	-0.54	0.27
H3	0.00	-0.20	0.29	0.01	1.31	0.46	0.02	3.48	0.34	0.02	2.50	0.51	0.01	1.45	0.64	0.00	051	0.30
	Sales																	
L1	0.01	1.32	0.37	0.01	0.99	0.31	0.00	0.62	0.28	0.01	0.72	0.46	0.02	1.33	0.50	0.01	1.25	0.26
L3	0.01	1.19	0.44	0.02	2.83	054	0.01	1.74	0.29	0.02	1.73	0.37	0.00	0.69	0.67	0.00	0.59	0.18
H1	0.00	-0.20	0.32	0.01	0.77	0.52	0.01	0.92	0.37	0.02	2.07	0.46	0.01	1.44	0.63	0.00	-0.54	0.33
H3	0.01	1.45	0.53	0.03	2.43	0.30	0.02	2.71	0.32	0.01	1.32	0.51	0.01	0.96	0.69	0.00	0.37	0.34
	Size_P/B																	
SL1	0.01	1.21	0.18	-	-	-	0.01	1.40	0.21	0.01	1.22	0.34	0.03	1.94	0.34	0.02	1.74	0.09
SL3	0.03	1.10	0.02	-	-	-	0.03	1.99	0.11	0.01	1.17	0.32	0.02	2.19	0.40	0.03	3.22	0.04
SH1	0.01	0.62	0.19	-	-	-	0.01	1.31	0.23	0.01	0.87	0.46	0.01	1.43	0.51	-0.01	-0.88	0.09
SH3	0.00	0.10	0.17	-	-	-	0.02	2.76	0.30	0.00	0.41	0.53	0.01	1.07	0.49	0.00	-0.63	0.13
BL1	-0.01	-1.09	0.29	-	-	-	0.00	0.54	0.35	0.00	0.74	0.56	0.01	1.78	0.64	-0.01	-1.60	0.40
BL3	-0.01	-0.92	0.44	-	-	-	0.02	2.55	0.39	0.01	2.46	0.70	0.01	1.43	0.67	-0.01	-1.28	0.34
BH1	-0.01	-1.41	0.25	-	-	-	0.00	0.26	0.39	0.00	0.36	0.60	0.00	0.66	0.75	-0.02	-3.72	0.33
BH3	-0.01	-1.11	0.31	-	-	-	0.02	3.05	0.46	0.00	1.08	0.70	0.00	-0.46	0.70	-0.01	-1.25	0.33
	Size_P/E																	
SL1	0.02	1.25	0.10	-	-	-	0.02	1.70	0.20	0.01	1.21	0.3-0	0.02	1.25	0.38	0.02	1.37	0.06
SL3	0.01	0.79	0.04	-	-	-	0.04	2.09	0.09	0.01	0.98	0.39	0.02	155	0.38	0.02	2.24	0.05
SH1	0.01	0.65	0.32	-	-	-	0.01	0.72	0.27	0.01	1.03	0.48	0.02	1.80	0.41	-0.01	-0.91	0.09
SH3	0.00	0.3S	0.14	-	-	-	0.02	1.95	0.30	0.00	0.43	0.54	0.01	1.88	0.53	0.00	0.22	0.10
BL1	0.00	-052	0.23	-	-	-	0.00	0.50	0.37	0.01	0.97	0.60	0.01	1.51	0.64	-0.01	-1.22	0.43
BL3	-0.01	-0.76	0.39	-	-	-	0.02	3.08	0.40	0.01	2.21	0.71	0.01	1.26	0.70	-0.01	-1.45	0.35
BH1	-0.02	-2.59	0.30	-	-	-	0.00	-0.54	0.39	0.00	0.32	0.59	0.01	1.29	0.75	-0.02	-3.27	0.30
BH3	-0.01	-1.53	0.39	-	-	-	0.01	2.68	0.47	0.00	0.75	0.63	0.00	-0.47	0.68	-0.01	-1.06	0.29

Table 3A. FF factor model results: $R_{Pt} - R_{Ft} = \alpha + \beta(R_{Pt} - R_{Ft}) + sSMB_t + lLMH_t + e_t$

Panel A: Excess return on 6-6 stylized portfolios regressed on the excess return on the market ($R_M - R_F$) factor																		
Two proxy portfilios that relate to size (SMB) and (LMH) factors																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	-0.02	-1.72	0.18	0.03	1.03	0.10	0.00	-0.50	0.65	0.00	0.89	0.77	-0.02	-2.76	0.66	-0.01	-1.15	0.28
P5	0.04	3.57	0.26	0.04	3.87	0.39	0.01	2.70	0.65	0.01	2.02	0.70	0.02	3.29	0.69	0.02	2.65	0.36

Table 3A (cont.). FF factor model results: $R_{Pt} - R_{Ft} = \alpha + \beta(R_{Pt} - R_{Ft}) + sSMB_t + lLMH_t + e_t$

	Size																	
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
S1	-0.02	-2.05	0.87	0.04	1.13	0.04	0.00	-0.45	0.71	0.01	2.03	0.74	-0.01	-1.78	0.71	-0.01	-0.81	0.27
S3	0.04	2.40	0.13	0.04	3.03	0.32	0.01	1.69	0.74	0.01	1.93	0.74	0.02	3.06	0.75	0.01	1.92	0.29
B1	-0.02	-2.35	0.24	0.00	-0.37	0.65	0.00	-0.84	0.57	0.00	0.89	0.76	-0.01	-2.78	0.72	-0.01	-2.55	0.37
B3	0.01	0.30	0.43	0.03	4.00	053	0.01	1.89	0.57	0.01	2.22	0.90	0.02	2.84	0.73	0.00	0.37	0.39
	P/B																	
L1	-0.01	-0.76	0.17	0.01	1.03	0.42	0.00	-0.25	0.60	0.00	-0.33	0.72	-0.01	-2.19	0.73	0.00	-0.69	0.29
L3	0.03	2.77	0.15	0.03	2.77	0.43	0.01	2.08	0.72	0.01	0.97	0.67	0.02	2.82	0.74	0.01	0.95	0.29
H1	-0.03	-3.14	0.19	-0.01	-1.22	0.43	0.00	-0.38	0.48	0.00	0.87	0.80	-0.02	-3.18	0.71	-0.02	-3.42	0.33
H3	0.00	0.69	0.36	0.03	2.90	0.46	0.01	2.75	0.51	0.01	1.94	0.91	0.02	2.72	0.71	0.00	0.65	0.36
	P/E																	
L1	-0.01	-1.08	0.16	0.01	0.95	057	0.00	-0.05	0.62	0.00	0.25	0.77	-0.02	-2.83	0.70	0.00	-0.75	0.29
L3	0.03	2.67	0.14	0.05	3.66	0.38	0.02	3.08	0.72	0.01	2.16	0.60	0.02	2.81	0.71	0.01	1.31	0.28
H1	-0.02	-252	0.25	0.00	0.22	0.37	-0.01	-1.20	0.50	0.00	0.39	0.75	-0.01	-2.17	0.71	-0.02	-2.87	0.30
H3	0.01	1.02	0.40	0.02	2.25	0.42	0.01	1.88	0.50	0.00	0.41	0.84	0.02	256	0.71	0.00	-0.11	0.34
	Dyield																	
L1	-0.02	-2.63	0.21	-0.01	-1.32	0.44	0.00	0.22	0.51	0.00	0.76	0.63	-0.01	-2.09	0.68	-0.01	-2.30	0.30
L3	0.01	0.32	0.37	0.01	1.07	0.44	0.00	0.87	0.-48	0.00	0.57	0.72	0.02	2.78	0.70	0.00	0.40	0.32
H1	-0.01	-1.73	0.29	0.02	1.91	0.46	0.01	1.90	0.50	0.00	0.63	0.71	0.00	-0.89	0.68	-0.01	-1.14	0.27
H3	0.01	2.23	0.47	0.04	3.35	0.44	0.01	2.32	0.55	0.02	3.18	0.66	0.03	3.91	0.69	0.01	1.18	0.26
	Sales																	
L1	0/00	-0.40	0.35	0.01	0.52	0.38	-0.01	-0.92	0.57	0.00	-0.15	0.80	-0.02	-3.20	0.74	-0.01	-1.62	0.30
L3	0.01	1.34	0.49	0.04	3.06	-0.02	0.01	0.84	0.62	0.01	0.90	0.56	0.01	0.94	0.72	0.00	-0.25	0.37
H1	-0.02	-1.87	0.46	0.00	-0.03	0.41	0.00	-0.39	0.58	0.01	1.60	0.70	-0.01	-2.01	0.71	-0.01	-1.18	0.28
H3	0.02	2.44	0.47	0.02	1.23	0.39	0.02	2.32	0.55	0.01	1.38	0.61	0.02	2.22	0.70	0.02	2.13	0.33
	Size_P/B																	
SL1	0.00	0.33	0.16	-	-	-	0.00	0.19	0.67	0.00	-0.01	0.80	-0.02	-2.57	0.75	-0.02	-2.04	0.49
SL3	0.05	2.54	0.07	-	-	-	0.01	1.12	0.79	0.00	0.66	0.81	0.02	2.14	0.80	0.02	1.73	0.09
SH1	-0.02	-2.13	0.23	-	-	-	0.00	0.34	0.57	0.00	-0.03	0.82	-0.01	-1.58	0.68	-0.02	-1.91	0.33
SH3	0.01	1.55	0.29	-	-	-	0.01	2.14	0.65	0.00	0.86	0.72	0.02	2.48	0.73	0.00	0.13	0.25
BL1	-0.02	-1.78	0.29	-	-	-	0.00	-0.13	0.51	0.00	-0.11	0.61	-0.01	-1.55	0.72	-0.01	-1.81	0.34
BL3	0.01	0.38	0.48	-	-	-	0.01	2.00	0.56	0.01	1.74	0.73	0.02	2.86	0.72	0.00	0.02	0.36
BH1	-0.03	-3.25	0.21	-	-	-	0.00	-0.59	0.49	0.00	-0.07	0.75	-0.02	-3.47	0.70	-0.02	-2.94	0.31
BH3	0.00	0.44	0.31	-	-	-	0.01	2.92	0.49	0.01	1.32	0.73	0.02	251	0.70	0.00	0.24	0.36
	Size_P/E																	
SL1	0.00	-0.29	0.09	-	-	-	0.00	0.55	0.66	0.00	-0.04	0.80	-0.02	-3.02	0.72	-0.02	-1.56	0.41
SL3	0.04	2.20	0.05	-	-	-	0.02	2.19	0.73	0.01	1.38	0.74	0.02	2.35	0.74	0.01	1.12	0.08
SH1	-0.01	-0.95	0.27	-	-	-	-0.01	-1.18	0.61	0.00	-0.22	0.82	-0.01	-1.45	0.65	-0.02	-2.40	0.16
SH3	0.02	1.70	0.26	-	-	-	0.00	0.23	0.60	0.00	0.58	0.76	0.02	250	0.68	0.00	-0.08	0.25
BL1	-0.02	-1.87	0.24	-	-	-	0.00	0.20	0.50	0.00	0.53	0.70	-0.01	-2.41	0.69	-0.01	-1.22	0.35
BL3	0.01	1.20	0.41	-	-	-	0.02	3.02	0.55	0.01	2.88	0.73	0.02	2.96	0.72	0.00	0.41	0.32
BH1	-0.03	-3.03	0.25	-	-	-	-0.01	-1.23	0.49	0.00	-0.14	0.68	-0.01	-2.68	0.74	-0.02	-2.83	0.31
BH3	0.00	0.26	0.42	-	-	-	0.01	1.87	0.46	0.00	-0.13	0.67	0.02	257	0.71	-0.01	-0.90	0.35
Panel B: Excess return on 12-12 stylized portfolios regressed on the excess return on the market ($R_M - R_F$) factor																		
Two proxy portfilios that relate to size (SMB) and (LMH) factors																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	0.00	-0.39	0.31	0.01	1.19	0.32	0.00	-0.36	0.67	0.01	1.60	0.75	0.00	-0.14	0.79	0.00	-0.10	0.37
P5	0.01	0.77	0.28	0.07	1.91	0.15	0.01	1.91	0.64	0.01	2.19	0.84	0.00	-0.30	0.72	0.01	1.46	0.28
	Size																	
S1	0.00	-0.27	0.31	0.02	1.39	0.26	0.00	-0.01	0.71	0.01	1.67	0.72	0.00	0.28	0.81	0.00	-0.39	0.31
SB	0.00	0.16	0.32	0.04	1.31	0.25	0.00	0.25	0.73	0.02	2.55	0.60	0.00	0.68	0.75	0.00	0.59	0.29

Table 3A (cont.). FF factor model results: $R_{Pt} - R_{Ft} = \alpha + \beta(R_{Pt} - R_{Ft}) + sSMB_t + lLMH_t + e_t$

	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\bar{R}^2$	α	$t(\alpha)$	$\bar{R}^2$	α	$t(\alpha)$	$\bar{R}^2$	α	$t(\alpha)$	$\bar{R}^2$	α	$t(\alpha)$	$\bar{R}^2$	α	$t(\alpha)$	$\bar{R}^2$
B1	-0.01	-1.54	0.31	0.01	0.99	0.62	0.00	-1.02	0.57	0.00	0.71	0.81	0.00	-0.02	0.79	-0.01	-1.87	0.43
B3	-0.01	-1.09	0.39	0.02	1.99	0.55	0.01	1.57	0.58	0.01	1.56	0.81	0.00	-0.30	0.70	0.00	-0.33	0.41
	F/B																	
L1	-0.01	-0.77	0.32	0.04	2.65	-0.04	0.00	-0.31	0.63	0.00	0.63	0.68	0.00	-0.04	0.80	-0.01	-1.11	0.33
L3	0.00	0.07	0.24	0.06	3.43	-0.02	0.01	1.33	0.72	0.00	0.72	0.74	0.00	0.75	0.76	0.00	-0.50	0.30
H1	-0.01	-1.58	0.30	0.01	1.06	-0.04	0.00	-0.45	0.49	0.01	1.58	0.78	0.00	-0.43	0.77	-0.01	-2.57	0.35
HB	-0.01	-1.22	0.34	0.04	2.84	0.01	0.01	2.31	0.54	0.00	0.74	0.87	0.00	-0.30	0.71	0.00	-0.40	0.41
	P/E																	
L1	0.00	-0.35	0.29	0.02	2.26	0.40	0.00	-0.09	0.65	0.00	0.45	0.70	0.00	-0.41	0.78	-0.01	-1.01	0.34
L3	0.00	-0.25	0.24	0.04	1.72	0.37	0.01	1.49	0.69	0.01	2.13	0.79	0.00	0.36	0.75	0.00	0.34	0.31
H1	-0.01	-1.83	0.35	0.00	-0.49	0.30	-0.01	-1.22	0.51	0.01	1.04	0.74	0.00	0.17	0.77	-0.01	-2.59	0.34
HB	-0.01	-0.95	0.35	0.01	1.07	0.55	0.01	1.69	0.54	0.00	-0.05	0.78	0.00	-0.23	0.71	0.00	-0.86	0.34
	Dyield																	
L1	-0.01	-1.52	0.30	0.00	0.13	0.29	-0.01	-1.33	0.53	0.00	0.60	0.68	0.00	0.24	0.75	-0.01	-2.41	0.31
L3	-0.01	-0.95	0.37	0.01	0.72	0.56	0.01	2.36	0.54	0.00	1.24	0.72	0.00	0.09	0.72	0.00	-0.02	0.34
H1	-0.01	-1.37	0.39	0.02	1.49	0.25	0.00	0.11	0.53	0.01	1.04	0.71	0.00	0.66	0.76	-0.01	-1.30	0.29
HB	0.00	-0.07	0.29	0.02	1.86	0.42	0.01	2.39	0.58	0.01	2.29	0.68	0.00	0.71	0.66	0.00	0.47	0.30
	Sales																	
L1	0.00	0.28	0.43	0.01	0.80	0.29	-0.01	-0.98	0.57	0.00	-0.04	0.75	-0.01	-0.96	0.78	0.00	-0.60	0.35
L3	0.00	0.07	0.50	0.02	2.57	0.58	0.00	0.53	0.54	0.01	1.50	0.50	0.00	-0.49	0.75	0.00	-0.15	0.18
H1	-0.01	-0.87	0.35	0.00	0.57	0.51	0.00	-0.25	0.55	0.01	1.90	0.73	0.00	-0.63	0.79	0.00	-0.60	0.32
H3	0.01	0.95	0.53	0.02	1.56	0.36	0.01	1.70	0.58	0.01	1.02	0.70	0.00	0.09	0.72	0.00	0.43	0.34
	Size_P/B																	
SL1	0.00	-0.24	0.35	-	-	-	0.00	0.07	0.63	0.00	0.62	0.76	-0.01	-0.85	0.81	-0.01	-1.14	0.30
SL3	-0.01	-0.25	0.24	-	-	-	0.01	1.31	0.79	0.00	0.55	0.81	0.00	0.06	0.81	0.01	0.60	0.19
SH1	0.00	0.37	0.30	-	-	-	0.00	-0.08	0.61	0.00	0.55	0.72	0.00	-0.05	0.77	-0.01	-0.98	0.28
SH3	0.00	-0.40	0.26	-	-	-	0.01	1.30	0.65	0.00	0.08	0.69	0.00	0.06	0.73	0.00	0.28	0.31
BL1	-0.01	-1.50	0.30	-	-	-	0.00	-0.72	0.58	0.00	0.43	0.62	0.00	-0.02	0.77	-0.01	-1.32	0.41
BL3	-0.01	-0.82	0.45	-	-	-	0.01	1.54	0.56	0.01	2.33	0.71	0.00	0.28	0.72	-0.01	-1.28	0.34
BH1	-0.01	-1.64	0.27	-	-	-	0.00	-0.54	0.45	0.00	0.23	0.63	0.00	-0.25	0.78	-0.01	-2.79	0.34
BH3	-0.01	-0.93	0.31	-	-	-	0.01	2.38	0.50	0.00	1.06	0.74	0.00	-0.65	0.70	0.00	-0.10	0.38
	Size_P/E																	
SL1	0.00	0.32	0.16	-	-	-	0.00	0.40	0.66	0.00	0.65	0.70	-0.01	-1.07	0.76	-0.01	-1.13	0.35
SL3	0.00	-0.43	0.17	-	-	-	0.01	1.31	0.67	0.00	0.54	0.77	-0.01	-0.87	0.82	0.00	0.49	0.11
SH1	0.00	-0.39	0.41	-	-	-	0.00	-0.52	0.54	0.00	0.71	0.76	0.00	-0.58	0.74	-0.01	-0.78	0.10
SH3	0.00	-0.35	0.19	-	-	-	0.00	0.21	0.64	0.00	0.05	0.70	0.01	1.52	0.66	0.00	0.00	0.19
BL1	-0.01	-1.04	0.25	-	-	-	0.00	-0.71	0.54	0.00	0.69	0.65	0.00	-0.22	0.75	0.00	-0.89	0.42
BL3	-0.01	-0.79	0.39	-	-	-	0.01	2.28	0.53	0.01	2.24	0.71	0.00	0.37	0.73	-0.01	-1.09	0.34
BH1	-0.02	-2.83	0.31	-	-	-	-0.01	-1.49	0.48	0.00	0.09	0.63	0.00	0.00	0.80	-0.01	-2.60	0.30
BH3	-0.01	-1.31	0.39	-	-	-	0.01	1.89	0.52	0.00	0.60	0.68	0.00	-0.76	0.68	0.00	-0.17	0.31

Table 4A. Mean company characteristics for Sorted Portfolios

Panel A: 6-6 Stylized portfolios												
	Brazil		Russia		India		China		Korea		South Africa	
Portfolio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean Size	P/B ratio
Return portfolios												
P1	7.73	2.48	9.72	0.06	6.56	1.56	8.97	3.54	7.48	1.52	7.73	2.48
P5	7.74	2.10	10.09	0.07	6.95	2.80	9.58	3.56	7.92	2.08	7.74	2.10
Size-return portfolios												
S1	6.52	2.13	8.94	0.07	5.31	0.90	8.50	3.16	6.53	1.15	6.52	2.13
S3	6.60	1.50	9.19	0.04	5.24	1.00	8.57	3.13	6.63	1.86	6.60	1.50
B1	10.19	2.49	12.13	0.05	8.56	2.51	9.73	2.69	8.83	1.35	10.19	2.49
B3	1020	3.08	11.70	0.06	8.72	3.40	10.05	4.05	8.98	1.31	10.20	3.08

Table 4A (cont.). Mean company characteristics for Sorted Portfolios

	Brazil		Russia		India		China		Korea		South Africa	
Portfolio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean Size	P/B ratio
P/B-return portfolios												
L1	8.18	0.59	10.55	0.03	6.76	0.52	8.95	0.90	7.52	0.36	8.18	0.59
L3	8.25	-0.18	10.22	0.02	6.66	0.09	9.32	0.07	7.64	0.33	8.25	-0.18
H1	9.32	4.42	11.22	0.12	8.96	3.73	9.09	5.98	8.30	2.31	9.32	4.42
H3	9.19	4.40	11.31	0.11	9.05	4.50	9.62	6.28	8.72	2.62	9.19	4.40
P/E-return portfolios												
L1	8.11	2.02	11.17	0.05	7.20	0.98	8.96	3.25	7.58	1.61	8.11	2.02
L3	8.12	1.25	11.14	0.06	7.19	0.65	9.54	2.51	7.80	1.93	8.12	1.25
H1	9.44	2.65	10.56	0.07	8.46	2.94	9.06	3.51	8.26	0.97	9.44	2.65
H3	9.39	3.22	10.60	0.08	8.81	4.18	9.42	5.06	8.65	1.28	9.39	3.22
Dividend yield-return portfolios												
L1	9.68	246	11.09	0.06	8.95	3.63	9.36	3.12	8.46	1.03	9.68	2.46
L3	9.48	3.02	11.17	0.07	8.84	3.88	9.83	4.00	8.80	1.35	9.48	3.02
H1	9.13	1.92	11.87	0.06	7.61	1.49	9.45	1.96	7.96	0.67	9.13	1.92
H3	9.09	2.19	11.10	0.07	7.49	1.46	9.88	2.34	8.14	0.86	9.09	2.19
PSG-return portfolios												
L1	8.61	1.69	11.97	0.05	7.64	1.60	8.86	3.74	7.50	0.79	8.61	1.69
L3	8.70	1.77	11.74	0.06	8.03	2.07	9.39	4.15	7.91	1.11	8.70	1.77
H1	9.16	2.01	11.74	0.06	8.34	2.08	9.18	2.85	8.32	0.94	9.16	2.01
H3	9.14	2.74	11.65	0.09	8.55	3.42	9.55	2.91	8.76	1.11	9.14	2.74
Size_P/B-return portfolios												
SL1	6.39	-0.68	-	-	4.91	0.04	8.39	0.29	6.35	0.11	6.39	-0.68
SL3	6.33	-3.36	-	-	4.62	-1.69	8.47	-1.71	6.40	0.17	6.33	-3.36
SH1	6.82	5.75	-	-	6.21	1.74	8.59	7.04	6.70	2.19	6.82	5.75
SH3	6.99	4.65	-	-	6.26	1.90	8.71	8.26	6.85	3.55	6.99	4.65
BL1	10.07	1.33	-	-	8.41	0.97	9.79	1.72	8.66	0.50	10.07	1.33
BL3	10.09	1.50	-	-	8.47	0.96	9.99	1.62	8.69	0.46	10.09	1.50
BH1	10.37	4.03	-	-	9.32	4.53	9.84	4.67	9.19	2.32	10.37	4.03
BH3	10.34	4.40	-	-	9.45	5.16	10.06	5.67	9.35	1.90	10.34	4.40
Size_P/E-return portfolios												
SL1	6.18	0.76	-	-	5.60	-3.27	8.39	3.25	6.37	1.56	6.18	0.76
SL3	6.22	-0.58	-	-	5.62	-0.93	8.51	162	6.40	3.24	6.22	-0.58
SH1	7.17	2.04	-	-	5.58	0.80	8.60	3.87	6.71	0.57	7.17	2.04
SH3	7.14	3.73	-	-	5.53	1.31	8.68	5.18	6.75	0.68	7.14	3.73
BL1	10.12	1.97	-	-	8.50	1.30	9.87	2.58	8.76	1.63	10.12	1.97
BL3	10.18	2.25	-	-	8.67	1.58	10.11	3.18	8.86	1.17	10.18	2.25
BH1	10.32	3.02	-	-	9.25	4.03	9.72	3.48	9.08	1.14	10.32	3.02
BH3	10.30	3.79	-	-	9.47	4.88	9.95	4.97	9.28	1.50	10.30	3.79
Panel B: 12-12 stylized portfolios												
	Brazil		Russia		India		China		Korea		South Africa	
Portfolio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio
Return portfolios												
P1	7.37	0.44	9.78	0.05	6.65	1.70	8.86	2.85	7.28	1.29	7.64	1.37
P5	7.81	0.92	9.86	0.06	7.06	2.69	9.48	3.53	8.00	1.51	7.76	2.71
Size-return portfolios												
S1	6.20	0.32	9.46	0.04	5.29	-4.18	8.54	3.69	6.44	1.13	6.62	0.85
S3	6.04	0.38	7.43	0.07	5.39	-0.15	8.47	3.93	6.61	2.58	6.65	2.07
B1	10.07	0.89	12.03	0.05	8.56	2.21	9.80	3.10	8.72	0.97	10.21	2.55
B3	10.25	1.31	11.70	0.07	8.73	3.87	9.84	3.46	8.95	1.47	10.28	3.10
P/B-return portfolios												
L1	7.06	0.07	10.60	0.03	6.96	0.66	8.92	0.93	7.42	0.38	8.22	0.06
L3	7.41	0.06	10.05	0.02	6.67	-0.32	9.22	-0.70	7.69	0.33	8.35	1.13
H1	9.77	1.24	12.10	0.09	8.98	4.03	8.96	5.26	8.16	2.07	9.42	3.89
H3	9.69	1.57	11.12	0.10	8.99	4.99	9.62	5.76	8.80	3.11	9.20	3.81

Table 4A (cont.). Mean company characteristics for Sorted Portfolios

	Brazil		Russia		India		China		Korea		South Africa	
Portfolio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio	Mean size	P/B ratio
P/E-return portfolios												
L1	7.55	0.47	11.33	0.04	7.25	-2.66	8.92	2.97	7.46	1.32	8.13	1.12
L3	7.92	0.56	10.85	0.06	7.28	0.43	9.49	3.04	7.89	2.19	8.30	1.98
H1	8.68	0.68	10.70	0.07	8.49	3.24	8.93	2.77	8.04	0.79	9.48	2.70
H3	9.49	1.21	10.55	0.08	8.87	4.70	9.38	5.20	8.78	1.45	9.45	3.17
Dividend yield-return portfolios												
L1	8.65	0.68	11.25	0.05	8.86	3.16	9.21	272	8.29	0.90	9.69	2.47
L3	9.71	1.23	11.24	0.07	8.90	4.79	9.78	3.92	8.86	1.52	9.43	2.79
H1	8.56	0.54	11.61	0.05	7.69	1.48	9.32	1.79	7.74	0.61	9.23	1.97
H3	8.97	0.79	11.24	0.07	7.60	1.66	9.76	2.20	8.15	0.93	9.24	2.32
PSG-return portfolios												
L1	7.59	0.45	11.97	0.05	7.66	1.62	8.88	3.86	7.26	1.20	8.50	1.73
L3	8.37	0.60	11.74	0.06	8.07	2.22	9.24	3.34	7.99	0.80	8.79	2.09
H1	9.32	0.83	11.74	0.06	8.21	2.00	9.07	2.31	8.08	0.74	9.30	2.24
H3	9.42	1.38	11.65	0.09	8.55	3.82	9.32	1.23	8.90	1.11	9.14	2.87
Size_P/B-return portfolios												
SL1	5.58	0.02	-	-	5.27	-14.98	8.35	0.35	6.29	0.13	6.46	6.04
SL3	5.49	-0.17	-	-	4.70	-3.17	8.35	-3.11	6.32	0.04	6.53	6.51
SH1	7.43	0.79	-	-	6.26	1.62	8.52	6.24	6.59	2.24	7.11	7.41
SH3	7.10	0.62	-	-	6.31	2.06	8.67	7.96	6.71	4.86	7.03	7.14
BL1	9.68	0.27	-	-	8.47	0.99	9.62	1.56	8.55	0.50	10.14	10.19
BL3	10.01	0.40	-	-	8.59	1.00	9.91	1.61	8.67	0.45	10.02	10.16
BH1	10.53	1.74	-	-	9.45	4.81	9.73	4.14	9.15	1.79	10.34	10.28
BH3	10.39	1.83	-	-	9.42	5.86	10.01	5.34	9.35	2.05	10.41	10.26
Size_P/E-return portfolios												
SL1	6.95	0.31	-	-	5.73	0.82	8.37	3.49	6.28	1.81	-2.07	-0.10
SL3	6.02	0.32	-	-	5.58	-2.33	8.42	1.11	6.32	4.49	0.79	1.59
SH1	6.95	0.49	-	-	5.83	0.84	8.53	2.77	6.64	0.49	3.81	1.93
SH3	6.74	0.32	-	-	5.71	1.52	8.61	5.43	6.73	0.72	2.94	2.49
BL1	9.83	0.78	-	-	8.57	1.46	9.76	2.32	8.66	1.03	1.32	2.24
BL3	10.17	0.94	-	-	8.69	1.62	10.06	3.26	8.92	1.05	1.56	2.42
BH1	10.33	0.88	-	-	9.26	4.25	9.55	280	8.94	0.96	3.87	2.87
BH3	10.34	1.63	-	-	9.49	5.56	9.89	4.74	9.29	1.68	4.40	3.73

Table 5A. CAPM

Panel A: CAPM based α and $t(\alpha)$ differential for 6-6 stylized portfolios												
	Brazil		Russia		India		China		Korea		South Africa	
	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff
	Return portfolios											
P5-P1	0.065	3.891	0.022	2.177	0.015	1.458	0.005	0.626	0.036	2.606	0.019	2.336
	Size-return portfolios											
S3-S1	0.014	0.452	0.006	0.174	-0.032	-0.456	-0.003	-0.328	0.029	2.155	0.011	1.217
BB-B1	0.027	2.390	0.041	4.431	0.012	1.448	0.002	0.247	0.027	3.462	0.015	2.215
	P/B-return portfolios											
L3-L1	0.044	2.863	0.033	2.240	0.015	1.306	0.012	1.010	0.032	2.606	0.007	0.827
H3-H1	0.031	2.761	0.032	2.859	0.015	2.003	0.002	0.222	0.029	3.456	0.021	2.754
	P/E-return portfolios											
L3-L1	0.048	2.967	0.047	3.540	0.019	1.701	0.013	1.222	0.035	2.894	0.007	0.796
H3-H1	0.026	2.401	0.018	1.239	0.015	1.810	-0.002	-0.314	0.023	2.826	0.016	2.124
	Dividend yield-return portfolios											
L3-L1	0.027	2.494	0.029	2.376	0.004	0.529	-0.003	-0.450	0.024	3.085	0.014	1.863
H3-H1	0.023	2.052	0.024	1.764	0.003	0.292	0.011	1.075	0.030	3.331	0.013	1.723
	PSG-return portfolios											
L3-L1	0.021	1.665	0.039	2.233	0.011	0.992	0.002	0.202	0.025	1.808	-0.003	-0.265
H3-H1	0.038	3.239	0.025	1.731	0.021	1.786	-0.003	-0.310	0.029	2.558	0.021	2.295

Table 5A (cont.). CAPM

	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff
SL3-SL1	0.043	1.967	-	-	0.015	0.826	0.004	0.315	0.040	2.019	-0.003	-0.201
	Size_P/B-return portfolios											
SHB-SH1	0.028	1.967	-	-	0.011	0.849	0.001	0.080	0.029	2.225	0.013	1.081
BLB-BL1	0.024	2.065	-	-	0.012	1.249	0.006	0.826	0.026	2.805	0.012	1.575
BHB-BH1	0.034	2.689	-	-	0.017	2.430	0.004	0.670	0.030	3.814	0.018	2.354
	Size_P/E-return portfolios											
SL3-SL1	0.046	1.995	-	-	0.026	1.275	0.006	0.442	0.038	2.161	-0.007	-0.453
SHB-SH1	0.018	1.320	-	-	0.010	0.809	0.001	0.093	0.031	2.364	0.017	1.582
BLB-BL1	0.029	2.307	-	-	0.015	1.618	0.007	1.061	0.030	3.278	0.009	1.213
BHB-BH1	0.027	2.397	-	-	0.014	1.795	-0.001	-0.170	0.025	3.252	0.012	1.538
Panel B: CAPM based α and $t(\alpha)$ differential for 12-12 stylized portfolios												
	Brazil		Russia		India		China		Korea		South Africa	
	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff	α	$t(\alpha)$ diff
	Return portfolios											
P5-P1	0.005	0.377	0.015	0.593	0.011	1.016	-0.002	-0.216	-0.014	-1.279	0.009	1.116
	Size-return portfolios											
S3-S1	0.012	0.741	-0.013	-0.403	0.000	0.042	0.006	0.706	-0.008	-0.688	0.005	0.500
BB-B1	0.001	0.055	0.006	0.679	0.012	1.529	0.004	0.594	-0.007	-0.969	0.006	0.856
	P/B-return portfolios											
L3-L1	0.011	0.693	0.006	0.300	0.006	0.537	0.001	0.125	-0.007	-0.630	0.002	0.220
H3-H1	0.001	0.099	0.024	1.402	0.014	1.773	-0.005	-0.730	-0.004	-0.507	0.009	1.266
	P/E-return portfolios											
L3-L1	0.004	0.208	0.009	0.395	0.010	0.934	0.003	0.268	-0.006	-0.553	0.004	0.471
H3-H1	0.002	0.215	0.008	0.688	0.014	1.800	-0.005	-0.624	-0.009	-1.176	0.008	1.092
	Dividend yield-return portfolios											
L3-L1	0.001	0.088	0.006	0.443	0.018	2.329	0.001	0.088	-0.005	-0.647	0.012	1.676
H3-H1	-0.002	-0.143	-0.013	-0.930	0.014	1.491	0.004	0.394	-0.007	-0.786	0.005	0.745
	PSG-return portfolios											
L3-L1	-0.001	-0.107	0.013	0.914	0.009	0.823	0.009	0.791	-0.011	-0.836	-0.005	-0.477
H3-H1	0.012	0.988	0.020	1.484	0.017	1.467	-0.007	-0.656	-0.007	-0.600	0.006	0.644
	Size_P/B-return portfolios											
SL3-SL1	0.017	0.546	-	-	0.015	0.842	0.000	-0.035	-0.005	-0.314	0.012	0.917
SHB-SH1	-0.006	-0.404	-	-	0.011	0.897	-0.004	-0.436	-0.005	-0.357	0.003	0.252
BLB-BL1	0.002	0.168	-	-	0.012	1.350	0.006	0.838	-0.005	-0.511	0.001	0.144
BHB-BH1	0.004	0.298	-	-	0.015	1.997	0.003	0.449	-0.006	-0.791	0.012	1.532
	Size_P/E-return portfolios											
SL3-SL1	-0.006	-0.373	-	-	0.017	0.828	-0.004	-0.277	-0.001	-0.062	0.004	0.283
SHB-SH1	-0.003	-0.235	-	-	0.010	0.895	-0.006	-0.552	-0.004	-0.334	0.009	0.808
BLB-BL1	-0.001	-0.103	-	-	0.015	1.733	0.004	0.589	-0.004	-0.483	-0.002	-0.239
BHB-BH1	0.010	0.910	-	-	0.017	2.242	0.002	0.283	-0.009	-1.239	0.011	1.381

Table 6A. Mean excess returns on sectoral momentum portfolios

Panel A: 6-6 stylized portfolios						
Country	Brazil	Russia	India	China	Korea	South Africa
K1	0.0118	0.0598	0.0204	0.0236	0.0015	0.0107
K2	0.0191	0.0285	0.0164	0.0195	0.0074	0.0056
K3	0.0319	0.0356	0.0189	0.0186	0.0148	0.0125
K4	0.0140	0.0559	0.0204	0.0222	0.0234	0.0140
K5	0.0244	0.0777	0.0300	0.0204	0.0337	0.0213
K5 - K1	0.0126	0.0179	0.0096	-0.0032	0.0323	0.0105
EWI	0.0202	0.0515	0.0212	0.0208	0.0162	0.0128
Panel B: 12-12 stylized portfolios						
Country	Brazil	Russia	India	China	Korea	South Africa
K1	0.0145	0.0688	0.0185	0.0219	0.0274	0.0150
K2	0.0187	0.0381	0.0158	0.0189	0.0122	0.0117

Table 6A (cont.). Mean excess returns on sectoral momentum portfolios

Country	Brazil	Russia	India	China	Korea	South Africa
K3	0.0198	0.0551	0.0187	0.0207	0.0131	0.0065
K4	0.0153	0.0395	0.0220	0.0250	0.0192	0.0131
K5	0.0216	0.0715	0.0312	0.0179	0.0089	0.0147
K5 - K1	0.0072	0.0027	0.0127	-0.0039	-0.0185	-0.0003
EWI	0.0180	0.0546	0.0213	0.0209	0.0162	0.0122

Table 7. Four-factor model results: $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + sSMB + lLMH + wWML_t + e_t$

Panel A: Excess return on 6-6 stylized portfolios regressed on the excess return on the market ($R_M - R_F$) factor																		
Three proxy portfolios that relate to size (*SMB*), (*LMH*) and sector (*WML*) factors																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	-0.02	-1.67	0.20	0.04	3.95	0.87	0.00	-0.14	0.65	0.00	0.79	0.80	-0.01	-2.16	0.68	-0.01	-0.88	0.29
P5	0.04	3.5S	0.28	0.04	3.95	0.47	0.01	1.98	0.67	0.01	2.01	0.70	0.02	2.48	0.72	0.02	2.73	0.36
	Size																	
S1	-0.02	-2.01	0.87	0.05	3.83	0.84	0.00	-0.25	0.71	0.01	2.02	0.77	-0.01	-1.35	0.72	0.00	-0.62	0.28
S3	0.04	2.49	0.15	0.04	2.98	0.37	0.01	1.21	0.74	0.01	1.89	0.75	0.02	2.52	0.76	0.01	1.93	0.29
B1	-0.02	-2.30	0.25	0.00	-0.34	0.65	0.00	-0.42	0.57	0.00	0.82	0.77	-0.01	-2.21	0.73	-0.01	-2.27	0.39
B3	0.01	0.95	0.47	0.03	3.93	053	0.01	1.25	0.58	0.01	2.18	0.90	0.01	2.10	0.75	0.00	0.45	0.39
	P/B																	
L1	-0.01	-0.70	0.18	0.01	1.07	0.43	0.00	0.31	0.61	0.00	-0.40	0.73	-0.01	-1.78	0.73	0.00	-0.39	0.31
L3	0.04	2.85	0.16	0.03	2.82	0.47	0.01	1.70	0.73	0.00	0.91	0.68	0.02	2.14	0.75	0.01	1.07	0.29
H1	-0.03	-3.10	0.21	-0.01	-1.21	0.49	0.00	0.01	0.48	0.01	1.02	0.83	-0.01	-2.65	0.72	-0.02	-3.13	0.35
H3	0.01	0.82	0.39	0.03	2.85	0.46	0.01	1.92	0.55	0.01	1.94	0.90	0.01	1.88	0.73	0.00	0.69	0.36
	P/E																	
L1	-0.01	-1.02	0.18	0.01	1.03	0.60	0.00	0.37	0.62	0.00	0.11	0.78	-0.01	-2.38	0.71	0.00	-0.47	0.31
L3	0.04	2.75	0.15	0.05	3.69	0.40	0.01	2.56	0.72	0.01	2.10	0.61	0.01	2.08	0.73	0.01	1.32	0.28
H1	-0.02	-2.48	0.26	0.00	0.25	0.40	0.00	-0.69	0.51	0.00	0.57	0.78	-0.01	-1.62	0.72	-0.01	-2.65	0.31
H3	0.01	1.18	0.44	0.02	2.24	0.41	0.01	1.19	0.52	0.00	0.39	0.85	0.01	1.75	0.73	0.00	0.00	0.34
	Dyield																	
L1	-0.02	-2.64	0.22	-0.01	-1.32	0.48	0.00	-0.03	0.51	0.01	1.30	0.68	-0.01	-1.58	0.69	-0.01	-2.10	0.31
L3	0.01	0.94	0.40	0.01	1.06	0.43	0.00	0.67	0.48	0.00	0.57	0.72	0.01	2.05	0.72	0.00	0.47	0.32
H1	-0.01	-1.67	0.31	0.02	1.96	0.47	0.01	2.03	0.50	0.00	0.66	0.71	0.00	-0.31	0.69	-0.01	-0.98	0.27
H3	0.02	2.47	051	0.04	3.39	0.46	0.01	2.27	0.55	0.02	3.23	0.67	0.02	3.26	0.71	0.01	1.31	0.26
	Sales																	
L1	-0.01	-0.49	0.37	0.02	1.21	0.42	0.00	-0.42	0.58	0.00	0.12	0.80	-0.02	-2.83	0.74	-0.01	-1.42	0.30
L3	0.01	1.33	0.49	0.04	2.55	-0.02	0.01	0.83	0.62	0.01	0.92	0.55	0/00	0.45	0.73	0.00	-0.21	0.37
H1	-0.02	-1.92	0.47	0.00	-0.06	0.41	0.00	0.01	0.59	0.01	2.16	0.76	-0.01	-1.71	0.71	-0.01	-0.92	0.30
H3	0.02	2.44	0.48	0.02	1.21	0.39	0.01	1.51	0.59	0.01	1.42	0.61	0.01	1.49	0.73	0.01	2.02	0.33
	Size_P/B																	
SL1	0.01	0.43	0.16	-	-	-	0.00	0.32	0.67	0.00	0.07	0.80	-0.02	-2.31	0.75	-0.02	-1.62	0.53
SL3	0.05	2.59	0.07	-	-	-	0.01	0.70	0.79	0.00	0.60	0.81	0.01	1.62	0.81	0.02	157	0.09
SH1	-0.02	-1.98	0.25	-	-	-	0.00	0.30	0.57	0.00	0.24	0.83	-0.01	-1.31	0.68	-0.02	-1.58	0.35
SH3	0.02	1.72	0.33	-	-	-	0.02	2.39	0.65	0.01	1.11	0.73	0.01	2.00	0.74	0.00	0.21	0.24
BL1	-0.02	-1.72	0.30	-	-	-	0.00	0.47	0.53	0.00	0.18	0.64	-0.01	-1.06	0.72	-0.01	-1.62	0.34
BL3	0.01	1.10	0.50	-	-	-	0.01	1.44	0.57	0.01	1.76	0.73	0.01	2.20	0.74	0.00	0.14	0.36
BH1	-0.03	-3.21	0.22	-	-	-	0.00	-0.19	0.49	0.00	0.32	0.75	-0.01	-2.89	0.71	-0.02	-2.63	0.34
BH3	0.00	0.55	0.34	-	-	-	0.01	2.08	0.53	0.00	0.86	0.74	0.01	1.68	0.73	0.00	0.40	0.36
	Size_P/E																	
SL1	0.00	-0.19	0.10	-	-	-	0.01	0.73	0.66	0.00	0.34	0.81	-0.02	-2.69	0.72	-0.01	-1.20	0.43
SL3	0.04	2.24	0.05	-	-	-	0.02	1.73	0.73	0.01	1.50	0.74	0.01	1.74	0.75	0.01	1.15	0.08
SH1	-0.01	-0.85	0.28	-	-	-	-0.01	-0.80	0.64	0.00	-0.16	0.82	-0.01	-1.13	0.65	-0.02	-2.07	0.19
SH3	0.02	1.92	0.32	-	-	-	0.00	0.43	0.60	0.00	0.66	0.76	0.01	1.76	0.70	0.00	-0.12	0.24
BL1	-0.02	-1.81	0.27	-	-	-	0.00	0.63	0.51	0.00	0.87	0.71	-0.01	-1.83	0.70	-0.01	-1.05	0.35

Table 7. Four-factor model results: $R_{Pt} - R_{Ft} = \alpha + \beta (R_{Mt} - R_{Ft}) + sSMB + lLMH + wWML_t + e_t$

	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
BL3	0.01	1.33	0.44	-	-	-	0.01	2.37	0.56	0.01	2.87	0.73	0.02	2.33	0.73	0.00	0.60	0.32
BH1	-0.03	-2.98	0.26	-	-	-	0.00	-0.74	0.50	0.00	0.26	0.64	-0.01	-2.18	0.74	-0.01	-2.55	0.33
BH3	0.00	0.37	0.45	-	-	-	0.01	1.16	0.49	0.00	-0.52	0.68	0.01	1.73	0.74	0.00	-0.72	0.35
Panel B: Excess return on 12-12 stylized portfolios regressed on the excess return on the market ($R_M - R_F$) factor																		
Three proxy portfolios that relate to size (*SMB*), (*LMH*) and sector (*WML*) factors																		
	Brazil			Russia			India			China			Korea			South Africa		
	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$	α	$t(\alpha)$	$\overline{R}^2$
	Return portfolios																	
P1	0.00	-0.48	0.31	0.01	1.28	0.32	0.00	0.01	0.67	0.01	1.15	0.77	0.00	-0.26	0.79	0.00	-0.07	0.37
P5	0.01	0.91	0.29	0.05	1.42	0.23	0.01	1.06	0.66	0.01	2.10	0.84	0.00	0.04	0.77	0.01	1.42	0.29
	Size																	
S1	0.00	-0.20	0.30	0.02	1.66	0.27	0.00	0.11	0.71	0.01	1.30	0.74	0.00	0.29	0.81	0/00	-0.38	0.31
S3	0.00	-0.07	0.34	0.03	1.10	0.25	0.00	0.45	0.73	0.01	2.21	0.62	0.00	1.04	0.78	0.00	057	0.29
B1	-0.01	-1.35	0.32	0.01	1.20	0.63	0.00	-0.57	0.58	0.00	0.53	0.82	0.00	-0.08	0.79	-0.01	-1.84	0.44
B3	-0.01	-1.03	0.38	0.02	2.05	055	0.00	0.68	0.61	0.01	1.52	0.81	0.00	0.02	0.75	0.00	-0.36	0.41
	P/B																	
L1	-0.01	-0.62	0.32	0.04	2.64	-0.05	0.00	0.12	0.63	0.00	0.24	0.70	0.00	-0.04	0.79	-0.01	-1.09	0.33
L3	0.00	-0.33	0.29	0.06	3.36	-0.03	0.01	0.98	0.72	0.00	0.56	0.74	0.01	1.19	0.80	0.00	-0.50	0.30
H1	-0.01	-145	0.30	0.02	1.27	-0.03	0.00	-0.12	0.49	0.01	1.37	0.80	0.00	-0.42	0.77	-0.01	-2.54	0.36
H3	-0.01	-0.95	0.36	0.04	2.63	0.01	0.01	1.28	0.58	0.00	0.80	0.87	0.00	0.03	0.76	0.00	-0.44	0.41
	P/E																	
L1	0.00	-0.34	0.28	0.02	2.29	0.40	0.00	0.21	0.65	0.00	0.04	0.71	0.00	-0.41	0.78	-0.01	-0.99	0.33
L3	-0.01	-0.56	0.27	0.04	1.64	0.37	0.00	0.88	0.70	0.01	2.06	0.79	0.00	0.71	0.78	0.00	0.33	0.31
H1	-0.01	-154	0.37	0.00	-0.03	0.36	0.00	-0.75	0.51	0.00	0.83	0.76	0.00	0.18	0.77	-0.01	-2.56	0.34
H3	-0.01	-0.83	0.35	0.01	1.15	055	0.00	0.78	0.57	0.00	-0.15	0.78	0.00	0.13	0.76	-0.01	-0.88	0.34
	Dyield																	
L1	-0.01	-1.38	0.30	0.00	0.38	0.30	0.00	-0.79	0.53	0.00	0.55	0.69	0.00	0.30	0.75	-0.01	-2.40	0.30
L3	-0.01	-0.82	0.37	0.01	1.01	0.57	0.01	1.45	0.57	0.00	1.17	0.72	0.00	0.44	0.76	0.00	-0.04	0.34
H1	-0.01	-1.28	0.39	0.02	1.77	0.27	0.00	0.50	0.53	0.00	0.79	0.72	0.00	0.73	0.76	-0.01	-1.26	0.30
H3	0.00	-0.14	0.28	0.02	1.75	0.42	0.01	1.89	0.59	0.01	2.15	0.68	0.01	1.17	0.73	0.00	0.46	0.29
	Sales																	
LI	0.00	0.17	0.44	0.00	0.38	0.30	0.00	-0.46	0.57	0.00	-0.09	0.75	-0.01	-1.06	0.79	0.00	-0.58	0.34
L3	0.00	0.05	0.49	0.02	2.62	0.58	0.00	0.56	0.51	0.01	1.49	0.50	0.00	-0.08	0.80	0.00	-0.16	0.18
HI	-0.01	-0.93	0.35	0.00	0.56	0.50	0.00	0.03	0.55	0.01	1.75	0.74	0.00	-0.70	0.79	0.00	-0.57	0.32
H3	0.01	0.83	0.54	0.02	1.77	0.36	0.00	0.56	0.62	0.01	1.03	0.69	0.00	0.51	0.77	0.00	0.45	0.34
	Size_P/B																	
SL1	0.00	-0.29	0.36	-	-	-	0.00	-0.04	0.63	0.00	0.60	0.76	-0.01	-0.79	0.81	-0.01	-1.09	0.31
SL3	-0.01	-0.47	0.26	-	-	-	0.00	0.57	0.80	0.00	0.54	0.81	0.00	0.35	0.82	0.01	0.58	0.18
SH1	0.00	0.40	0.30	-	-	-	0.00	0.18	0.61	0.00	0.42	0.74	0.00	-0.03	0.77	-0.01	-0.92	0.30
SH3	0.00	-0.51	0.26	-	-	-	0.01	1.34	0.65	0.00	0.00	0.69	0.00	0.39	0.75	0.00	0.29	0.30
BL1	-0.01	-1.28	0.31	-	-	-	0.00	-0.26	0.58	0.00	0.46	0.62	0.00	-0.09	0.77	-0.01	-1.28	0.41
BL3	-0.01	-1.13	0.47	-	-	-	0.01	0.94	0.57	0.01	2.27	0.71	0.00	0.60	0.76	-0.01	-1.27	0.34
BH1	-0.01	-1.48	0.27	-	-	-	0.00	-0.02	0.46	0.00	0.27	0.64	0.00	-0.25	0.78	-0.01	-2.77	0.34
BH3	0.00	-0.59	0.35	-	-	-	0.01	1.27	0.55	0.00	1.04	0.74	0.00	-0.38	0.74	0/00	-0.13	0.38
	Size_P/E																	
SL1	0.00	0.29	0.16	-	-	-	0.00	0.48	0.66	0.00	0.47	0.72	-0.01	-1.06	0.76	-0.01	-1.11	0.35
SL3	0.00	-0.31	0.17	-	-	-	0.01	0.47	0.68	0.00	0.51	0.77	0.00	-0.68	0.83	0.01	0.49	0.10
SH1	0.00	-0.37	0.41	-	-	-	0.00	-0.17	0.54	0.00	0.68	0.76	0.00	-0.59	0.74	-0.01	-0.71	0.13
SH3	0.00	-0.31	0.18	-	-	-	0.00	0.41	0.64	0.00	0.00	0.70	0.01	2.16	0.72	0.00	-0.01	0.18
BL1	-0.01	-0.92	0.25	-	-	-	0.00	-0.42	0.54	0.00	0.74	0.66	0.00	-0.26	0.75	0.00	-0.84	0.44
BL3	-0.01	-1.03	0.40	-	-	-	0.01	1.69	0.54	0.01	2.18	0.71	0.00	0.67	0.76	-0.01	-1.08	0.34
BH1	-0.02	-2.60	0.33	-	-	-	-0.01	-1.05	0.48	0.00	0.12	0.64	0.00	-0.04	0.80	-0.01	-2.58	0.30
BH3	-0.01	-1.04	0.41	-	-	-	0.00	0.91	0.55	0.00	0.58	0.68	0.00	-0.48	0.74	0.00	-0.19	0.31

Table 8A. Sector growth rate 6-6

	Brazil			Russia			India			China			Korea			South Africa		
	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1
Mean	-0.61	-0.23	0.38	-0.03	0.44	0.47	0.05	0.46	0.41	0.03	0.35	0.31	0.03	0.24	0.21	0.04	0.36	0.33
Sigma	0.16	0.29		0.16	0.29		0.04	0.50		0.05	0.12		0.08	0.10		0.07	0.12	
t-stats	-22.38	-5.42		-0.87	6.06		5.71	4.46		3.19	13.19		1.81	11.15		2.62	14.07	

Table 9A. Sector growth rate 12-12

	Brazil			Russia			India			China			Korea			South Africa		
	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1	Q1	Q5	Q5-Q1
Mean	-0.61	-0.26	0.35	-0.01	0.41	0.43	0.05	0.30	0.25	0.03	0.35	0.31	0.03	0.24	0.21	0.03	0.33	0.31
Sigma	0.13	0.17		0.15	0.26		0.04	0.17		0.05	0.12		0.08	0.10		0.07	0.13	
t-stats	-15.48	-5.13		-0.29	5.88		3.70	5.98		2.21	9.62		1.28	7.71		1.41	9.11	