WORKING PAPERS DA FEP

Investigação - Trabalhos em curso - nº 120, Outubro de 2002

THE CROSS-SECTIONAL DETERMINANTS OF RETURNS

Evidence from Emerging Markets' Stocks

Ana Paula Serra

FACULDADE DE ECONOMIA

UNIVERSIDADE DO PORTO

www.fep.up.pt

THE CROSS-SECTIONAL DETERMINANTS OF RETURNS: EVIDENCE FROM EMERGING MARKETS' STOCKS

Ana Paula Serra

CEMPRE
Faculdade de Economia do Porto
Universidade do Porto
Rua Dr. Roberto Frias, 4200-464 Porto
aserra@fep.up.pt

ABSTRACT

This paper looks at the cross-section of stock returns for the particular case of emerging markets. For each of 21 emerging markets I investigate the role of a set of a priori specified factors in the cross-section of returns, and subsequently assess whether the important factors are common. I use data on emerging markets' individual stocks from the Emerging Markets Data Base (IFC). My results indicate that the most important pricing factors are common to the emerging markets in my sample, and that these important factors are similar to those identified for mature markets. Among the top six factors are technical factors and price level attributes. The payoffs to these factors are not correlated suggesting that even if investors across markets elect similar factors to price assets, premia are local.

Keywords: International Asset Pricing; Emerging Markets
JEL classification: G15 International Financial Markets

RESUMO

Este trabalho investiga os determinantes dos retornos das acções de mercados emergentes. Para cada um dos 21 mercados da amostra, avalia-se o papel de um conjunto de factores definidos a priori e comparam-se os factores mais importantes. A análise é feita ao nível das acções individuais com dados da *Emerging Markets Data Base* (IFC). Os resultados indicam que os factores mais determinantes dos retornos das acções são comuns aos mercados emergentes analisados e similares aos identificados por estudos sobre mercados desenvolvidos. Entre os 6 factores mais importantes, aparecem factores relacionados com as cotações passadas e rácios de mercado. Os prémios associados a estes factores não se encontram, porém, correlacionados. Esta evidência sugere assim que, ainda que os investidores dos vários mercados elejam os mesmos factores para avaliar as acções, o preço a que remuneram esses factores é estabelecido localmente.

Palavras-Chave: Finanças Internacionais, Mercados Emergentes

* CEMPRE - Centro de Estudos Macroeconómicos e Previsão - is supported by the Fundação para a Ciência e a Tecnologia, Portugal, through the Programa Operacional Ciência, Tecnologia e Inovação (POCTI) of the Quadro Comunitário de Apoio III, which is financed by FEDER and Portuguese funds.

1. INTRODUCTION

1.1 Factors in stock returns

Understanding the factors that drive stock returns has long challenged both academics and professional portfolio managers.[1,2] There is still a lot of debate of what are the factors that influence the movement of a company's share price. There is ongoing research assessing whether stock returns are generated by risk (e.g. market betas, APT factors, liquidity factors) and/or non-risk characteristics (e.g. reversal or momentum) and whether the pricing factors are global or local.[3] Recent research has looked at the relative importance of country vs. industry factors[4]. The evidence seems to support that country affiliation dominates (global) industry affiliation but it is unclear to what extend the debate is on the importance of country vs. industry factors per se or, more broadly, on the importance of local (country specific) factors relative to global factors. Another related issue is to understand what these country specific influences stand for, if they proxy local characteristic factors, local industry factors or local macroeconomic factors.

1.2 Commonality in factors across countries

To estimate a factor model of security returns across countries requires two things: first, the pricing factors have to be the same regardless of the countries that firms belong to. Second, the payoffs to these factors have to be global.

It is important to stress that local pricing does not invalidate commonality in factors across markets. Finding or not common factors in returns could mirror similarities in the

Acknowledgements: I thank IFC for providing data. I also thank seminar participants at Faculdade de Economia da Universidade Nova de Lisboa (INOVA 2001) and discussants at the 2001 Conference of EFMA in Lugano and the 2001 FMA Annual Meeting in Toronto for useful comments and suggestions. All remaining errors are my responsibility.

1 For example, Chen, Roll and Ross (1986) have investigated the systematic variables that influence asset pricing in the US.

2 This issue has important implications for professional asset managers in structuring their portfolios and identifying investment opportunities. The acceptance and widely use of BARRA equity multiple factor among institutional investors is a good example of that importance. See, for example, the works of Grinold, Ruff and Stefek (1989) or Divecha, Drach and Stefek (1992) for a practitioner approach to factor pricing.

3 See for example, Brennan, Chordia and Subrahmanyan (JFE, 1998). The authors analyse the relation between stock returns and measures of risk (book-to-market, firm size, dividend yield) and several non-risk characteristics (lagged returns). They show that return momentum, size, book to market effects and liquidity explain the cross-section of US monthly returns for the period from January 1966 to December 1995 (average of 2457 CRSP/COMPUSTAT stocks) even after controlling for the Connor and Korajczyk (1988) statistical factors.

4 See, for example, Heston and Rouwenhorst (1994), Griffin and Karolyi (1998) or Serra (2000).

underlying economies. Important factors may be related to global shocks (for example, change in oil prices) or have a domestic character, even if stock returns respond to the same factors (for example, change in *local* interest rates). Thus even if the underlying economics are similar and synchronous, and therefore there is commonality in important factors, the payoffs to these factors may not be the same because the price to these factors is established in separate worlds[5]. Recent research has shown that the liberalisation of capital markets with the increasing influence of international investors leads to common priced factors and common risk premiums (Bekaert and Harvey, 1998).

Previous studies establish that across the major developed markets there seems to be commonality in important factors. Haugen and Baker (1996), for example, test the importance of a multitude of factors in explaining security returns within a country. They show that expected return factor models are surprisingly accurate in forecasting future returns to stocks in the major countries in the world (US, UK, Japan, Germany and France). On average, they find very important degree of commonality in the important factors. Earlier studies have found significance for macroeconomic and APT factors identified by factor analysis[6]. Recent evidence is mixed regarding the power of these fundamental factors. None of the three to four world-wide common factors identified by Haugen and Baker (1996) is related to sensitivities to macroeconomic or other risk-related variables. Yet Fama and French (1998) investigates the *Value vs. Growth* relation around the world for the period 1975-1995 and finds that the difference between average returns of value and growth portfolios is positive and significant for 12 out of 13 major markets.[7]

The evidence regarding the importance of local vs. global factors and the equality of premia across markets is mixed. For example, Cho *et al*. (1986) found that international factors are significant in explaining the cross-section of average returns. Heston, Rouwenhorst and Wessels (1995) also investigate the structure of international stock returns. Using data on 6000 firms in the US and 12 European countries, they find that

[5] Partial market integration occurs when investors have an incomplete access to other markets (or to securities that could replicate those markets). For a more formal definition, see, for example, Bekaert and Harvey (1995) and Carrieri, Errunza and Hogan (2001).

[6] Cho, Eun and Senbet (1986) and Bodurtha, Cho and Senbet (1989) extend Chen *et al.* (1986) research to an international setting.

countries share multiple risk factors. Most of the indices are correctly priced by factors estimated by the full sample of firms and rewards are identical across countries. Still, they document large country specific sources in return variation. In contrast, Haugen and Baker (1996) find that, while there is a very important degree of commonality in the important factors, the monthly payoffs to important factors are not highly correlated. Griffin (2002) examines the time-series variation in international stock returns and also finds that the Fama and French domestic three factor model produces better results than the corresponding world factor model.

1.3 Factors in Emerging Markets

Do factors affect similarly emerging markets and developed markets returns? It could be argued that emerging markets are inherently different (as they are in different stages of maturity for both their capital markets and economies) and liberalisation may have changed the importance of the various types of information (global vs. local) over time[8]. Contrary to what happens with the mature markets, the literature about the factors that drive the structure of returns in emerging markets is recent. Most of the work on emerging markets has investigated country-level data. A few recent papers investigate individual stock data.[9] Most of the evidence is consistent to Fama and French (1998) and Rouwenhorst (1999). They show that the factors that drive cross-sectional differences in expected stock returns in emerging markets are qualitatively similar to those that have been found in developed markets: size, book-to-market, earnings-price and momentum. Results suggest, however, different factor pricing across markets.

The examination of new and out of sample evidence may enlighten the debate on the important determinants in cross-section pricing. Moreover, the analysis can provide indirect evidence on international capital market integration. My hypothesis is that emerging markets should show less commonality in pricing in result of lower integration of their capital markets. In this paper, I investigate the factors that explain

---

[7] Fama and French claim that size and book-to-market are related to economic fundamentals.

[8] Earlier studies on the predictability of returns revealed that emerging markets returns are more likely than developed markets to be influenced by local information (Harvey, 1995).

[9] Papers that analyse the cross-section of returns in emerging stock markets are Claessens, Dasgupta and Glen (1998), Fama and French (1998), Patel (1999), Rouwenhorst (1999) and Barry, Goldreyer,

stock returns in emerging markets and explore if the important factors are common and similar to those found for mature markets. I examine the role of an extended set of a priori specified risk and non-risk factors for 21 emerging markets and assess whether the important factors are common across markets.[10] I then compare these elected factors with the previous evidence for mature markets.

The remainder of the paper is structured as follows. Section 2 describes the data. Section 3 presents the empirical model and discusses factor selection. In section 4 I run the cross-sectional regressions, rank the most important factors and discuss the results. To preview, I find that the most important pricing factors are common to the emerging markets in my sample and that these important factors are similar to those identified for mature markets. Among the top six factors are technical factors and price level attributes. The payoffs to these factors are not correlated suggesting that even if investors across markets elect similar factors to price assets, factors are priced differently. Section 5 concludes and suggests possible avenues for future research.

2. DATA

2.1 Sources

The main source of my data is the Emerging Markets Data Base (EMDB)[11]. I use the individual stock series on a weekly basis, from the beginning of 1990 to the end of 1996.

I use weekly data because of sample size and data availability[12]. I use Friday to Friday total continuous (log) returns. I have computed adjusted prices applying the capital adjustment factor - given in the data set - to current prices. I have cross-checked the adjustment factor with the information given for capital changes. In case of misfit, I

Lockwood, and Rodriguez (2002). Please refer to the appendix for sample data and factor selection in these papers.

10 Most of the papers that investigate individual emerging market stock data examine only a few attributes. Achour, Harvey, Hopkins and Lang (1998) investigate a wider range of attributes (book-to-market; cash flow-price; earnings-price; earnings growth; revenue growth; debt/equity ratios; return on equity; market capitalisation; prospective earnings-price measured over different horizons; IBES revisions and momentum) for three emerging markets (Malaysia, Mexico and South Africa).

11 The IFC database (now Standard & Poors') is widely recognised as being the most complete and high quality emerging market database.

12 There could be problems with weekly return data caused by infrequent trading of the component stocks.

have re-computed the adjustment ratio. I follow the IFC methodology to compute total returns for individual stocks.[13] Dividends are reinvested to purchase additional units of equity at the closing price applied on the ex-dividend date. I use gross dividends and thus ignore taxes or re-investment charges.

Exchange rates are defined as the number of units per US dollar and are also given in EMDB.

To compute risk exposures, I use home-made value-weighted indices measured in US dollars for emerging markets. These are almost perfectly correlated with the IFC indices but by using home-made value-weighted indices I avoid comparing log returns with the log averages of discrete returns. In addition I use the world market index from FT/S&P - Actuaries' that is also a value-weighted index.

The ratios book-to-market, earnings to price and dividend yield are all from EMDB. In particular, EMDB reports the price-to-book value and the price-to-earnings ratios. These are computed as the closing price divided, respectively, by the last reported net worth and twelve-month earnings per share. Dividend yield series are, as most recently available, dividend yields brought forward for one year.

Data on interest rates (commercial lending prime rate), the consumer price index, the industrial production index and changes in exports (in US dollars), for each of the home markets, are IMF series (International Financial Statistics database). These series are available on a monthly basis and were obtained from Datastream.[14]

Firms are assigned to one of the SIC broad industry categories (one digit) as in the IFC database.

2.2 Sample Description

The data used in this study are the stock constituents of the IFC Global Indices. I have excluded firms that had missing or meaningless data for prices. I have also excluded those firms originating from emerging markets whose coverage started after 1993. Finally, I have excluded all firms that seemed to have a serious thin trading problem: I

[13] See "The IFC Indices - Methodology, Definitions and Practices" (1996) for details on the computation.

[14] Conversion to weekly data assumed a step function for interest rates and spline approximations to generate the other three series (consumer price changes, industrial production changes and change in exports).

have removed all the firms that did not show any price changes (zero returns) for ten consecutive weeks or more.

The sample period consists of 364 weeks and includes the eight months of the Kuwait invasion (starting August 2, 1990) and the Mexican crisis in December 1993.[15] Firms in my sample can have a partial or complete return history because I did not establish a minimum number of weeks for a firm to be included.[16]

The cross-sectional regressions include stocks for 21 emerging markets. I have established a minimum of fifteen stocks in the cross-section. When there are lagged variables among the explanatory variables, the cross-section of returns is analysed over shorter time periods (less than 364 weeks).

2.3 Simple Statistics

For each market I computed time-series averages of the individual stock returns (measured in US $). For the 17 markets, for which there is coverage over the entire sample period, the analysis shows the following results:

- average standard deviations are high: in annualised terms, the average is 48%, ranging from 29% for Portugal to 77% for Brazil.
- average sample estimates of skewness for weekly emerging markets' stock returns tend to be positive but close to zero, ranging from -0.5, for Mexican stocks, to 0.6 in Chile.[17]
- weekly individual stock returns have positive sample excess kurtosis, ranging from 1.7 for Korean stocks to 12.8 in Venezuela.

In sum, individual stock returns show weak evidence of skewness and strong evidence of excess kurtosis. The average *p*-value for normality is above the 10% level of significance in around half the 17 markets.

---

[15] I have checked the influence of these observations by repeating the analysis on the series excluding the "crises" observations. My results are robust to this procedure.

[16] Please recall that EMDB coverage includes, from 1990, individual stocks' weekly data for Argentina, Brazil, Chile, Colombia, Greece, India, Indonesia, Jordan, Korea, Malaysia, Mexico, Philippines, Portugal, Taiwan, Thailand, Turkey, Venezuela. Later Pakistan (from 1992), China, Hungary, Nigeria, Peru, Poland, Sri Lanka, South Africa and Zimbabwe (from 1993) were added. More recently Egypt, Morocco, Russia, Czech Republic, amongst others, were also added. The aggregate data are approximately available for the same periods.

[17] Campbell, Lo and Mackinlay (1996) provide evidence for the universe of US stocks over the period 1962-1994: skewness is in the range -0.2 to 2.3 and kurtosis ranges from 3.4 to 59.4.

3. ANALYTICAL FRAMEWORK

3.1 Empirical Specification

I look at the role of a set of factors at explaining the within-market variation in stock returns and then compare the results across emerging markets and with the previous evidence for the major markets in the world.

For each market, I test for the explanatory power of a number of a priori appealing factors. For a given week, I specify the following factor model:

$$R_{i,t} = \sum_{j=1}^{J} P_{j,t} F_{i,j} + u_{it} \qquad (1)$$

where $R_{i,t}$ is the return of firm i in week t. $P_{j,t}$ is a the payoff to factor j in week t, $F_{i,j}$ is the exposure of firm i to factor j and $u_{i,t}$ is security i's unexplained component in week t. J is the number of factors included in the return generating model. Examples of $F_{i,j}$ are factor loadings such as local beta and currency beta, and characteristics such as size, yield or industry assignments.

I estimate weekly cross-sectional coefficients and obtain a time series of estimates for the sample period. I repeat the analysis separately for each market.[18] The factors are then ranked, based on the absolute value of the t statistics of their time series mean (as in Fama-MacBeth, 1973).[19] The commonality is assessed by comparing the ranking and sign consistency of the most important factors across markets. This ranking reveals if the same factors affect the returns across emerging markets. Moreover, I investigate whether the payoffs are highly correlated across markets. Finally, I compare the elected factors for emerging markets with the ones that have ranked first in previous studies for mature markets.

There are two basic approaches to conduct this empirical research: regression and sorting. The approach used here, regression, imposes a rigid structure of data in that every stock has an equal response to a given change in the attributes within a country. Yet it is common that the coefficients are unstable and often flip signs. Further, in many

[18] In the context of emerging markets, where changing integration of capital markets impacts the relative importance of the different pricing factors, conditional estimation would be the correct procedure. Unconditional estimation was dictated by sample data constraints.

[19] My procedure is valid only if the estimates for each period are independent samples of the estimated parameters and the linear factor model is well-specified. If measurement errors in betas are large or the model is misspecified, the Fama-MacBeth (1973) t-values can overstate the precision of the estimates.

markets, the data is insufficient for reliable estimation of the unrestricted multi-factor cross-sectional regression models. Another problem of the standard application of the Fama-MacBeth (1973) procedure is that the factor loadings come as independent variables in estimating the cross-section regression for each week. These variables have to be estimated in the first step and thus are measured with error. The standard errors are understated because they include the additional error induced by the estimation in the factor loadings.[20]

The alternative approach, the portfolio-based approach, consists of sorting securities at the end of each period, according to one attribute, based on their ranks (the value of the attribute). There can be univariate or multivariate sorts. Depending on the number of securities in the market, three or five portfolios (fractiles) are formed. These portfolios are held one period (holding period) and then re-balanced. Usually, the analysis then focuses on the differences between the top and bottom portfolios (top to bottom spread returns). The main motivation of this alternative approach, has been to avoid the two-step estimation and mitigate the EIV (Error-in-Variables) problem with estimating factor loadings. Yet Maddala (1998) shows that grouping does not solve the EIV bias. In addition, portfolio-based approaches cause other problems: first, the portfolio process conceals possibly return relevant security characteristics within portfolio averages; second, it may make it difficult to reject the null of no effect on security returns; third, "data-snooping" bias - using the same criteria in portfolio formation as prior research - may lead you too reject to often.[21]

3.2 Factor Selection

Most of the factors that I use have been identified in earlier empirical studies on developed stock returns. The application of the same factors in emerging markets provides a unique opportunity for an out-of-sample test. I follow closely Haugen and Baker (1996) to choose the factors to include in the analysis. The final set of factors was reduced given the data constraints. Most of the factors are risk related but I also include attributes (price level), liquidity and price history factors.

Moreover, when linear beta pricing model is misspecified, the cross-sectional estimates are not consistent even for the correctly specified factors (see Jagannathan and Wang, 1998).

[20] Brennan *et al.* (1998) correct for this bias but find that the magnitude of the understatement is small.

[21] Brennan *et al.* (1998) point out some of the pitfalls in using portfolio-based approaches. See the references therein.

Risk factors

Risk factors are dictated by theoretical models of asset pricing (Capital Asset Pricing Model, Arbitrage Pricing Model in their local or international versions). If markets are liquid and efficient, differences in expected returns should result from differences in risk. Further, there is substantial evidence on the power of risk measures in explaining the cross-section of returns, not only in the US but also in other developed and emerging markets. I examine the following risk factors: local and world market betas; currency betas; macroeconomic betas; and volatility (total risk and idiosyncratic risk).[22]

I expect the payoffs to these factors to be positive: higher risk stocks require higher returns.

Firm characteristics or factors indicating over-reaction

Several recent studies have shown that fundamental valuation ratios have a very important role in explaining returns[23]. Yet there is much controversy on what they account for: some authors claim these ratios are a proxy for distress, some say that they indicate whether a stock is selling cheap or dear. I examine the following ratios: earnings to price; book value to price and dividend yield.[24] In appendix I show the time-series averages of these attributes and size for the median stock in each emerging market.

Regardless of whether the payoffs to these attributes compensate risk or overreaction, the coefficients on these attributes should be positive. High yield, value companies should observe higher returns.

[22] I investigate the role of univariate and multivariate betas. Jagannathan and Wang (1998) motivate this procedure showing that when the true beta specification is unknown, investigating only the role of multivariate betas can be misleading.

[23] Daniel, Titman and Wei (2001) provide evidence that security characteristics may have a different influence on returns than Fama and French book to market and size factors. This "characteristic model" (Daniel and Titman, 1997), where returns are related directly to book to market ratios instead of the Fama and French loadings, seems to produce better results than the risk factors model for Japan stocks.

[24] Barry et al. (2002) express stock attributes relative to each firm's local market average. In their analysis, they analyse the cross-section of returns pooling stocks from all emerging markets.

Liquidity factors

Differences in liquidity can also drive the cross-sectional differences in returns. Investors require a super risk premium to hold illiquid securities, to compensate for higher bid-ask spreads. I use two measures for liquidity: market capitalisation and price per share.[25]

Again it is controversial to say that market capitalisation is only picking up liquidity[26]. Size could be a proxy for risk. Anyway, liquid stocks should have lower expected returns. Therefore, I expect the coefficients on these factors to be negative.

Technical factors

Efficient markets preclude any significant relation between the price history of a stock and its future expected return. Yet several papers have found significant relations between past and future returns. There is mixed evidence on the profitability of strategies that bet on short term reversals and only a few studies have looked at long term reversals, but there is growing evidence on the importance of momentum in predicting returns in the US and in other developed and emerging markets. I examine lagged (raw and excess) weekly returns for several lags (1 to 12, 26 weeks) and also lagged buy and hold returns of 8, 12, 26 and 52 weeks. All lagged return variables exclude the return of the prior week in order to account for the bid-ask bounce and to avoid spurious association between the prior week return and the current week return caused by thin trading.

I expect that the payoffs for the lagged returns up to 12 weeks to be negative; for lagged returns of 26 weeks, positive; and negative again for the 52 weeks.[27]

Appendix B includes detailed information about the factors used in the regressions.

---

25 There are other factors that are more closely associated to liquidity. These are, for example, trading volume, value of trade or bid-ask spreads. EDMB does not provide the trading information on a weekly basis and has no information on quotes.

26 The size effect is widely regarded as a proxy for trading liquidity but it captures many other effects. For example, smaller socks are regarded as low quality stocks due to a greater variability in earnings and greater exposure to local factors.

27 It is very difficult to establish when the short term ends and the same goes for the medium and long term.

4. EMPIRICAL RESULTS

4.1 Procedures

Multicollinearity seems to be a problem when using more than one buy and hold excess return variables in the cross-sectional regressions because of overlapping observations. To overcome this problem, I had to drop some variables. In particular I kept together horizon 8 weeks and 26 weeks, 8 and 52 and 12 and 52. I also investigate the role of a set of lagged returns as suggested by Jegadeesh (1993).[28] This procedure overcomes multicollinearity and gives a picture of predictability for different lags; yet it does not capture momentum or long term reversal trends.

Extreme observations are common in the returns of individual stocks in emerging markets. To avoid that those observations impact the regression results, I looked at the results after trimming the explanatory variables. I dropped the observations in the tail of the distribution by excluding those stocks whose values were more than three deviations away from the median (for any explanatory variable in the case of multiple regressions) and, in alternative, I excluded the observations below percentile 5 and above percentile 95.

The cross-sectional estimates are obtained using the Generalised Method of Moments (GMM). GMM allows for correlated disturbances and heterokesdasticity. If the disturbances are uncorrelated and using the independent variables as the instruments, GMM estimates will be OLS but the asymptotic covariance matrix will be the White estimator.

I use the time-series standard deviations of the slopes in the week-by-week cross-sectional regressions to construct standard errors for the average slopes as suggested by Fama-MacBeth (1973). The significance of each factor is then assessed on the basis of the resulting *t*-statistic[29]. To test the null hypothesis of the joint significance of the payoffs to all factors across the entire period, I run a multivariate test of the time series means of the non-intercept estimated parameters. This multivariate statistic has an approximate *F* distribution.

---

[28] Jegadeesh (1993) suggests investigating the serial correlation properties of individual stock returns using a cross-sectional regression model instead of the traditional approaches of time series regression tests or variance ratios. As long as the true parameters are similar across stocks, this procedure has the advantage to account for the cross-sectional dependence of the individual estimates.

I use three measures of fit: R^2, adjusted R^2 and the explanatory power statistic.[30]

The assessment of the most important factors could have been based on several criteria. The ranking was based on the absolute value of the *t* statistics for the multifactor regression.

4.2 Market by Market Cross-Sectional Regressions

I have looked at different specifications to ensure my results were robust. Here below I concentrate on two of them. In the first specification (*BASE*), I regress the individual stock returns on four risk exposures (exposures to the local market, to the world market and to currency risk, and volatility), three attributes (earnings-price, book-to-market and dividend yield), two liquidity factors (market value and price per share) and two price history factors (12 and 52 weeks holding period lagged returns).[31] The second specification (*TIME-TREND*) includes the same set of Risk, Liquidity and Price History factors but uses, instead of point attributes, trailing (52 to 104 weeks) averages for earnings-price and book-to-market. This procedure takes account for reporting lags that could lead to asynchronicity between book-values and price information. Furthermore, it smoothes the regressors and overcomes the influence of outliers in the regressors that are common in emerging markets. Finally, these trailing measures could also capture some earnings momentum or profitability track.

The payoffs associated with the various factors are obtained separately for each individual market. The dimension of the cross-section varies from market to market and, for each market, from week to week, with the necessary consequences on the precision of the estimates of the payoffs. The smallest cross-section occurs for Argentina with 15 stocks; the largest cross-section occurs for Korea with 135 stocks.
We reject the null that all the mean payoffs are zero for all the 21 markets.

For the two specifications here analysed, the final set of elected factors is not very different but there are differences in the way some factors are constructed and on the signs of the estimates obtained. Table 1 compares the individual markets rankings.

---

29 Since I do not adjust the standard errors by the sample autocorrelation of the weekly slopes, one has to be conservative when reading the *t*-statistics.

30 The Explanatory Power statistic is obtained as one minus the ratio of the sum of errors for all the weekly cross-sectional regressions divided by the sum of total returns variation, again for all the weekly regressions.

31 For this base specification betas are multivariate betas and I have done no trimming.

Tables in appendix A show, for each market, the multifactor regression mean estimates and associated *t*-statistics. The mean estimates and associated *t*-values for each individual market show that there is an important degree of commonalty over the 21 markets. Book-to-market, earnings-price, 12 lagged holding period returns and dividend yield, per share are among the top six factors in, respectively, 18, 17, 16 and 15 out of the 21 markets. For the second specification, size, price, book-to-market and 12 lagged holding period returns are among the top six factors in, respectively, 17, 16, 15 and 15 out of the 21 markets. Surprisingly, in many markets, the coefficients on book-to-market and earnings-price are negative and the coefficients on size and price are positive.

4.3 Commonality

I concentrate now on the commonality of factors across the 21 emerging markets. To find the top 6 factors in the universe of emerging markets, I have averaged the absolute *t*-values across the 21 markets and I define the ranking based on that average.

Table 2 and 3 summarise the results. The tables show the mean estimates and *t*-statistics for the 6 most important factors across the 21 emerging markets for the two specifications here analysed.

Table 2 shows the results for the base specification. I find evidence of short-term reversal in returns. I also find that the payoffs to "Attributes" and "Liquidity" factors are among the top 6 important factors. Yet, except for the "Dividend Yield", the signs of the estimates of these factors are against my expectations and in contrast with the evidence found in mature markets. I find that high book-to-market stocks showed lower average returns than low book-to-market stocks; high earnings-price stocks also showed lower average returns than low earnings-price stocks; and large stocks paid on average higher returns than small stocks. The sign of the estimates is "wrong" in more than 17 emerging markets out of the 21, and over half of these are significant.

Table 3 shows the results for the time-trend specification. The factors elected are essentially the same but now the average estimates for the "Attributes" factors are different. The estimates for the earnings-to-price factor are now positive in 10 out of the 21 emerging markets, but only a few of these are significant. The estimates for the book-to-market factor are now positive in 17 out of the 21 emerging markets, and 10 of

these are significant at a 5% level. As before there is evidence supporting short-term mean-reversion. Liquidity factors remain also among the top 6 but the coefficients on these variables remain positive against my priors. The positive sign for these coefficients could be explained by the fact that, when first tapping these markets, foreign investors concentrate their investments in large, well-known, more liquid stocks.

It is notorious that local and world betas are seldom significant.

My results are robust to:[32]

- univariate or multivariate betas;
- different holding period lagged returns and raw or unexpected returns;
- trailing time trends using all time-series information;
- different trimming procedures;
- two sub-periods, before and after the Mexican crisis of December 1994;
- two main regions, Latin America and Asia.

Finally I have computed the mean payoffs and associated *t*-values, aggregating the estimates using precision weights, as suggested by Litzenberger and Ramaswamy (1979); The market-by-market and overall rankings of these time-series precision weighted average *t*-values yields the same top 6 factors found above.

4.4 Correlation in Payoffs

To find out if the common factors identified in the previous section were priced similarly across markets, I have looked at the cross-country correlation between the estimated payoffs, over the period 1990 to 1996.

Table 4 summarises the results. The values for the correlation of the payoffs for any of the 6 most important factors elected for the universe of emerging markets are very close to zero. This result occurs for all specifications. I have looked at the correlation of payoffs at a regional level but the average correlation is still close to zero. This low correlation suggests that pricing is local and provides indirect evidence against integration of capital markets.

[32] For space constraints, I do not report here the estimates of the alternative specifications. Results are available upon request.

4.5 Discussion

Haugen and Baker (1996) study 5 mature markets and find an even stronger degree of commonality among the most important factors in explaining the cross-section of stock returns. The average absolute *t*-values across the 5 markets they study elect primarily technical factors (1, 3 and 12 month excess returns) and attributes (book-to-market, earnings-to-price and cash flow-to-price). Claessens *et al.* (1995), Fama and French (1998) and Rouwenhorst (1998) look at the cross-section of returns in emerging markets. The first study uses the Fama-MacBeth (1973) estimation technique while the last two analyse, instead, the differences in returns for portfolios based on book-to-market, earnings-price, size and momentum. Claessens *et al.* (1995, 1998) present contradictory findings relative to the published evidence for developed markets: size, price-book value and dividend yield all have explanatory power but, in many cases, they get "wrong" signs for the payoffs of these attributes. The other studies get the "right" signs but, with the exception of Barry *et al. (*2002), their evidence is statistically weak.[33] Fama and French (1998) suggest that the "wrong" coefficients could result from influential observations. When the analysis is repeated using different trimming procedures, the signs of the estimates remain unchanged. Yet when I smooth the attributes using time trends, the signs of the coefficients on the book-to-market variable become positive confirming the relation observed in mature markets.

On what regards the second set of results, addressing the cross-market correlation in payoffs, my results are consistent with both Haugen and Baker (1996) and Rouwenhorst (1998) that also report very low correlation among any of the payoffs to the most important factors.

An important feature of this empirical research on asset pricing is that analysed returns are average returns. We observe that ex-post returns are explained by a particular set of variables. For example, if there was overreaction or underreaction, we are likely to

[33] For example, Fama and French (1998) find that in 12 out of 16 markets, high book-to-market stocks outperform low book-to-market stocks; high earnings-price outperform low earnings-price in 10 out of 16 markets and small stocks outperform large stocks in 11 out of 16 markets. Yet only a few of these differences are statistically significant. Rouwenhorst (1998) finds similar evidence for those factors and, in addition, he finds that winners outperform losers in 17 out of 20 markets. Yet, again, only a few markets show statistically differences in returns between winners and losers. Barry et al. (2002) looking at a longer period and larger cross-section - 2000 stocks in 30 emerging markets - find a strong global book-to-market effect but a weak size effect.

observe that actual returns are related to past returns showing reversion. Yet to establish returns in the future, that information is useless, in the sense that such a factor has no role to play in a model of expected returns. In the section above, some of the most important factors identified in the cross-sectional regressions may in fact be idiosyncratic and, therefore, it may make very little sense to assess if the respective estimated coefficients co-move over time across markets.

4.6 Summary of Main Findings

My main findings may be summarised as follows:

i. Technical factors, attributes and liquidity factors are the most important factors in the cross-section of returns.

ii. While in my base specification attributes show negative payoffs contrasting with the results found in mature markets, when I use trailing time trends instead of raw attributes as explanatory variables, I find more "reasonable" mean estimates.

iii. The average payoffs to liquidity factors are surprisingly positive contrasting with the evidence from mature markets. The size effect is thus not supported by the data.

iv. There is an important commonality in factors across emerging markets. Yet the cross-market correlation of the payoffs to these factors is close to zero.

v. My results show some similarities with the findings for mature markets. Technical factors and attributes are among the 6 most important factors both for emerging and mature markets. The cross-market correlation of the payoffs to important factors is low, confirming the evidence for mature markets.

5. CONCLUSIONS

In this paper, I have investigated the determinants of returns in emerging markets. My results suggest that the most important factors are common to emerging markets and these important factors are similar to those identified in previous studies for mature markets. Among the top 6 factors are technical factors, attributes (price level factors) and liquidity factors. The payoffs to these factors are, however, uncorrelated even at a regional level. This result could suggest that, even if investors across markets elect similar factors to price assets, the payoffs to these factors are priced locally. This last

result is consistent with partial market integration and this implication is valid even if pricing factors are common.

Further work should extend the cross-section analysis to a longer period (and use monthly data) to improve the quality of the estimates and establish if the results that I get for this decade are valid out-of-sample. It would be interesting to investigate what has changed in the relative importance of local vs. global pricing factors, in particular how that has been affected by stock market openings and by the effective removal of formal and informal barriers. Further work should also use different criteria to define "important factors" (for example, the R^2s from simple regressions).

REFERENCES

Achour, D., C. Harvey, G. Hopkins, and C. Lang (1998), Stock selection in emerging markets: portfolio strategies for Malaysia, Mexico and South Africa, *Emerging Markets Quarterly*, 2, Winter, pp. 38-91.

Barry, C.B., E. Goldreyer, L. Lockwood, and M. Rodriguez (2002), Robustness of size and value effects in emerging equity markets, 1985-2000, *Emerging Markets Review*, 3, March, pp. 1-30.

Bekaert, G., C. Erb, C. Harvey and T. Viskanta (1997), The cross-sectional determinants of emerging equity market returns, *in Peter Carman (ed.) Quantitative Investing for the Global Markets - Strategies, Tactics and Advanced Analytical Techniques*, *Chapter 9*, Fitzroy Fearborn Publishers, pp. 221-272.

Bekaert, G. and C. Harvey (1995), Time-varying world market integration, *Journal of Finance*, 50, June, pp. 403-444.

Bekaert, G. and C. Harvey (2000), Foreign speculators and emerging equity markets, *Journal of Finance*, 55, April, pp. 565-613.

Bodurtha, J., D. Cho and L. Senbet (1989), Economic forces and the stock market: an international perspective, *The Global Finance Journal*, 1, pp. 21-46.

Brennan, M., T. Chordia and A. Subrahmanyan (1998), Alternative factor specification, security characteristics and the cross-section of stock returns, *Journal of Financial Economics,* 49, September, pp. 345-373.

Campbell, J., A. Lo and A. Mackinlay (1996), *The Econometrics of Financial Markets*, Princeton.

Chen, N., R. Roll and S. Ross (1986), Economic forces and the stock market, *Journal of Business*, 59, pp. 383-403.

Cho, D.C., C. Eun, and L. Senbet (1986), International arbitrage pricing theory: an empirical investigation", *Journal of Finance*, 41, June, pp. 313-329.

Claessens, S., S. Dasgupta and J. Glen (1995), Stock price behavior in emerging markets, *World Bank Discussion Papers*, 228, December, pp. 323-352.

Claessens, S., S. Dasgupta and J. Glen (1998), The cross-section of stock returns: evidence from the emerging markets, *Emerging Markets Quarterly*, 2, Winter, pp. 4-13.

Daniel, K., and S. Titman (1997), Evidence on the characteristics of cross-sectional variation in stock returns, *Journal of Finance*, 52, February, pp. 1-33.

Daniel, K., S. Titman and K. Wei (2001), Explaining the cross-section of stock returns in Japan: factors or characteristics?, *Journal of Finance*, 56, pp. April, pp. 743-766.

Divecha, A, J. Drach and D. Stefek (1992), Emerging markets: a quantitative perspective, *Journal of Portfolio Management*, Fall, pp. 41-50.

Carrieri, F., V. Errunza and K. Hogan (2001), Characterising world market integration through time, *McGill University WP*.

Fama, E. and K. French (1998), Value versus growth: the international evidence, *Journal of Finance*, 53, December, pp. 1975-1999.

Fama, E., and J. MacBeth (1973), Risk, return and equilibrium: empirical tests, *Journal of Political Economy*, 81, pp. 607-636.

Griffin, J., (2002), Are the Fama and French factors global or country specific?, *The Review of Financial Studies*, 15, pp. 783-803.

Griffin, J. and G. Karoly (1998), Another look at the role of the industrial structure of markets for international diversification strategies, *Journal of Financial Economics*, 50, December, pp. 351-373.

Grinold, R., A. Rudd, and D. Stefek (1989), Global factors: fact or fiction*, Journal of Portfolio Management*, Fall, pp. 79-88.

Harvey, C. (1995), Predictable Risk and Returns in Emerging Markets, *Review of Financial Studies*, 8, Fall, 773-816.

Harvey, C. (2000), Drivers of expected returns in international markets, *Emerging Markets Quarterly*, 4, Fall, pp. 1-17.

Haugen, R. and N. Baker (1996), Commonality in the determinants of expected stock returns, *Journal of Financial Economics*, 41, July, pp. 401-439.

Heston, S. and G. Rouwenhorst (1994), Does industrial structure explain the benefits of international diversification, *Journal of Financial Economics*, 36, August, pp. 3-27.

Heston, S., G. Rouwenhorst and R. Wessels (1995), The structure of international stock returns and the integration of capital markets, *Journal of Empirical Finance*, pp. 2.

Jagannathan, R. and Z. Wang (1998) An asymptotic theory for estimating beta-pricing models using cross-sectional regressions, *Journal of Finance*, 53, July, pp. 1285-1310.

Jegadeesh, N. (1993), Evidence of predictable behavior of security returns, *Journal of Finance*, 45, July, pp. 881-898.

Maddala, G. (1998), Econometric issues related to errors in variables *in* Steiner Strøm *(ed.) Financial Markets in Econometrics ands Economic Theory in the 20th century*, Cambridge University Press.

Patel, S. (1998), Cross-sectional variation in emerging markets equity returns: January 1988 to March 1997, *Emerging Markets Quarterly*, 2, Spring, pp. 57-70.

Rouwenhorst, K. (1999), Local return factors and turnover in emerging stock markets*, Journal of Finance*, 54, August, pp. 1439-1464.

Serra, A. (2000), Country and Industry Factors in Returns: Evidence from Emerging Markets' Stocks, Emerging Markets Review, 1, pp. 127-151.

TABLE 1- THE 6 MOST IMPORTANT FACTORS FOR EACH OF THE 21 EMERGING MARKETS (1990-1996)
This table shows the top 6 factors for each individual market. The ranking was based on the absolute value of the *t*-statistics for the multifactor regression. For each week, from 12 January 1990 to 27 December 1996, stock returns are regressed (using GMM) on "Risk" Factors, "Price-Level" ("Attributes") factors, "Liquidity" factors and "Price History" ("Technical") factors. Table A.4 provides detailed information on the statistics (the time series means and Fama-MacBeth, 1973 *t*-values) of the cross-sectional regressions. Please refer to appendix B for more information about the pricing factors.

- Base Specification -

Factor Elected	1rst	2nd	3rd	4th	5th	6th
Argentina	Lag12	BTM	Volatility	Size	Local Beta	DY
Brazil	Lag12	Size	BTM	DY	Lag52	Volatility
Chile	EP	Currency	DY	BTM	Lag12	Lag52
China	EP	DY	Lag52	Local Beta	Price	BTM
Colombia	Lag12	Size	Local Beta	World Beta	EP	BTM
Greece	Price	DY	EP	BTM	Currency	Volatility
India	Lag12	BTM	Volatility	Size	DY	EP
Indonesia	Price	DY	EP	Lag52	BTM	Local Beta
Jordan	EP	DY	BTM	Currency	Size	World Beta
Korea	Size	BTM	Price	Lag52	Lag12	DY
Malaysia	EP	Lag12	DY	Price	Lag52	(-)Earnings
Mexico	BTM	Price	Lag12	EP	Lag52	Currency
Pakistan	Lag12	Volatility	Size	BTM	EP	Local Beta
Peru	EP	DY	BTM	Lag12	World Beta	Currency
Philippines	Lag12	Price	World Beta	EP	BTM	Local Beta
Portugal	BTM	DY	Price	EP	World Beta	Local Beta
South Africa	Size	Lag12	EP	DY	Local Beta	Price
Sri Lanka	BTM	Size	DY	Price	Lag52	Lag12
Taiwan	BTM	EP	Lag52	Size	Lag12	World Beta
Thailand	EP	Size	DY	Price	Lag52	Lag12
Turkey	EP	Lag52	Size	Lag12	BTM	Price

TABLE 1 - THE 6 MOST IMPORTANT FACTORS FOR EACH OF THE 21 EMERGING MARKETS (1990-1996) (CONT.)

- Time Trend Specification -

Factor Elected	1rst	2nd	3rd	4th	5th	6th
Argentina	Size	Lag12	Volatility	Local Beta	BTM	World Beta
Brazil	Lag12	Size	EP	BTM	Local Beta	World Beta
Chile	Size	BTM	Currency	Lag52	Local Beta	Price
China	Price	BTM	Volatility	Lag12	World Beta	Lag52
Colombia	Lag12	Size	World Beta	EP	Lag52	Local Beta
Greece	Price	Currency	Lag12	DY	Lag52	World Beta
India	Lag12	Size	Price	Volatility	EP	BTM
Indonesia	Price	BTM	EP	Size	Local Beta	World Beta
Jordan	DY	Size	Currency	EP	Local Beta	World Beta
Korea	Size	Price	Lag12	Lag52	EP	Volatility
Malaysia	BTM	Lag12	Price	DY	Volatility	World Beta
Mexico	Price	Lag52	Lag12	Size	Local Beta	DY
Pakistan	Lag12	Price	Size	Volatility	BTM	Local Beta
Peru	BTM	Price	Currency	Local Beta	Lag52	Size
Philippines	Lag12	BTM	World Beta	EP	Size	Price
Portugal	Price	EP	World Beta	DY	Currency	Local Beta
South Africa	Lag12	Size	EP	Local Beta	Volatility	BTM
Sri Lanka	Size	EP	Price	Volatility	BTM	Lag52
Taiwan	BTM	Price	Size	Lag12	DY	Lag52
Thailand	Size	BTM	Price	Volatility	Lag12	DY
Turkey	Price	BTM	Size	Lag52	Lag12	Currency

TABLE 2- MEAN PAYOFFS AND *t*-STATISTICS FOR THE 6 MOST IMPORTANT FACTORS ACROSS 21 EMERGING MARKETS (1990-1996)

- Base Specification -

This table presents the mean payoffs and *t*-statistics of the six most important factors in explaining the cross-section of returns. The coefficients are obtained from cross-sectional weekly multifactor regressions for each individual market, averaged over the sample period. The elected factors result from ranking the absolute *t*-statistics across the 21 markets. Sign(+) and (-) denote the number of markets for which the mean average estimate was, respectively positive or negative. Signif (+) and (-) denote the number of markets for which the mean average positive or negative estimates were significant at a 5% level of confidence.

I. The 6 Most Important Factors across 21 Emerging Markets

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Lagged 12 Weeks Holding Period Returns	(-)	0	21	0	14
2	E/P	(+)	3	18	0	16
3	BTM	(+)	1	20	0	14
4	DY	(+)	19	2	14	0
5	Size	(-)	18	3	10	0
6	Price per Share	(-)	17	4	11	0

II. Mean Payoffs and *t*-Statistics for the 6 Most Important Factors

Factor	Arg	Bra	Chi	Chn	Col	Gre	Ind	Ido	Jor	Kor	Mal	Mex	Pak	Per	Phil	Por	SAf	Sri	Tai	Tha	Tur
Lag12	-0.025	-0.038	-0.010	-0.007	-0.048	-0.008	-0.003	-0.026	-0.002	-0.026	-0.018	-0.019	-0.029	-0.021	-0.027	-0.004	-0.023	-0.017	-0.007	-0.006	-0.017
	(-2.09)	(-8.00)	(-1.84)	(-1.07)	(-3.17)	(-1.09)	(-0.44)	(-6.19)	(-0.20)	(-3.09)	(-4.93)	(-3.30)	(-4.96)	(-1.92)	(-3.60)	(-0.55)	(-4.17)	(-2.09)	(-1.46)	(-1.20)	(-2.38)
E/P	0.065	-0.003	-0.061	-0.121	-0.035	-0.036	-0.069	-0.079	-0.043	0.006	-0.112	-0.045	-0.045	-0.152	-0.056	-0.028	-0.084	0.066	-0.075	-0.098	-0.159
	(0.19)	(-0.28)	(-2.69)	(-2.84)	(-0.80)	(-2.88)	(-2.99)	(-3.47)	(-2.64)	(0.35)	(-5.13)	(-2.73)	(-2.05)	(-4.68)	(-2.05)	(-2.19)	(-3.43)	(1.43)	(-3.21)	(-5.11)	(-4.52)
BTM	-0.013	-0.002	-0.004	-0.008	-0.001	-0.005	-0.004	-0.019	-0.005	-0.009	-0.001	-0.007	-0.008	-0.010	-0.004	-0.007	-0.002	-0.022	-0.021	0.001	-0.019
	(-2.08)	(-4.08)	(-1.94)	(-1.87)	(-0.51)	(-2.38)	(-1.74)	(-5.58)	(-1.47)	(-4.60)	(-0.45)	(-5.78)	(-2.70)	(-2.19)	(-0.88)	(-3.17)	(-1.19)	(-3.70)	(-4.00)	(0.73)	(-1.99)
DY	0.114	0.139	0.126	0.121	0.023	0.063	0.141	0.160	0.062	0.152	0.121	0.025	0.013	0.179	-0.119	0.095	0.173	0.175	0.048	0.128	-0.001
	(1.31)	(3.87)	(2.15)	(2.57)	(0.14)	(3.20)	(3.07)	(3.63)	(2.28)	(2.70)	(4.08)	(0.92)	(0.40)	(2.53)	(-0.83)	(2.90)	(2.28)	(3.35)	(1.23)	(4.08)	(-0.03)
Size	0.004	0.005	0.001	-0.001	0.007	0.000	0.000	0.003	0.001	0.003	-0.000	0.000	0.003	0.001	-0.001	0.000	0.004	0.005	0.002	0.003	0.003
	(1.60)	(6.04)	(1.55)	(-0.69)	(1.99)	(0.27)	(0.21)	(4.35)	(1.06)	(4.71)	(-0.22)	(0.77)	(3.05)	(1.18)	(-0.68)	(0.01)	(4.81)	(3.53)	(1.96)	(4.50)	(3.50)
Price per	0.000	-0.000	-0.000	0.006	0.001	0.004	0.005	0.001	0.000	0.010	0.004	0.002	0.002	0.000	0.002	0.003	-0.001	0.003	-0.002	0.002	0.004
Share	(0.73)	(-0.55)	(-0.58)	(2.09)	(0.44)	(4.41)	(3.85)	(1.43)	(0.37)	(4.47)	(3.94)	(3.78)	(1.42)	(0.18)	(2.87)	(2.20)	(-1.29)	(2.63)	(-1.22)	(2.77)	(1.97)

TABLE 2 - MEAN PAYOFFS AND *t*-STATISTICS FOR THE 6 MOST IMPORTANT FACTORS ACROSS 21 EMERGING MARKETS (1990-1996)
- Time Trend Specification -

This table presents the mean payoffs and *t*-statistics of the six most important factors in explaining the cross-section of returns. The coefficients are obtained from cross-sectional weekly multifactor regressions for each individual market, averaged over the sample period. The elected factors result from ranking the absolute *t*-statistics across the 21 markets. Sign(+) and (-) denote the number of markets for which the mean average estimate was, respectively positive or negative. Signif (+) and (-) denote the number of markets for which the mean average estimates positive or negative were significant at a 5% level of confidence.

I. The 6 Most Important Factors across 21 Emerging Markets

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Price per Share	(-)	19	2	15	0
2	Size	(-)	21	0	15	0
3	Lagged 12 Weeks Holding Period Returns	(-)	1	20	0	11
4	BTM-Trend	(+)	17	4	10	1
5	EP-Trend	(+)	10	11	3	3
6	Lagged 52 Weeks Holding Period Returns	(+/-)	13	8	2	4

II. Mean Payoffs and *t*-Statistics for the 6 Most Important Factors

Factor	Arg	Bra	Chi	Chn	Col	Gre	Ind	Ido	Jor	Kor	Mal	Mex	Pak	Per	Phil	Por	SAf	Sri	Tai	Tha	Tur
Price per	0.000	-0.000	-0.001	0.012	0.0006	0.004	0.009	0.002	0.000	0.010	0.005	0.003	0.005	0.003	0.001	0.004	0.000	0.004	0.006	0.003	0.014
Share	(0.39)	(-0.28)	(-1.27)	(4.63)	(0.26)	(3.66)	(7.54)	(3.84)	(0.01)	(4.29)	(5.13)	(4.41)	(3.73)	(2.20)	(1.93)	(3.09)	(0.18)	(3.52)	(4.62)	(4.63)	(6.43)
Size	0.005	0.006	0.002	0.000	0.008	0.000	0.002	0.004	0.001	0.003	0.000	0.001	0.003	0.001	0.002	0.000	0.004	0.007	0.001	0.004	0.003
	(3.59)	(6.89)	(3.20)	(0.22)	(2.04)	(0.61)	(2.58)	(5.35)	(1.13)	(4.84)	(0.00)	(2.26)	(3.14)	(1.44)	(2.04)	(0.77)	(4.10)	(5.28)	(2.00)	(5.64)	(3.25)
Lag12	-0.017	-0.038	-0.006	-0.011	-0.064	-0.009	-0.005	-0.023	0.002	-0.025	-0.021	-0.014	-0.031	-0.004	-0.032	-0.004	-0.025	-0.016	-0.008	-0.006	-0.010
	(-2.42)	(-8.67)	(-1.25)	(-1.78)	(-3.91)	(-1.25)	(-0.78)	(-5.76)	(0.18)	(-2.70)	(-5.35)	(-2.71)	(-5.39)	(-0.38)	(-4.16)	(-0.61)	(-4.63)	(-2.02)	(-1.61)	(-1.37)	(-1.49)
BTM-Trend	-0.002	0.001	0.004	0.0010	0.001	-0.000	0.007	0.004	0.001	0.001	0.011	0.001	0.004	0.010	0.012	0.001	-0.002	-0.015	0.016	0.011	0.034
	(-1.43)	(2.94)	(2.75)	(3.24)	(0.50)	(-0.15)	(3.16)	(1.54)	(0.33)	(0.73)	(5.85)	(0.44)	(1.68)	(2.37)	(3.22)	(0.57)	(-1.50)	(-2.63)	(5.52)	(5.57)	(3.76)
EP-Trend	0.030	-0.033	0.002	-0.040	0.056	-0.011	0.054	-0.033	-0.010	0.029	-0.019	0.009	0.004	-0.006	-0.050	-0.027	0.037	0.112	-0.014	0.005	-0.036
	(0.89)	(-3.80)	(0.14)	(-1.25)	(1.26)	(-0.87)	(2.58)	(-1.73)	(-0.69)	(1.51)	(-1.05)	(0.63)	(0.22)	(-0.18)	(-2.13)	(-2.32)	(2.11)	(3.66)	(-0.94)	(0.27)	(-1.23)
Lag52	0.001	-0.004	0.004	-0.004	0.009	0.003	-0.002	0.002	0.001	-0.013	0.000	0.007	0.003	0.0054	0.004	0.003	0.003	-0.011	-0.004	-0.002	-0.008
	(0.23)	(-1.81)	(2.00)	(-1.69)	(1.26)	(0.97)	(-0.79)	(1.04)	(0.27)	(-2.36)	(0.28)	(3.47)	(1.06)	(1.45)	(1.07)	(0.95)	(1.41)	(-2.50)	(-1.41)	(-0.81)	(-2.45)

TABLE 3 - THE MEAN CORRELATION BETWEEN PAYOFFS TO THE TOP 6 FACTORS ACROSS 21 EMERGING MARKETS

This table shows the average, minimum and maximum correlation of weekly payoffs within emerging markets, for the 6 most important factors for the universe of emerging markets, over the period 1990 to 1996. The factors elected result from ranking the cross-markets average of absolute time-series means of the *t*-values in each market. Panel I refers to the specification where BTM, EP and DY as given by EMDB (IFC). Panel II refers to the specification that uses instead trailing (52 to 104 weeks) time trends for those variables.

- Base Specification -

Ranking	Factor	Mean	Minimum	Maximum
1	Lagged 12 Weeks Holding Period Returns	0.00	-0.20	0.25
2	E/P	0.00	-0.31	0.25
3	BTM	0.01	-0.22	0.22
4	DY	0.06	-0.16	0.29
5	Size	-0.01	-0.24	0.18
6	Price Per Share	0.01	-0.18	0.26

- Time Trend Specification -

Ranking	Factor	Mean	Minimum	Maximum
1	Price per Share	0.00	-0.24	0.25
2	Size	-0.01	-0.23	0.17
3	Lagged 12 Weeks Holding Period Returns	0.00	-0.25	0.26
4	BTM-Trend	0.01	-0.16	0.21
5	EP-Trend	0.01	-0.31	0.30
6	Lagged 52 Weeks Holding Period Returns	0.01	-0.20	0.29

APPENDIX A.
ADDITIONAL TABLES

TABLE A.1 - THE CROSS-SECTION OF RETURNS - INTERNATIONAL EVIDENCE

This table summarises sample data and factor selection in some selected studies; JF - Journal of Finance; JFE - Journal of Financial Economics; EMQ - Emerging Markets Quarterly; EMR - Emerging Markets Review

	Sample Period	Frequency	Number of Countries/Firms	Factors
Bodurtha, Cho and Senbet (GFJ, 1989)	1/73-12/83	Monthly	7/263	Industrial Production, Anticipated Inflation, Risk Premiums, Term Structure, Consumption, World and Local Stock Market Prices, World Industrial Production Growth, Deviations from IRP/PPP, Wholesale Prices, International Reserves, Money Supply, Imports, Exports, Gold and Oil Prices, US Junk Bond Premium
Haugen and Baker (JFE, 1996)	1/79-12/93	Monthly	5/4524	Risk (Price Beta and Macro Betas), Liquidity, Price Level, Growth Potential, Price History
Fama and French (JF, 1998)	12/74-12/94	Monthly	DM 12/6258	Local and World Betas, Book to Value, Earnings/Price, CashFlow/Price, Dividend Yield, Size
Emerging Markets sub-sample	1987-95	Monthly	EM 16/?	Local and World Betas, Book to Value, Earnings/Price, Size
Claessens, Dasgupta and Glen (EMQ, 1998)	1986/93	Monthly	EM 19/?	Beta, Earnings/Price, Price/Book Value, Size, Dividend Yield, Turnover and Change in Local Currency relative to US $
Rouwenhorst (JF, 1999)	Start date-4/97	Monthly	20/1705	Local and World Betas, Book to Value, Size and Momentum
Patel (EMQ, 1999)	1/88-3/97	Monthly	22/?	Price/Book, Price/Earnings, Size, Beta, Sector Affiliation
Barry, Goldreyer, Lockwood and Rodriguez (EMR, 2002)	1985-2000	Monthly	35/2000	Book to Value, Size

TABLE A.2 - FIRMS IN SAMPLE

Summary Statistics Summary Statistics for Individual Stocks - Weekly Returns,
This table shows cross-sectional averages of simple statistics computed over the period January 1990 to December 1996 for the constituent stocks of the IFC Global Markets Indices. Data is from the Emerging Markets Data Base (EMDB), International Finance Corporation, World Bank. Markets listed above China have complete series. The simple statistics refer to individual stock total returns denominated in US $. *N* is the number of constituents stocks of the IFCG indices at the end of 1996.

	N	Mean	Median	St Dev	Skewn	Kurtosis
Argentina	38	0.0017	-0.0003	0.0884	0.2990	3.300
Brazil	99	-0.0011	-0.0068	0.1068	0.1132	6.4695
Chile	51	0.0019	-0.0014	0.0515	0.5248	3.269
Colombia	27	0.0019	-0.0008	0.0587	0.4485	6.0002
Greece	69	-0.0032	-0.0062	0.0511	0.4624	3.6855
India	151	-0.0020	-0.0043	0.0651	0.5004	3.8505
Indonesia	110	-0.0039	-0.0014	0.0657	-0.3265	6.8669
Jordan	58	-0.0015	-0.0026	0.0400	0.4238	5.5423
Korea	185	-0.0046	-0.0080	0.0569	0.4636	1.6120
Malaysia	179	-0.0016	-0.0048	0.0544	0.4180	3.4647
Mexico	114	-0.0010	-0.0018	0.0672	-0.4863	13.7600
Philippines	71	-0.0012	-0.0022	0.0599	0.1713	3.9304
Portugal	46	0.0010	-0.0003	0.0405	0.1279	5.6851
Taiwan	113	-0.0003	-0.0017	0.0602	0.0325	3.4374
Thailand	115	-0.0074	-0.0090	0.0638	0.0553	3.4411
Turkey	64	-0.0003	-0.0070	0.1020	0.2514	2.8902
Venezuela	23	0.0030	-0.0009	0.0909	-0.3020	12.6678
China	174	0.0024	-0.0015	0.0887	1.3048	10.4881
Hungary	16	0.0038	0.0008	0.0640	0.4358	3.1708
Pakistan	87	-0.0038	-0.0046	0.0662	0.3327	4.3598
Peru	40	0.0006	-0.0033	0.0700	0.4898	2.878
Poland	28	0.0022	-0.0002	0.0689	-0.0469	1.7523
South Africa	65	0.0039	0.0013	0.0500	0.3664	1.8237
Sri Lanka	51	-0.0043	-0.0031	0.0605	0.0654	7.5937
Nigeria	16	0.0104	0.0066	0.0901	0.1232	8.8760
Zimbabwe	24	0.0071	0.0005	0.0812	0.2373	5.3194
All				0.0671	0.2645	5.5672

TABLE A.3 - FIRMS IN SAMPLE

Attributes

This table shows the averages for a set of attributes of the firms in sample. Data were obtained from Emerging Markets Data Base (EDMB), International Finance Corporation, World Bank. The statistics are time-series averages, over the sample period, of cross-sectional medians (weekly data, January 1990 to December 1996). *N* is the number of firms for each market at the end of 1996. *PER* is the price-earnings ratio. *PBV* is the price-book value. *DY* is the dividend yield. *MV* is the market capitalisation (US $).

	N	PER	PBV	DY	MV
Argentina	38	6.37	0.96	0.0146	179
Brazil	99	6.13	0.65	0.0133	247
Chile	51	15.12	1.88	0.0139	390
Colombia	27	13.03	1.38	0.0058	261
Greece	69	12.77	2.62	0.0370	125
India	151	22.19	3.55	0.0141	232
Indonesia	110	16.23	1.95	0.0204	212
Jordan	58	13.58	1.87	0.0589	25
Korea	185	20.17	1.19	0.0168	334
Malaysia	179	26.35	3.20	0.0117	544
Mexico	114	11.67	1.46	0.0165	450
Philippines	71	20.22	2.44	0.0011	168
Portugal	46	14.48	1.40	0.0257	124
Taiwan	113	25.23	2.81	0.0083	587
Thailand	115	17.05	2.74	0.0229	400
Turkey	64	15.65	3.79	0.0443	174
Venezuela	23	14.04	1.89	0.0049	162
China	174	35.03	3.54	0.0159	120
Hungary	16	6.60	1.61	0.0458	49
Pakistan	87	16.30	3.07	0.0176	56
Peru	40	14.76	2.28	0.0114	28
Poland	28	17.64	3.00	0.0182	114
South Africa	65	20.01	2.83	0.0122	1331
Sri Lanka	51	13.30	2.29	0.0180	26
Nigeria	16	9.90	3.24	0.0920	47
Zimbabwe	24	6.38	1.02	0.0298	34

TABLE A.4- CROSS-SECTIONAL REGRESSIONS

This table shows the time-series mean coefficients of the multifactor cross-sectional regressions for each individual market. For each week from 12 January 1990 to 27 December 1996, stock returns are regressed (using GMM) on "Risk" Factors, "Price-Level" ("Attributes") factors, "Liquidity" factors and "Price History" ("Technical") factors. Please refer to appendix B for more information about these factors. Inference for each individual parameter is based on the *t*-statistics for the mean estimates (Fama-MacBeth, 1973). The measures of fit are *EP*, R^2 and $Adj.R^2$. *EP* is obtained as one minus the ratio of the sum of errors for all the cross-sectional regressions divided by the sum of total return variation again for all the periodical regressions. R^2 and $Adj.\ R^2$ are, respectively, the cross-sectional regression R^2 and adjusted R^2. The multivariate p-value refers to a joint test of the null that all average payoffs are zero. *N* gives the range of the dimension of the cross-sections over time for each market (number of stocks).

I. Base Specification

Market		Risk				Attributes				Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volat	Curr	EP	EP(-)	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Argentina																		15-30
Estimate	-0.062	-0.025	-0.002	1.746	0.003	0.065	0.007	-0.013	0.114	0.004	0.000	-0.025	-0.008					
t-statistic	(-0.99)	(-1.60)	(-0.41)	(2.02)	(0.35)	(0.19)	(0.47)	(-2.09)	(1.31)	(1.83)	(0.73)	(-2.09)	(-1.14)	0.77	0.72	0.24	(0.2614)	
Brazil																		45-78
Estimate	-0.102	-0.009	0.006	0.689	-0.001	-0.003	0.005	-0.002	0.139	0.005	-0.000	-0.038	-0.009					
t-statistic	(-5.83)	(-1.77)	(3.28)	(3.56)	(-0.47)	(-0.28)	(2.45)	(-4.08)	(3.87)	(6.04)	(-0.55)	(-8.00)	(-3.76)	0.34	0.32	0.15	(0.0001)	
Chile																		24-45
Estimate	-0.011	-0.004	0.001	0.110	-0.004	-0.061		-0.004	0.126	0.001	-0.000	-0.010	0.004					
t-statistic	(-0.84)	(-0.94)	(0.37)	(0.14)	(-2.22)	(-2.69)		(-1.94)	(2.15)	(1.55)	(-0.58)	(-1.84)	(1.83)	0.50	0.48	0.19	(0.0005)	
China																		17-115
Estimate	0.016	-0.019	-0.003	0.753	-0.002	-0.121		-0.008	0.121	-0.001	0.006	-0.007	-0.007					
t-statistic	(0.81)	(-2.30)	(-1.72)	(1.82)	(-0.69)	(-2.84)		(-1.87)	(2.57)	(-0.69)	(2.09)	(-1.07)	(-2.43)	0.50	0.41	0.29	(0.0001)	
Colombia																		18-20
Estimate	-0.116	-0.011	-0.006	0.409	-0.002	-0.035		-0.001	0.023	0.007	0.001	-0.048	0.002					
t-statistic	(-2.01)	(-1.27)	(-1.20)	(0.35)	(-0.33)	(-0.80)		(-0.51)	(0.14)	(1.99)	(0.44)	(-3.17)	(0.30)	0.85	0.80	0.35	(0.4230)	

TABLE A.4 - CROSS-SECTIONAL REGRESSIONS (CONT.)

I. Base Specification (cont.)

Market		Risk				Attributes				Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volat	Curr	EP	EP(-)	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Greece																		19-44
Estimate	-0.037	0.004	-0.003	1.306	0.004	-0.036		-0.0052	0.063	0.000	0.004	-0.008	-0.001					
t-statistic	(-2.95)	(0.09)	(-1.10)	(1.62)	(1.94)	(-2.88)		(-2.38)	(3.20)	(0.27)	(4.41)	(-1.09)	(-0.42)	0.57	0.53	0.21	(0.0017)	
India																		41-113
Estimate	-0.051	-0.004	0.003	1.992	-0.000	-0.079		-0.019	0.160	0.003	0.001	-0.026	-0.003					
t-statistic	(-4.57)	(-1.18)	(1.48)	(4.62)	(-0.39)	(-3.47)		(-5.58)	(3.63)	(4.35)	(1.43)	(-6.19)	(-1.84)	0.31	0.30	0.17	(0.0001)	
Indonesia																		15-45
Estimate	-0.043	0.004	0.002	0.346	0.001	-0.069		-0.004	0.141	0.000	0.005	-0.003	-0.007					
t-statistic	(-2.21)	(1.37)	(0.85)	(0.79)	(1.00)	(-2.99)		(-1.74)	(3.07)	(0.21)	(3.85)	(-0.44)	(-2.54)	0.41	0.39	0.12	(0.0001)	
Jordan																		16-44
Estimate	-0.010	-0.002	0.003	0.598	-0.002	-0.043		-0.005	0.062	0.001	0.000	-0.002	0.001					
t-statistic	(-0.84)	(-0.71)	(0.71)	(0.41)	(-1.35)	(-2.64)		(-1.47)	(2.28)	(1.06)	(0.37)	(-0.20)	(0.13)	0.57	0.57	0.17	(0.1122)	
Korea																		19-135
Estimate	-0.156	-0.006	-0.002	0.851	-0.000	0.006		-0.008	0.152	0.003	0.010	-0.026	-0.019					
t-statistic	(-5.67)	(-1.28)	(-0.62)	(0.72)	(-0.07)	(0.35)		(-4.60)	(2.70)	(4.71)	(4.47)	(-3.09)	(-3.50)	0.41	0.51	0.39	(0.0001)	
Malaysia																		41-104
Estimate	0.002	-0.001	0.003	0.587	0.000	-0.112	-0.003	-0.001	0.121	-0.000	0.004	-0.018	-0.004					
t-statistic	(0.23)	(-0.25)	(1.62)	(1.26)	(0.41)	(-5.13)	(-1.88)	(-0.45)	(4.08)	(-0.22)	(3.94)	(-4.93)	(-2.29)	0.37	0.34	0.18	(0.0001)	
Mexico																		26-75
Estimate	-0.006	-0.002	-0.002	0.454	-0.002	-0.045		-0.007	0.025	0.000	0.002	-0.019	0.003					
t-statistic	(-0.65)	(-0.53)	(-0.66)	(0.82)	(-1.28)	(-2.73)		(-5.78)	(0.92)	(0.77)	(3.78)	(-3.30)	(1.40)	0.41	0.42	0.21	(0.0001)	
Pakistan																		30-56
Estimate	-0.060	-0.005	-0.001	1.893	0.002	-0.045		-0.008	0.013	0.003	0.002	-0.029	-0.003					
t-statistic	(-3.76)	(-1.48)	(-0.60)	(3.20)	(1.46)	(-2.05)		(-2.70)	(0.40)	(3.05)	(1.42)	(-4.96)	(-1.01)	0.39	0.39	0.19	(0.0001)	
Peru																		15-33
Estimate	-0.009	0.013	-0.006	0.357	0.003	-0.152		-0.010	0.179	0.001	0.000	-0.021	-0.001					
t-statistic	(-0.62)	(1.48)	(-1.88)	(0.39)	(1.57)	(-4.68)		(-2.19)	(2.53)	(1.18)	(0.18)	(-1.92)	(-0.14)	0.63	0.63	0.22	(0.0155)	

TABLE A.4 - CROSS-SECTIONAL REGRESSIONS (CONT.)

I. Base Specification (cont.)

Market		Risk				Attributes				Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volat	Curr	EP	EP(-)	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Philippines																		22-40
Estimate	0.0198	-0.004	0.009	0.178	0.001	-0.056		-0.004	-0.118	-0.001	0.001	-0.027	0.001					
t-statistic	(0.92)	(-0.86)	(2.57)	(0.28)	(0.61)	(-2.05)		(-0.88)	(-0.83)	(-0.68)	(2.87)	(-3.60)	(0.24)	0.58	0.55	0.26	(0.0052)	
Portugal																		21-26
Estimate	-0.023	0.008	-0.005	0.789	0.001	-0.028		-0.007	0.0945	0.000	0.003	-0.004	-0.001					
t-statistic	(-1.30)	(1.24)	(-1.31)	(0.64)	(0.25)	(-2.19)		(-3.17)	(2.90)	(0.01)	(2.20)	(-0.55)	(-0.36)	0.61	0.57	0.16	(0.0562)	
S Africa																		58-61
Estimate	-0.086	-0.012	-0.001	0.980	-0.005	-0.084		-0.002	0.173	0.004	-0.001	-0.023	-0.002					
t-statistic	(-4.51)	(-1.79)	(-0.80)	(1.04)	(-1.03)	(-3.43)		(-1.19)	(2.28)	(4.81)	(-1.29)	(-4.17)	(-1.14)	0.40	0.36	0.22	(0.0001)	
Sri Lanka																		26-37
Estimate	-0.092	-0.008	-0.003	1.832	0.000	0.066		-0.022	0.175	0.005	0.003	-0.017	-0.009					
t-statistic	(-3.83)	(-1.63)	(-1.44)	(1.93)	(-0.02)	(1.43)		(-3.70)	(3.35)	(3.53)	(2.63)	(-2.09)	(-2.25)	0.50	0.48	0.17	(0.0029)	
Taiwan																		19-86
Estimate	-0.011	0.001	-0.002	-0.533	0.000	-0.075	-0.0017	-0.021	0.048	0.002	-0.002	-0.007	-0.007					
t-statistic	(-0.62)	(0.31)	(-1.27)	(-0.88)	(0.45)	(-3.21)	(-1.26)	(-4.00)	(1.23)	(1.96)	(-1.22)	(-1.46)	(-2.47)	0.44	0.41	0.25	(0.0001)	
Thailand																		31-63
Estimate	-0.063	0.001	0.000	-0.335	-0.000	-0.098		0.001	0.128	0.003	0.001	-0.006	-0.003					
t-statistic	(-4.67)	(0.31)	(0.15)	(-0.68)	(-0.17)	(-5.11)		(0.73)	(4.08)	(4.50)	(2.77)	(-1.20)	(-1.38)	0.41	0.40	0.20	(0.0008)	
Turkey																		17-44
Estimate	-0.097	0.011	0.001	0.874	0.003	-0.159		-0.019	-0.001	0.003	0.004	-0.017	-0.013					
t-statistic	(-3.69)	(0.81)	(0.23)	(1.19)	(1.21)	(-4.52)		(-1.99)	(-0.03)	(3.50)	(1.97)	(-2.38)	(-3.92)	0.49	0.51	0.18	(0.0001)	

TABLE A.4 - CROSS-SECTIONAL REGRESSIONS (CONT.)

II. Time Trend Specification

Market		Risk				Attributes			Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volatil	Curren	EP	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Argentina																	20-30
Estimate	-0.089	-0.020	-0.002	1.397	0.000	0.030	-0.002	0.021	0.005	0.000	-0.017	0.001					
t-statistic	(-3.36)	(-1.77)	(-0.77)	(2.25)	(0.01)	(0.89)	(-1.43)	(0.45)	(3.59)	(0.39)	(-2.42)	(0.23)	0.64	0.59	0.23	(0.0063)	
Brazil																	54-78
Estimate	-0.105	-0.011	0.004	0.407	0.001	-0.033	0.001	0.043	0.006	-0.000	-0.038	-0.004					
t-statistic	(-6.38)	(-2.32)	(2.27)	(2.05)	(0.56)	(-3.80)	(2.94)	(1.37)	(6.89)	(-0.28)	(-8.67)	(-1.81)	0.33	0.31	0.16	(0.0001)	
Chile																	26-45
Estimate	-0.045	-0.006	0.001	0.066	-0.003	0.002	0.004	0.056	0.002	-0.000	-0.006	0.005					
t-statistic	(-2.85)	(-1.38)	(0.40)	(0.08)	(-2.09)	(0.14)	(2.75)	(0.94)	(3.20)	(-1.27)	(-1.25)	(2.00)	0.49	0.46	0.19	(0.0048)	
China																	37-115
Estimate	-0.031	-0.013	-0.003	0.817	-0.001	-0.040	0.010	0.063	0.000	0.012	-0.011	-0.004					
t-statistic	(-2.07)	(-1.56)	(-1.77)	(2.13)	(-0.47)	(-1.25)	(3.24)	(1.47)	(0.22)	(4.63)	(-1.78)	(-1.69)	0.51	0.40	0.30	(0.0001)	
Colombia																	18-20
Estimate	-0.157	-0.009	-0.006	0.232	-0.002	0.056	0.001	0.183	0.008	0.001	-0.064	0.009					
t-statistic	(-2.25)	(-1.04)	(-1.26)	(0.20)	(-0.49)	(1.26)	(0.50)	(0.98)	(2.04)	(0.26)	(-3.91)	(1.26)	0.85	0.80	0.36	(0.0029)	
Greece																	19-41
Estimate	-0.037	0.002	-0.002	0.371	0.004	-0.010	-0.000	0.023	0.000	0.004	-0.009	0.003					
t-statistic	(-2.88)	(0.37)	(-0.91)	(0.46)	(1.83)	(-0.87)	(-0.15)	(1.12)	(0.61)	(3.66)	(-1.25)	(0.97)	0.58	0.54	0.22	(0.0017)	
India																	42-113
Estimate	-0.078	-0.004	0.002	1.219	0.001	-0.033	0.004	0.026	0.003	0.002	-0.023	0.002					
t-statistic	(-6.45)	(-1.02)	(1.32)	(2.92)	(0.97)	(-1.73)	(1.54)	(0.56)	(5.35)	(3.84)	(-5.76)	(1.04)	0.31	0.29	0.16	(0.0001)	
Indonesia																	15-45
Estimate	-0.130	0.004	0.003	0.395	0.000	0.054	0.007	0.026	0.002	0.009	-0.005	-0.002					
t-statistic	(-7.15)	(1.23)	(1.20)	(0.90)	(0.88)	(2.58)	(3.16)	(0.52)	(2.58)	(7.54)	(-0.78)	(-0.79)	0.41	0.39	0.12	(0.0001)	

TABLE A.4 - CROSS-SECTIONAL REGRESSIONS (CONT.)

II. Time Trend Specification (cont.)

Market		Risk				Attributes			Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volatil	Curren	EP	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Jordan																	16-44
Estimate	-0.019	-0.002	0.002	0.394	-0.002	-0.001	0.001	0.048	0.001	0.000	0.002	0.001					
t-statistic	(-1.40)	(-0.52)	(0.45)	(0.26)	(-0.98)	(-0.69)	(0.33)	(2.94)	(1.13)	(0.01)	(0.18)	(0.27)	0.56	0.56	0.14	(0.1684)	
Korea																	19-137
Estimate	-0.162	-0.004	-0.003	1.285	-0.000	0.029	0.001	0.048	0.003	0.010	-0.025	-0.013					
t-statistic	(-6.22)	(-0.82)	(-0.92)	(0.99)	(-0.27)	(1.51)	(0.73)	(0.77)	(4.84)	(4.29)	(-2.70)	(-2.36)	0.40	0.51	0.38	(0.0017)	
Malaysia																	41-105
Estimate	-0.010	-0.000	0.002	0.894	0.001	-0.019	0.011	0.079	0.000	0.005	-0.020	0.000					
t-statistic	(-0.92)	(-0.18)	(1.10)	(1.86)	(1.09)	(-1.05)	(5.85)	(3.14)	(0.00)	(5.13)	(-5.35)	(0.28)	0.35	0.32	0.18	(0.0001)	
Mexico																	32-74
Estimate	-0.028	-0.008	0.001	0.436	-0.002	0.009	0.001	-0.034	0.001	0.002	-0.014	0.007					
t-statistic	(-2.82)	(-1.81)	(0.52)	(0.91)	(-1.14)	(0.63)	(0.44)	(-1.28)	(2.26)	(4.41)	(-2.71)	(3.47)	0.40	0.40	0.21	(0.0001)	
Pakistan																	30-56
Estimate	-0.083	-0.005	0.002	1.195	0.001	0.004	0.004	0.046	0.003	0.005	-0.031	0.003					
t-statistic	(-5.14)	(-1.49)	(1.00)	(2.10)	(0.57)	(0.22)	(1.68)	(1.45)	(3.14)	(3.73)	(-5.39)	(1.06)	0.40	0.39	0.19	(0.0001)	
Peru																	15-33
Estimate	-0.037	0.013	-0.002	-0.733	0.003	-0.006	0.010	0.055	0.001	0.003	-0.004	0.005					
t-statistic	(-2.15)	(1.61)	(-0.69)	(-0.84)	(1.66)	(-0.18)	(2.37)	(0.70)	(1.44)	(2.20)	(-0.38)	(1.45)	0.59	0.60	0.18	(0.0155)	
Philippines																	22-40
Estimate	-0.049	-0.005	0.009	0.856	0.001	-0.049	0.012	0.174	0.002	0.001	-0.032	0.004					
t-statistic	(-2.28)	(-1.23)	(3.00)	(1.44)	(0.20)	(-2.13)	(3.22)	(1.21)	(2.04)	(1.93)	(-4.16)	(1.07)	0.59	0.55	0.27	(0.0001)	
Portugal																	21-26
Estimate	-0.040	0.006	-0.006	0.841	0.004	-0.027	0.001	0.050	0.000	0.004	-0.004	0.003					
t-statistic	(-2.31)	(1.02)	(-1.64)	(0.66)	(1.08)	(-2.32)	(0.57)	(1.48)	(0.77)	(3.09)	(-0.61)	(0.95)	0.60	0.57	0.16	(0.0124)	
S Africa																	58-61
Estimate	-0.079	-0.013	-0.001	1.733	-0.004	0.037	-0.002	-0.001	0.004	0.000	-0.025	0.003					
t-statistic	(-4.16)	(-1.84)	(-0.41)	(1.83)	(-0.75)	(2.11)	(-1.50)	(-0.02)	(4.10)	(0.18)	(-4.63)	(1.41)	0.39	0.35	0.21	(0.0001)	

TABLE A.4 - CROSS-SECTIONAL REGRESSIONS (CONT.)

II. Time Trend Specification (cont.)

Market		Risk				Attributes			Liquidity		Price History		Fit				N
	Intercept	Local Beta	World Beta	Volatil	Curren	EP	BTM	DY	Size	Price	Lag12	Lag52	EP	R2	Adj.R2	Multi-variate *p*-value	
Sri Lanka																	27-37
Estimate	-0.136	-0.012	-0.004	2.839	0.000	0.112	-0.015	0.128	0.006	0.004	-0.016	-0.010					
t-statistic	(-5.92)	(-2.45)	(-1.92)	(2.89)	(0.63)	(3.66)	(-2.63)	(2.48)	(5.28)	(3.52)	(-2.02)	(-2.50)	0.49	0.47	0.18	(0.0001)	
Taiwan																	19-86
Estimate	-0.058	-0.000	0.000	-0.043	0.001	-0.014	0.016	0.051	0.001	0.006	-0.007	-0.003					
t-statistic	(-3.75)	(-0.09)	(0.16)	(-0.07)	(1.27)	(-0.94)	(5.52)	(1.47)	(2.00)	(4.62)	(-1.61)	(-1.41)	0.42	0.38	0.24	(0.0001)	
Thailand																	31-63
Estimate	-0.095	-0.000	0.001	0.825	0.000	0.005	0.011	0.030	0.004	0.003	-0.006	-0.002					
t-statistic	(-6.91)	(-0.09)	(0.67)	(1.64)	(0.14)	(0.27)	(5.57)	(1.02)	(5.64)	(4.63)	(-1.37)	(-0.81)	0.41	0.40	0.20	(0.0001)	
Turkey																	17-44
Estimate	-0.197	0.007	0.000	0.406	0.004	-0.036	0.034	-0.018	0.003	0.014	-0.010	-0.008					
t-statistic	(-7.26)	(0.52)	(0.09)	(0.54)	(1.35)	(-1.23)	(3.76)	(-0.47)	(3.25)	(6.43)	(-1.49)	(-2.45)	0.49	0.51	0.18	(0.0001)	

TABLE A.5 - MEAN PAYOFFS AND *t*-STATISTICS FOR THE 6 MOST IMPORTANT FACTORS ACROSS 6 LATIN-AMERICAN EMERGING MARKETS (1990-1996)
- Latin America -

This table presents the six most important factors in explaining the cross-section of returns. Please refer to appendix B for more information about these factors. The elected factors result from ranking the absolute *t*-statistics. These *t*-statistics refer to the average cross-sectional weekly coefficients, obtained for each individual market. . Inference for each individual parameter is based on the *t*-statistics for the mean estimates (Fama-MacBeth, 1973). Sign(+) and (-) denote the number of markets for which the mean average estimate was, respectively positive or negative. Signif (+) and (-) denote the number of markets for which the mean average positive or negative estimates were significant at a 5% level of confidence.

I. Base Specification

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Lagged 12 Weeks Holding Period Returns	(-)	0	6	0	6
2	BTM	(+)	0	6	0	5
3	Size	(-)	6	0	2	0
4	E/P	(+)	1	5	0	3
5	DY	(+)	6	0	3	0
6	Negative Earnings Dummy	(-)				

II. Time Trend Specification

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Size	(-)	6	0	5	0
2	Lagged 12 Weeks Holding Period Returns	(-)	0	6	0	4
3	BTM - Trend	(+)	5	1	3	0
4	Lagged 52 Weeks Holding Period Returns	(+/-)	1	5	0	2
5	Local Beta	(+)	1	5	0	2
6	Price per Share	(-)	4	2	2	0

TABLE A.6 - MEAN PAYOFFS AND *t*-STATISTICS FOR THE 6 MOST IMPORTANT FACTORS ACROSS ASIAN EMERGING MARKETS (1990-1996)
- Asia -

This table presents the six most important factors in explaining the cross-section of returns. Please refer to appendix B for more information about these factors. The elected factors result from ranking the absolute *t*-statistics. These *t*-statistics refer to the average cross-sectional weekly coefficients, obtained for each individual market. . Inference for each individual parameter is based on the *t*-statistics for the mean estimates (Fama-MacBeth, 1973). Sign(+) and (-) denote the number of markets for which the mean average estimate was, respectively positive or negative. Signif (+) and (-) denote the number of markets for which the mean average positive or negative estimates were significant at a 5% level of confidence.

I. Base Specification

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Lagged 12 Weeks Holding Period Returns	(-)	0	10	0	6
2	E/P	(+)	2	8	0	8
3	Price per Share	(-)	9	1	7	0
4	BTM	(+)	1	9	0	6
5	DY	(+)	1	9	7	0
6	Size	(-)	7	3	6	0

II. Time Trend Specification

Ranking	Factor	Expected Sign	Sign(+)	Sign(-)	Signif (+)	Signif (-)
1	Price per Share	(-)	10	0	10	0
2	BTM - Trend	(+)	9	1	6	1
3	Size	(-)	10	0	8	0
4	Lagged 12 Weeks Holding Period Returns	(-)	0	10	0	6
5	Volatility	(+)	9	1	5	0
6	E/P - Trend	(+)	5	5	2	1

APPENDIX B.
FACTORS IN THE CROSS-SECTIONAL REGRESSIONS

This appendix describes the factors used in the cross-sectional regressions.

I. Risk Factors

- Local market beta (trailing 52 to 104 weeks regression of excess returns on excess local market returns; US dollars; univariate and multivariate)
- World market beta (trailing 52 to 104 weeks regression of excess returns on excess world market returns; US dollars; univariate and multivariate)
- Currency beta (trailing 52 to 104 weeks regression of excess returns on exchange rate against the US dollar)
- Macroeconomic betas (trailing 52 to 104 weeks regression of local currency/US dollars returns on:
  - Inflation rates
  - Nominal local interest rates
  - Percentage changes in industrial production
  - Change in total exports (US $)
- Total risk: (trailing 52 to 104 weeks variance of total returns)
- Idiosyncratic risk: (residual variances from trailing 52 to 104 weeks regressions with one factor, the local market; or two factors, local market and world market factors)

II. Liquidity Factors

- Market capitalisation (natural log of US dollars current market price times the number of shares outstanding)
- Market price per share (prices are not adjusted for capital changes)

III. Factors Indicating Price Level (Attributes or Characteristics)

- Earnings to price ratio (EP)
  - Earnings to current price (for negative earnings this variable is zero)
  or Earnings to price trend (all sample and 104 weeks trailing time trend in earnings to price)
  - Zero/one dummy variable (reflecting positive or negative earnings)
  - Book-to-market ratio (BTM)
  - Ratio of book value to market value
  - Book-to-market trend (all sample and 104 weeks trailing time trend in book-to-market)
- Dividend yield (DY)
  - Dividend to price (computed as the most recently available dividend yields brought forward one year)
  - Dividend yield trend (all sample and 104 weeks trailing time trend in dividend yield)

IV. Technical Factors

- 1 to 12 and 26 weeks lagged returns
- Buy and Hold 8, 12, 26 and 52 lagged returns (all lagged one week to account for the bid-ask bounce)
- Five-weeks moving averages of Buy and Hold 8, 12, 26 and 52 lagged returns (all lagged one week to account for the bid-ask bounce)
- The same variables with unexpected returns (expected returns are defined either as the mean returns over the sample period except that week or as the local market return).

V. Sector Dummies

Sector dummies reflecting affiliation to one of the SIC nine broad industry categories:

- Agriculture, Foresting and Fishing
- Mining
- Construction
- Manufacturing
- Transportation, Communication, Electric, Gas and Sanitary Services
- Wholesale Trade and Retail Trade
- Finance, Insurance and Real Estate
- Services
- Government
- Diversified, Holding Companies