THE JOURNAL OF FINANCE • VOL. LIV, NO. 4 • AUGUST 1999

Local Return Factors and Turnover in Emerging Stock Markets

K. GEERT ROUWENHORST*

ABSTRACT

The factors that drive cross-sectional differences in expected stock returns in emerging equity markets are qualitatively similar to those that have been documented for developed markets. Emerging market stocks exhibit momentum, small stocks outperform large stocks, and value stocks outperform growth stocks. There is no evidence that high beta stocks outperform low beta stocks. A Bayesian analysis of the return premiums shows that the combined evidence of developed and emerging markets strongly favors the hypothesis that similar return factors are present in markets around the world. Finally, there exists a strong cross-sectional correlation between the return factors and share turnover.

THERE IS GROWING EMPIRICAL EVIDENCE that multiple factors are cross-sectionally correlated with average returns in the United States. Measured over long time periods, small stocks earn higher average returns than large stocks (Banz (1981)). Fama and French (1992, 1996) and Lakonishok, Shleifer, and Vishny (1994) show that value stocks with high book-to-market (B/M), earnings-to-price (E/P), or cash flow to price (C/P) outperform growth stocks with low B/M, E/P, or C/P. Moreover, stocks with high return over the past three months to one year continue to outperform stocks with poor prior performance (Jegadeesh and Titman (1993)). The evidence that beta is also compensated for in average returns is weaker (Fama and French (1992), Kothari, Shanken, and Sloan (1995))

The interpretation of the evidence is strongly debated.[1] Some believe that the premiums are a compensation for pervasive risk factors, others attribute them to firm characteristics or an inefficiency in the way markets incorporate information into prices. Yet others argue that the premiums may be biased by survivorship or data snooping. A motivation for examining inter-

* Yale School of Management, Yale University. I thank Geert Bekaert, Steve Buser, John Chalmers, Ken French, Campbell Harvey, Theo Nijman, N. Prabhala, Jeremy Stein, Raman Uppal, and seminar participants at 1999 ASSA Meetings, the Berkeley Program in Finance, Dartmouth, the 1998 European Finance Meetings, the Harvard Business School, H.E.C., Ohio State University, M.I.T., the 1998 NBER Summer Institute, Indiana University, Tilburg University, the University of Illinois at Urbana-Campaign, the University of Southern California, the University of Virginia, and Yale University for helpful discussions and comments. Part of this research was conducted while I was visiting M.I.T.

[1] Participants in this debate include Berk (1995), Daniel and Titman (1997), Fama and French (1996), Haugen and Baker (1996), Kothari et al. (1995), Lakonishok et al. (1994), Lo and MacKinlay (1990), Loughran (1997), and MacKinlay (1995).

national markets is that, to the extent that these markets move independently from the United States, they provide independent samples to study return premiums. In this spirit, a number of researchers have recently shown that size, value, and momentum also help to explain the cross section of average returns in developed equity markets outside of the United States.[2]

This paper examines the sources of return variation in emerging stock markets. From the perspective of collecting independent samples, emerging market countries are particularly interesting because of their relative isolation from the capital markets of other countries. Compared to developed markets, the correlation between most emerging markets and other stock markets has historically been low (Harvey (1995)), and until recently many emerging countries restricted investment by foreign investors. Interestingly, Bekaert and Harvey (1995) find that despite the recent trend toward abolition of these restrictions and the substantial inflows of foreign capital, some emerging equity markets have actually become more segmented from world capital markets. A large portion of the equity capital of emerging economies is held by local investors who are likely to evaluate their portfolios in light of local economic and market conditions (Bekaert and Harvey (1997b)). Therefore, the relative segmentation of emerging markets provides a unique opportunity to examine cross-sectional variation of stock returns: If the return factors in a group of relatively isolated markets are the same as those found in developed markets, it becomes more likely that the factors are fundamentally related to the way in which investors set prices in financial markets around the world.

Market segmentation and low correlations *across* emerging market countries do not preclude structure to the individual stock returns *within* these markets. For example, suppose that emerging markets are effectively segmented from world markets, and that a domestic version of the Capital Asset Pricing Model (CAPM) holds in each country. Under these conditions high beta stocks are expected to outperform low beta stocks in each country, as long as betas are measured relative to the appropriate local market portfolios. Therefore, one expects to find similar risk exposures driving expected stock returns in segmented and integrated markets, with the qualification that if markets are segmented the risk exposures are measured relative to local benchmarks, and the prices of risk are determined locally rather than in global markets.

The paper attempts to answer two sets of questions. The first set of three questions concerns the existence of return premiums: (i) Do the factors that explain expected return differences in developed equity markets also describe the cross section of expected returns of emerging market firms?

[2] For example, Fama and French (1998) report a value premium in a sample of 13 developed markets, and Heston, Rouwenhorst and Wessels (1999) and Rouwenhorst (1998) document a return premium for beta, size, and momentum in European countries. Haugen and Baker (1996) examine 12 return factors in five developed countries. Chan, Karceski, and Lakonishok (1997) compare return factors in three developed countries.

(ii) Are the return factors in emerging markets primarily local or do they have global components as well? (iii) How does the emerging market evidence contribute to the international evidence from developed markets that similar return factors are present in markets around the world?

The second set of questions relates to the interpretation of the return factors. Daniel and Titman (1997) argue that the return premiums in the United States are related to firm characteristics, rejecting the linear multifactor interpretation of Fama and French (1996). One firm characteristic that is of particular concern to investors in emerging markets is liquidity. For example, if growth stocks are on average more liquid that value stocks, the value premium may in part reflect a compensation for the lower liquidity of value firms. This motivates the final two questions of the paper: (iv) Is there a cross-sectional relationship between liquidity and average returns in emerging markets? (v) Are the return factors in emerging markets cross-sectionally correlated with liquidity?

Little is known about the answers to these questions, as few papers have studied individual stock returns in a broad sample of emerging markets. There is some conflicting evidence on the first question: Fama and French (1998) and Patel (1998) document a premium for small firms and value stocks in 17 emerging market countries; Claessens, Dasgupta, and Glen (1998) report a premium for large firms and growth stocks in an earlier sample of 19 emerging markets, in addition to a premium for beta and share turnover.[3] Harvey (1995), Bekaert et al. (1997), and Bekaert and Harvey (1995, 1997a) have studied the influence of local and global factors on expected returns and volatility in emerging markets (question (ii)), but these studies have been conducted at the aggregate country level, whereas this paper is concerned with the cross section of individual stock returns in countries.

The findings can be summarized as follows. In a sample of 1705 firms from 20 emerging markets, taken from the Emerging Markets Database (EMDB) of the International Finance Corporation (IFC), I find that the return factors in emerging markets are qualitatively similar to those documented for many developed markets. The combination of a small number of stocks in some countries and the high volatility of returns often precludes precise measurement of return premiums in individual countries, but averaged across all emerging markets, stocks exhibit momentum, small stocks outperform large stocks, and value stocks outperform growth stocks. There is no evidence that high beta stocks also outperform low beta stocks, nor do I find that average returns are related to liquidity, as measured by share turnover. The results for value and size confirm findings by Fama and French (1998) and Patel (1998), but differ from Claessens, Dasgupta, and Glen (1998). A Bayesian analysis of the return premiums shows that, unless one has strong prior beliefs to the contrary, the combined evidence from developed

[3] Anchour et al. (1998) look at the performance of individual stocks in emerging markets using portfolios sorted on a large number of firm characteristics, but the sample includes only three markets.

and emerging markets strongly favors the hypothesis that value, momentum, and to a lesser extent size are compensated for in average stock returns around the world.

Two empirical observations suggest that the return factors of emerging markets have a strong local character: their correlation across emerging markets is on average low, and the exposure to global risk factors cannot explain their average returns. There is no evidence that the factor correlations are higher among countries within particular geographical regions such as Latin America, Asia, or Europe/Africa/Middle-East. And although the co-movement between emerging market country returns may have increased over time (Bekaert and Harvey (1997b)), I find little evidence that this is also true for the factors that drive individual stock returns within these markets.

Although share turnover cannot explain differences in average returns in emerging markets, there are strong cross-sectional share turnover patterns in the local return factor portfolios. Stocks with high beta, small market cap, high past medium-term return, or high book-to-market have higher average turnover than stocks with low beta, large market cap, poor past performance, or low book-to-market. This seems at odds with a simple liquidity explanation for the return premiums.

The remainder of the paper is organized as follows. Section I gives a description of the data. The next section presents the average returns of the local return factor portfolios and their correlations. The third section evaluates the international evidence that similar factors are compensated in markets around the world. The evidence of the relationship between average returns and turnover is presented in Section IV. The final section gives a summary of the conclusions and provides directions for future research.

I. Data Description

As of April 1997 the Emerging Markets Database of the IFC contains data on more than 2200 firms from 31 emerging markets, but not all are included in the sample. Eleven countries are excluded because of insufficient return histories, which leaves 1705 firms in the 20 countries that the IFC tracks for at least seven years. For some firms monthly closing prices and dividends are available dating back to 1975. Starting at various points during the 1980s the IFC expanded its reporting to include monthly time series for price-to-book ratios, price-earnings ratios, market capitalization, trading volume, and the number of days per month that a stock is traded. It is important to note that the EMDB does not represent a random sample of emerging markets firms. There are two main sources of bias. First, the IFC uses several criteria to select stocks for its global indices. In order of importance these are: trading activity in terms of value of shares traded during a review period, total market capitalization coverage, and industry diversification. The EMDB is therefore biased toward larger and more frequently traded issues. Second, in mid-1981 when the IFC started constructing indices for 10 emerging markets, it collected available return information back to 1975, which introduces a survivorship bias into the pre-1982 returns (see Harvey

(1995) for a detailed discussion). For this reason firms are included in this study only after their respective countries enter the IFC database, which has the effect of excluding the backfilled returns.[4]

In addition to survivorship and stock selection bias there are several other data issues to confront. First, there are missing values in the time series of firm characteristics used to form portfolios such as size or book-to-market. A firm is excluded from a characteristic portfolio if the relevant ranking information is missing in a particular month, but remains in the sample otherwise. Second, there appear to be data errors. These vary from zero entries in cases where the database carries insufficient significant digits, to a computed total firm return that exceeds 100,000 percent per month. In light of the high volatility of emerging markets and lacking an independent data source, it is difficult to reliably identify data errors but for a few isolated cases of miscalculated stock splits ratios. Except for these few corrections, the reported results are based on all observations as reported in the database.

Total returns are calculated as the sum of the dividend return and price appreciation, using prices scaled by a "capital adjustment factor," which the IFC computes to correct for price effects associated with stock splits, stock dividends, and rights issues. Many emerging markets have firms with multiple classes of shares carrying different ownership restrictions. Firms with multiple share classes are treated as a single value-weighted portfolio of the outstanding equity securities.

Table I presents some summary statistics for the resulting sample. The first columns confirm one of the well-known facts about emerging markets: Between 1982 and 1997 average returns in emerging markets were high relative to most developed markets, both in local currency and in U.S. dollars (Harvey (1995)). Measured in U.S. dollars, average returns range from 0.17 percent in Jordan to 5.30 percent per month in Argentina, and average returns exceed 2 percent per month in 11 of the 20 sample countries. Emerging markets have also been more volatile than developed markets. Argentina has a standard deviation of almost 30 percent and is one of eight countries for which the historical standard deviation exceeds 10 percent per month. Goetzmann and Jorion (1999) argue that the survival of emerging markets can induce a positive correlation between ex post average returns and volatility. This survivorship bias may in part explain the high ex post correlation of 0.90 between the mean and standard deviation of the country returns measured in U.S. dollars.

The next columns show that there is considerable cross-sectional variation in median firm size, book-to-market, and trading intensity across markets.[5] Median firm size measured as the natural logarithm of the market value of equity in U.S. dollars varies from 2.81 in Zimbabwe to 6.14 in Taiwan, which

[4] Backfilled returns are used to get preliminary estimates of momentum and beta that are used to rank stocks in the first month that a country enters the sample.

[5] The distribution of these firm characteristics is skewed, and the ratios are especially sensitive to outliers. For these reasons, I compute monthly medians across firms in a country and report the time series average of these monthly medians.

Table I

Summary Statistics of Emerging Markets Firms, 1982:1–1997:4

The table gives for each country the number of firms in the sample, the starting date for the return data, the average return, and the standard deviation of the return of the equally weighted index of the sample firms, both in local currency (LC) and U.S. dollars (USD). Returns are expressed as percentage per month between the starting date and April 1997. The last four columns give summary statistics for median firm size, median book-to-market value (B/M), median monthly turnover, and median trading activity of the sample stocks in each country. The medians are computed by month across firms, and the table reports the time series average of these monthly medians. Size is measured as the log of the market value of equity in U.S. dollars. Turnover is computed as the number of shares traded in a month as a percentage of the number of outstanding shares at the beginning of the month. Days traded is expressed as the number of days that a stock trades in a month. Information on B/M, turnover, and days traded is not available before 1987.

Country	Number of Firms	Starting Date	LC Return		USD Return		Median Size	Median B/M	Median Turnover	Median Days Traded
			Mean	Std. Dev.	Mean	Std. Dev.				
Argentina	49	8201	16.50	42.92	5.30	29.82	4.08	1.58	3.00	20.58
Brazil	87	8201	19.35	26.67	4.27	20.17	4.97	1.62	1.82	20.28
Chile	59	8201	3.41	8.30	2.12	8.63	4.84	0.71	0.49	19.70
Colombia	34	8601	4.41	9.60	3.01	9.33	4.44	0.94	0.43	15.02
Greece	69	8201	2.24	9.71	1.40	9.91	4.02	0.51	1.51	20.25
Indonesia	114	9001	0.96	7.13	0.62	7.18	4.82	0.51	2.42	16.55
India	15	8201	1.92	9.50	1.14	9.04	4.76	0.40	1.88	18.09
Jordan	66	8201	0.56	4.57	0.17	4.78	3.30	0.67	1.79	18.29
Korea	179	8201	1.34	7.55	1.22	7.78	5.19	0.75	8.13	24.36
Malaysia	184	8601	1.63	9.15	1.60	9.06	5.64	0.43	1.89	20.59
Mexico	98	8201	6.00	12.93	3.05	13.86	5.17	0.90	2.74	18.75
Nigeria	38	8601	4.15	5.09	2.05	15.84	3.59	0.53	0.04	16.13
Pakistan	118	8601	1.74	7.00	1.05	7.05	2.97	0.51	0.44	15.22
Philippines	58	8601	3.17	10.83	2.92	10.69	4.51	0.45	1.78	20.50
Portugal	45	8901	0.77	6.14	0.63	6.74	4.93	0.72	1.34	18.89
Taiwan	119	8601	2.80	13.95	3.11	14.27	6.14	0.35	30.22	23.77
Thailand	120	8201	1.27	8.60	1.21	8.65	5.04	0.46	3.48	20.47
Turkey	64	8901	8.73	18.97	4.36	19.48	4.94	0.35	4.29	20.80
Venezuela	20	8601	5.43	12.35	2.98	13.62	4.76	0.61	0.84	17.06
Zimbabwe	28	8201	3.75	9.64	2.24	9.78	2.81	1.15	0.29	9.85

means that the median firm in Taiwan is almost 30 times larger than the median firm in Zimbabwe. Median B/M ratios range from 0.35 in Turkey and Taiwan to 1.62 in Brazil. The final two columns report liquidity measures for the sample stocks. Liquidity, as measured by the median number of days per month that a stock trades, is fairly uniform across countries and exceeds 15 in all countries except one. The monthly share turnover ratios show considerably more dispersion across markets. With a median monthly turnover ratio of 0.04 percent, Nigeria is one of six countries with turnover ratios below 1 percent. By contrast, Korea and Taiwan have monthly share turnover ratios of 8.13 and 30.22 percent respectively, and the median ratio has regularly exceeded 100 percent per month in Taiwan. These observations suggest that the median stock in most countries trades frequently, but the volume can be relatively small. The next section describes the cross-sectional relation between these characteristics and average returns by emerging market.

II. Local Return Factor Portfolios

It is standard practice in empirical finance to study return premiums by comparing the returns of portfolios that are formed by sorting stocks on observable firm characteristics or estimated risk exposures.[6] We rank stocks by country on local beta, size, prior six-month return, book-to-market, and turnover. At the beginning of each month, stocks for which the relevant ranking information is available are grouped by country into three portfolios (top 30, middle 40, and bottom 30 percent). The portfolios are equally weighted and are rebalanced every month. Unless stated otherwise, the conclusions are unaffected by the equal weighting of the factor portfolios. Throughout the paper I report the full sample postranking returns of the top and bottom portfolios, expressed in U.S. dollars. Choosing the U.S. dollar as a numéraire serves to make the average portfolio returns comparable across countries, but does not affect the excess returns of top minus bottom portfolios within countries because these excess returns correspond to investment strategies that take simultaneous unit dollar long and short positions, and therefore to a first approximation take no net position in any country or currency.[7]

[6] An alternative methodology is to run Fama–MacBeth (1973) monthly cross-sectional regressions to examine return premiums. Although these regression slope coefficients sometimes have the interpretation of portfolio excess returns, they do not constrain the portfolio weights to be positive. Because short selling is a serious problem in emerging markets, I choose to compare the return of equally weighted portfolios.

[7] The equivalence between average dollar and local currency excess returns is exact for log returns and only approximate for the reported simple returns. Also, country neutrality does not mean that the spread portfolios have no exposure to the local market. For example, the excess returns on portfolios sorted on local beta are expected to be positively correlated with the local market.

A. Local Beta and Size

For each stock a monthly preranking local beta is estimated by regressing its local currency return on the local currency IFC Global (IFCG) index return of the country to which the firm belongs. One lag of the index return is included to allow for a delayed response due to nonsynchronous trading. A minimum of two years and up to five years of historical returns prior to the time of ranking are used to obtain preranking betas. The choice of benchmark merits some discussion. Because the primary focus of the paper is on local factors and not market integration, the IFCG country indices are used instead of the narrower IFC investable country indices, or a "world" market index that includes developed markets. Harvey (1995) has shown that the correlations between emerging country returns and the world market are close to zero, and it seems unlikely that a global beta is informative about the cross section of expected returns. In Section II.C, I examine the extent to which these local beta portfolios share a common component with global factors.

The left half of Table II summarizes the average postranking returns of the beta-sorted portfolios by country. There is no clear relation between average returns and preranking local betas in emerging markets. In approximately half of the countries the high beta portfolio outperforms the portfolio of low beta stocks, but the excess return is never significantly different from zero. The last two rows of Table II show that the difference between the returns of beta-sorted portfolios that are diversified across all 20 emerging markets is not significantly different from zero, both in the case where stocks are equally weighted and where countries are equally weighted.

The high volatility of emerging market returns raises two concerns about the power to detect differences in average returns. First, the preranking betas may be poorly estimated, and what is designed as a sort on beta is effectively a sort on estimation error that is uncorrelated with the postranking average returns. The next two columns of Table II show that this is not the case. The full sample postranking beta of the high-beta portfolios exceeds the beta of the low-beta portfolios in 18 countries, and in 13 countries by more than two standard errors. The second concern is that it may be difficult to accurately estimate average returns over relatively short time intervals. However, the t-test applies to the return *difference* between two portfolios that are strongly positively correlated. The sample correlations between the two beta-sorted portfolios range from 0.44 to 0.94 across countries. As a consequence of diversification, the sample correlation between the two internationally diversified beta portfolios reported in the next to last row exceeds 0.90, and the standard error of the average excess return of -3 basis points (bp) is only 18 bp per month. This is small in absolute terms, but needs to be put in perspective against the difference between the postranking betas, which averages 0.22 across countries. Suppose that a local version of the CAPM holds in each country and that the true risk premium for beta averages 12 percent per annum across markets, or 100 bp per month. The expected excess return of two portfolios that differ in beta by 0.22 is

Table II

Average Returns of Beta- and Size-Sorted Portfolios

At the beginning of each month all stocks with at least two years of return history are ranked by country based on historical beta into three groups: High (top 30 percent), Medium (middle 40 percent), and Low (bottom 30 percent). Preranking betas are computed in local currency relative to the IFC Global index of that country, using two to five years of monthly historical returns, depending on data availability. Columns 3–5 give the average return on equally weighted portfolios of low (L) and high (H) beta stocks and the HML-β excess return, measured in U.S. dollars and expressed in percentage per month. $t(\ )$ is the mean excess return divided by its standard error. The next two columns give the postranking betas of the HML-β excess return, and the betas divided by their standard errors. The final four columns summarize the returns of size-sorted portfolios. At the beginning of each month all stocks with available ranking information are sorted by country into three groups based on market value of equity measured in U.S. dollars: Big (top 30 percent), Medium (middle 40 percent), and Small (bottom 30 percent). Columns 10–12 report the average return on equally weighted portfolios of small (S) and big (B) stocks, and the average SMB excess return. The last two rows report data for an equally weighted portfolio of stocks of all 20 markets and for the cross-country average, an equally weighted average of the 20 country excess returns. The standard errors are computed using the Newey–West correction for heteroskedasticity and autocorrelation.

	Average Returns of Beta Portfolios					Postranking Betas		Average Returns of Size-Sorted Portfolios				
Country	Start	Low-β	High-β	HML-β	t(HML-β)	HML-β	t(HML-β)	Start	Small	Big	SMB	t(SMB)
Argentina	8201	5.40	4.82	−0.58	−0.63	−0.10	−2.98	8201	7.30	3.47	3.84	2.54
Brazil	8201	3.44	3.56	0.12	0.13	0.08	1.89	8201	5.00	3.25	1.76	1.33
Chile	8201	2.65	2.41	−0.24	−0.43	0.06	0.71	8201	2.22	1.91	0.31	0.61
Colombia	8701	2.83	1.97	−0.86	−1.30	−0.11	−1.56	8601	2.60	3.29	−0.68	−0.79
Greece	8201	1.96	1.30	−0.66	−1.05	0.14	2.36	8201	1.42	1.38	0.04	0.07
Indonesia	9201	1.46	2.33	0.87	1.77	0.47	5.94	9001	0.22	0.69	−0.46	−0.80
India	8201	1.38	0.83	−0.56	−1.60	0.30	6.71	8201	0.89	1.24	−0.35	−0.89
Jordan	8201	−0.13	0.68	0.80	1.96	0.34	3.47	8201	0.02	0.35	−0.34	−0.79
Korea	8201	1.13	1.16	0.03	0.07	0.09	1.61	8201	1.39	1.07	0.32	0.51
Malaysia	8701	2.23	2.19	−0.04	−0.08	0.34	5.34	8601	1.84	1.42	0.43	0.60
Mexico	8201	2.81	3.29	0.47	0.54	0.39	5.58	8201	4.63	2.24	2.39	2.17
Nigeria	8701	4.34	1.87	−2.47	−1.57	0.23	0.67	8601	1.62	2.22	−0.59	−0.62
Pakistan	8701	1.32	0.96	−0.36	−0.80	0.28	4.99	8601	0.70	1.11	−0.42	−0.75
Philippines	8701	1.15	2.46	1.32	1.36	0.27	2.83	8601	3.56	3.33	0.23	0.29
Portugal	8901	−0.06	0.82	0.88	1.54	0.32	3.32	8901	0.34	1.08	−0.74	−1.61
Taiwan	8701	2.81	3.03	0.22	0.42	0.09	2.65	8601	3.57	2.90	0.68	0.81
Thailand	8201	1.05	1.30	0.26	0.31	0.55	6.66	8201	0.52	1.90	−1.39	−2.39
Turkey	8901	4.85	4.97	0.12	0.12	0.26	4.39	8901	4.84	4.12	0.72	0.59
Venezuela	8701	1.77	2.63	0.85	0.83	0.40	4.47	8601	3.85	2.48	1.37	1.41
Zimbabwe	8201	2.39	1.58	−0.81	−1.06	0.09	0.92	8201	3.28	1.42	1.85	1.95
All 20 markets		2.14	2.11	−0.03	−0.17				2.42	1.73	0.69	2.88
Cross-country average		2.22	2.15	−0.08	−0.43				2.60	1.90	0.70	2.96

$100 \times 0.22 = 22$ bp per month, which is only about one standard error from the sample average premium. The conclusion is therefore that although there is no evidence that local beta risk is compensated in average returns, the power of the test is probably low due to difficulties in achieving sufficient spread in the postranking betas.[8]

The last columns of Table II give the returns on size-sorted portfolios. Although the size premium is only significant in a few individual countries, an internationally diversified portfolio of small stocks has significantly outperformed a portfolio of large stocks by approximately 69 basis points per month ($t = 2.88$) when securities are equally weighted or by 70 basis points ($t = 2.96$) when countries are equally weighted. The strong performance of small stocks has not been uniform: Of the five countries with the largest size returns, four are from Latin America, and only in 12 of the 20 countries have size returns been positive. A nonparametric Wilcoxon Signed Rank Test (SRT) on the 20 small (S) and big (B) average returns does not reject equal performance of small and big firms at the 10 percent level. Unreported results show that the performance of small stocks cannot be attributed to a negative correlation between beta and size. Of the 20 country-specific small minus big (SMB) excess return portfolios, 14 have a negative beta with respect to their respective IFCG indices. The average correlation between the SMB portfolios across countries is only 0.01, which suggests that most of the country-specific excess return variance can be diversified internationally. The low correlation of size-sorted portfolios across emerging markets is similar to the international evidence for developed markets reported by Heston et al. (1995), who conjecture that if most of the variance in size returns can be diversified internationally, the size premium is perhaps a reward for the lower liquidity of small stocks. Although a direct measure of liquidity, such as the bid-ask spread, is not available in the EMDB, the database provides information on share turnover. As will be shown in Section IV, the median turnover of the stocks in portfolio S is higher than in portfolio B. This does not reflect a positive association between turnover and average returns in emerging markets, but is a consequence of the sample selection criteria used by the IFC. Instead, the interesting finding is that even among stocks that are screened based on the total value of trading volume, small stocks earn a return premium over large stocks in emerging markets. This seems to be at odds with a simple liquidity explanation of the size premium.

B. Momentum and Value

Momentum or relative strength portfolios are formed by ranking stocks in each country on prior six-month return. As shown in Jegadeesh and Titman (1993) and Rouwenhorst (1998) for developed markets, momentum returns

[8] It is conceivable that a larger spread on beta can be obtained by constructing the beta-sorted portfolios from only the extreme preranking beta deciles. Because these portfolios have fewer securities, they are not as well diversified and the power of the means test is attenuated by a larger standard error of the average excess return.

accrue gradually over a period of up to one year after ranking. Contrary to the beta- and size-sorted portfolios, it is important to select a holding period that is longer than one month. For ease of comparison with earlier papers a holding period of six months is chosen. And similar to Jegadeesh and Titman, I report the monthly average return across six strategies, each starting one month apart to handle the issue of overlapping observations. To attenuate the effect of bid-ask bounce the portfolios are formed one month after the end of the ranking period. The positions initially weight stocks equally and are not rebalanced during the holding period. Return outliers are potentially a problem in the formation of momentum portfolios because momentum strategies select stocks based on extreme prior performance. For this reason I exclude at each ranking date the extreme five percent of the prior six- month return distribution in the portfolio formation.[9]

The first columns of Table III show that on average past Winners (W) outperform Losers (L) in 17 of the 20 countries (Wilcoxon SRT p-value $<$ 1 percent), and the average WML (Winners minus Losers) excess return is more than two standard errors away from zero in six countries. Implemented simultaneously across all 20 emerging markets, the WML excess return averages 0.39 percent per month ($t = 2.68$) if stocks are equally weighted, and 0.58 percent per month ($t = 3.96$) when countries are equally weighted. The statistical significance of the returns to these internationally diversified momentum portfolios is again a result of the low pairwise correlation between the momentum returns of individual countries, which averages -0.007 across all 20 emerging markets and never exceeds 0.25 for individual country pairs.

At first glance, the average momentum returns in emerging markets seem lower than those reported for developed markets by Jegadeesh and Titman (1993) and Rouwenhorst (1998).[10] However, the W and L portfolios in these studies contain only stocks from the top and bottom 10 percent of the prior return distribution, but the emerging markets momentum portfolios include stocks from the top and bottom 30 percent. Since the evidence for developed markets indicates that the strength of return continuation increases with past return, the coarser sort attenuates the documented momentum effect for emerging markets.

The remaining columns of Table III report the average returns for portfolios ranked on book-to-market. The stocks of firms with low B/M are commonly referred to as growth stocks, as opposed to value stocks which sell at high B/M multiples. The table shows that high B/M stocks have outperformed low B/M stocks in 16 of 20 countries (Wilcoxon SRT p-value $<$ 1 percent). Although the return differences are not always significant for individual countries, the average excess return of an internationally diversified high

[9] The results are qualitatively similar, although slightly weaker, if these extreme observations are included.

[10] Jegadeesh and Titman (1990) report an average excess return of about one percent per month in the United States, and Rouwenhorst (1998) documents a similar return for a diversified European portfolio.

Table III
Average Returns of Momentum and Book-to-Market Portfolios

Momentum portfolios are formed by sorting all stocks with available ranking information at the beginning of each month t on prior six-month return between month $t-7$ and month $t-1$. After excluding the top and bottom five percent, stocks are assigned to three equally weighted portfolios: Winners (top 30 percent), Average (middle 30 percent) and Losers (bottom 30 percent). Positions are held for six months and are not rebalanced during this interval. Columns 3–6 report the average return of the Loser (L) and Winner (W) portfolios, the average Winners minus Losers (WML) excess return, and the t-statistic of the mean WML excess return. Book-to-market (B/M) portfolios are constructed as follows: At the beginning of each month all stocks with available ranking information are sorted by country based on B/M into three groups: High (top 30 percent), Medium (middle 40 percent) and Low (bottom 30 percent). Columns 8–11 report the average return on equally weighted portfolios of low (L) and high (H) B/M stocks, the average High minus Low (HML-BM) excess return, and the t-statistic of the mean excess return. The reported returns are expressed in U.S. dollars as percentage per month. All is the equally weighted portfolio of stocks from all 20 countries. The cross-country average portfolio weights all countries equally. The standard errors are computed using the Newey–West correction for heteroskedasticity and autocorrelation.

	Average Returns of Momentum Portfolios					Average Returns of Book-to-Market Portfolios				
Country	Start	Losers	Winners	WML	t(WML)	Start	Low-BM	High-BM	HML-BM	t(HML-BM)
Argentina	8201	5.51	4.72	−0.79	−0.95	8701	4.73	6.41	1.68	1.08
Brazil	8201	4.21	4.22	0.01	0.01	8701	2.46	6.40	3.94	2.34
Chile	8201	1.23	2.60	1.37	3.18	8801	2.10	3.17	1.07	1.74
Colombia	8601	1.90	3.99	2.09	3.27	8701	1.96	1.60	−0.36	−0.40
Greece	8201	0.59	2.35	1.76	4.95	8701	1.61	2.92	1.31	1.68
Indonesia	9101	0.65	0.41	−0.24	−0.61	9001	0.24	1.34	1.11	1.57
India	8201	0.84	1.35	0.51	2.02	8701	1.13	1.18	0.05	0.08
Jordan	8201	−0.35	0.90	1.25	3.63	8701	0.02	0.09	0.06	0.15
Korea	8201	1.32	1.34	0.03	0.08	8701	0.17	1.75	1.58	3.99
Malaysia	8601	1.52	1.66	0.14	0.39	8701	1.49	2.52	1.02	2.37
Mexico	8201	2.48	3.01	0.52	0.89	8701	2.47	3.86	1.39	1.17
Nigeria	8601	1.76	3.18	1.43	1.79	8701	2.71	2.96	0.25	0.19
Pakistan	8601	0.82	1.10	0.28	0.84	8701	1.12	1.07	−0.05	−0.08
Philippines	8601	2.69	2.85	0.16	0.33	8801	1.11	1.62	0.51	0.77
Portugal	8901	0.02	1.19	1.16	2.11	8901	0.97	0.37	−0.60	−0.93
Taiwan	8601	3.05	2.58	−0.47	−1.39	8701	2.72	3.73	1.01	1.42
Thailand	8201	0.93	1.63	0.70	1.58	8701	2.00	0.44	−1.56	−1.80
Turkey	8901	4.04	4.51	0.48	0.73	8901	3.41	6.27	2.86	1.60
Venezuela	8601	2.68	2.71	0.03	0.05	8701	2.27	3.54	1.27	0.93
Zimbabwe	8201	1.94	2.69	0.75	1.23	8701	1.48	3.80	2.31	1.86
All 20 markets		1.74	2.13	0.39	2.68		1.70	2.42	0.72	3.35
Cross-country average		1.86	2.44	0.58	3.96		1.90	2.83	0.93	3.68

minus low B/M excess return (HML) is 0.72 percent per month ($t = 3.35$) if stocks are weighted equally, or 0.93 percent per month ($t = 3.68$) if countries are weighted equally. Unreported results show similar excess returns for portfolios sorted on earnings-to-price. The excess return of equally weighted B/M portfolios translates to an estimated value premium of 9.00 percent per annum, which is close to the historical averages of 7.60 percent reported by Fama and French (1998) for developed markets between 1974 and 1995. They report a value premium of 16.91 ($t = 3.06$) for B/M-sorted portfolios that are value-weighted and diversified across 17 emerging markets between 1987 and 1995.

C. Emerging Market Return Factors: Local or Global Risks?

The previous sections show that on average across emerging markets small stocks outperform large stocks, past medium-term winners outperform medium-term losers, and value stocks outperform growth stocks. Are these return factors predominantly local, or do they have common regional or global components as well? Panel A of Table IV examines the return factor correlations among emerging markets and within geographical regions, and Panel B presents the sensitivity of the internationally diversified emerging markets return factors to a set of global risk factors. The first entry in Panel A shows that the pairwise correlation between the excess returns of the 20 beta-sorted portfolios averages 0.02 across all markets. The remainder of the first column shows a similarly low average correlation for the other return factors. The next columns show that the correlations are not appreciably higher among members of the same regional IFC indices. Even between the geographically concentrated emerging markets of Latin America, the average sample correlation between the return factors never exceeds 0.03. The right-hand side of Panel A gives average sample correlations for the last five years of the sample. During this period most emerging markets had relaxed barriers to cross-border investment, which can lead to an increase in the correlations between country market returns (Bekaert and Harvey (1997a, 1997b)). This is illustrated by inspecting the last line of Panel A, which give the average correlations between the IFCG country index returns. The average estimated pairwise correlation between the IFCG country returns is 0.18 over the last five years, compared to the full sample correlation of 0.10. However, there is no clear increase in the correlation between the local return factors. This suggests that the factors that influence country performance are distinct from those that drive expected return differences within markets. In conclusion, the correlation evidence suggests that the cross-sectional differences between expected returns are primarily driven by local factors.

The easiest way to assess the influence of global components would be to run a multiple regression of the local return factors on their global counterparts. However, global momentum, and size returns are not readily available. Panel B gives the coefficients of a simpler regression that includes the

Table IV

Correlation between Emerging Markets Factor Portfolios and Global Factor Exposures

Panel A gives the average pairwise correlation between the local excess return factor portfolios of emerging markets. The second column gives the average cross-correlation for all 20 markets. The next three columns give the average correlation by region: Latin America (Argentina, Brazil, Chile, Columbia, Mexico, and Venezuela), Asia (India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Taiwan, and Thailand), and EMEA (Europe/Middle East/Africa: Greece, Jordan, Nigeria, Portugal, Turkey, and Zimbabwe). The last row of Panel A gives the correlations between the IFC Global country index returns of the sample countries. Panel B reports the results of regressing the factor portfolios that are diversified across 20 emerging markets on the Morgan Stanley Capital International world excess market return, $R_M - r_f$, and the global Fama–French (1998) High minus Low Book-to-Market Portfolio (HML-BM). Due to data availability, the full sample results in Panel B end in 1995. All returns are measured in U.S. dollars.

Panel A: Correlation between Emerging Markets Factor Portfolios

	Full sample: 1982–1997:4				1992:4–1997:4			
Portfolio	All Markets	Latin America	Asia	EMEA	All Markets	Latin America	Asia	EMEA
HML-β	0.02	0.01	0.05	0.06	0.03	0.03	0.10	0.06
SMB	0.01	0.03	0.02	0.02	0.01	0.06	0.06	0.03
WML	−0.01	−0.02	0.01	−0.05	0.01	0.05	0.01	−0.09
HML-BM	0.01	0.00	−0.01	0.06	0.04	0.07	−0.01	0.13
Global IFC index returns	0.10	0.04	0.20	0.08	0.18	0.19	0.32	0.12

Panel B: Factor Exposures to Global Risk Factors

$$R_{i,t} - r_{f,t} = a + b\,[R_{M,t} - r_{f,t}] + c\ \text{HML-BM}_t + e_{i,t}$$

	Full sample: 1982–1995							1991–1995						
	a	$t(a)$	b	$t(b)$	c	$t(c)$	R^2	a	$t(a)$	b	$t(b)$	c	$t(c)$	R^2
HML-β	−0.15	−0.73	0.08	1.57	0.16	1.61	0.02	−0.31	−1.17	0.08	0.94	0.45	3.37	0.18
SMB	0.86	3.41	−0.06	−0.98	0.08	0.66	0.08	0.26	0.83	−0.33	−3.41	0.12	0.77	0.19
WML	0.36	1.92	0.05	1.05	−0.10	−1.13	0.04	0.24	1.52	0.08	1.59	−0.21	−2.61	0.17
HML-BM	0.91	4.37	−0.06	−1.28	0.11	1.11	0.19	0.98	3.45	−0.07	−0.84	0.02	0.16	0.19

excess returns of the Morgan Stanley Capital International (MSCI) world market portfolio and the book-to-market portfolio of Fama and French (1998) as independent variables.[11] Over the full sample, approximately half of the estimated global exposures are negative, and none of the factor portfolios have significantly positive loadings on the global risk factors. As a consequence, it is not surprising that the global risk factors are unable to explain the mean returns of the emerging markets return factors. With the exception of the momentum factor, the intercepts of the regressions are close to the raw excess return reported in Tables II and III.[12] Over the last five years of the sample, the intercepts are insignificant for momentum and size, not because of increased explanatory power of the global risk factors, but because the raw momentum and size premiums are lower during this period. The combined evidence from the correlations and the exposure regressions provides further evidence that during much of the sample period emerging markets have been isolated from world markets.

III. A Bayesian Interpretation of Return Premiums around the World

Table V summarizes the average emerging markets factor premiums, as well as their counterparts from the United States and other international developed markets reported elsewhere in the literature.[13] The fact that qualitatively similar factors play a role in both financially integrated markets and in countries with segmented capital markets makes it more likely that the premiums are fundamentally related to the way in which financial markets set prices. However, despite the large *t*-statistics in Table V, some individuals may still be skeptical about the presence of these risk premiums because of their prior beliefs about the distribution of the returns before examining the data. For example, based on reading the extensive literature on (weak form) market efficiency, someone may have strong prior beliefs that momentum strategies, which trade stocks based on their most recent six-month price history, are equally likely to return positive or negative profits. How would this "skeptic" update his prior beliefs after consecutively examining the momentum premiums for the U.S., international, and emerging markets reported in Table V?

[11] I thank Ken French for making these data available, in addition to the time series for SMB and HML-BM portfolios for the United States and for international markets outside of the United States, which will be used in Section III. A detailed description of the methodology used to construct these series can be found in Fama and French (1996, 1998).

[12] Adding the SMB and WML excess returns from the United States as regressors does not affect the results.

[13] The HML-BM returns for the United States and international markets are from Fama and French (1998), as well as the time series for SMB. The SMB for Europe and WML returns for the United States and Europe are from Heston, Rouwenhorst, and Wessels (1999) and Rouwenhorst (1998). They are constructed in the same way as the size and momentum returns in emerging markets.

Table V

Return Premiums around the World

The table summarizes a sample of international evidence on return premiums around the world. The U.S. return premiums for size and book-to-market (B/M) represent the excess return of small over large stocks (SMB) and the excess return of high over low B/M stocks (HML-BM) from Fama and French (1996, 1998) updated through 1997. U.S. and European WML momentum returns are from Rouwenhorst (1998). They are calculated as the excess return of a portfolio of stocks with highest prior six-month return (Winners) and a portfolio containing the stocks with lowest prior six-month performance (Losers). Winners and Loser portfolios contain the top and bottom three deciles of the prior six-month return distribution. The International B/M return premium is the excess return of an international portfolio of high B/M stocks from 12 developed markets outside the United States and a portfolio of low B/M stocks from those same countries, as reported in Fama and French (1998). The size premium for Europe is the excess return of small and large stocks, averaged across 12 countries in Europe, reported in Heston, Rouwenhorst, and Wessels (1999). The emerging markets premiums represent the average across 20 emerging markets. The table gives for each sample the average return and the *t*-statistic of the sample mean. The bracketed *t*-statistics are computed as the average difference between the return premium in the United States or International/Europe and the premium in emerging markets (during the period that the samples overlap), divided by the standard error of the difference. The standard errors are computed using the Newey–West correction for heteroskedasticity and autocorrelation.

	United States			International[a]/Europe[b,c]			Emerging Markets		
Premium	Period	Mean	*t*-statistic	Period	Mean	*t*-statistic	Period	Mean	*t*-statistic
Size (SMB)	6307–9712	0.23	1.62	7901–9512	0.29[c]	3.67	8201–9704	0.70	2.96
			[2.96]			[2.36]			
Momentum (WML)	8001–9512	0.64	3.02	8001–9512	0.67[b]	6.33	8201–9704	0.58	3.96
			[−0.31]			[−0.65]			
Value (HML-BM)	6307–9712	0.41	3.28	7501–9512	0.50[a]	3.13	8701–9704	0.93	3.68
			[2.70]			[1.47]			

[a] Source: Fama and French (1998).
[b] Source: Rouwenhorst (1998).
[c] Source: Heston et al. (1999).

Bayes' Rule provides a natural framework to analyze how the combination of prior beliefs and information obtained by sampling the data influences individual beliefs. If an individual's prior belief about the mean return premium, μ, is given by the probability density function $P_0(\mu)$ and the likelihood of observing a sample premium $\bar{x}$ is $P_x(\bar{x}|\mu)$, Bayes' Rule states that the probability density function that describes the posterior beliefs about the mean return premium after observing the data, $P_1(\mu|\bar{x})$, is proportional to $P_x(\bar{x}|\mu)P_0(\mu)$. Assuming normal distributions for prior beliefs and the sample means, the distribution for the posterior mean will also be normal.[14] In this case the mean of the posterior distribution μ_1 is simply a weighted average of the prior mean μ_0 and the sample mean $\bar{x}$:

$$\mu_1 = \frac{w_0\mu_0 + w_x\bar{x}}{w_0 + w_x}, \tag{1}$$

where the weights w_0 and w_x are the precisions (inverse of the variances) of the prior and sample means. The precision of the posterior distribution is $w_1 = w_0 + w_x$.

Suppose there is an investor who is skeptical about the ability of past returns to predict future returns and, before examining the data, believes that the average excess return of momentum investing is not different from the excess return of two random portfolios with the same number of securities. To characterize the distribution of these prior beliefs he takes the same 18 years of monthly data from the United States that were used to compute the momentum returns in Table V and he constructs two random "momentum" portfolios. The difference between the average returns of these portfolios is close to zero with a standard error of 0.06 percent per month. The actual sample average excess return of momentum strategies in the United States is 0.64 percent per month with a standard error of 0.217 percent. Using equation (1), the skeptic's posterior beliefs after observing the U.S. evidence would be given by a normal distribution with a mean of 0.046 and a standard deviation of 0.058. Defining the odds ratio as the probability that the average return premium is positive divided by the probability that the average return premium is negative, the skeptic would update his prior odds ratio of 1 (even odds) to about 7:2 in favor of a positive momentum premium. How would the European and emerging markets evidence further alter these beliefs? If the U.S. and European samples were independent, it would be possible to simply use the posterior distribution obtained from the U.S. data as the prior distribution before observing the European sample mean, and find a new posterior distribution by substituting the European sample moments into equation (1). However, momentum strategies are correlated across countries (Rouwenhorst (1998)). To account for the covariance

[14] With 15 to 30 years of monthly data available, the distributions of the sample means are likely to be close to normal.

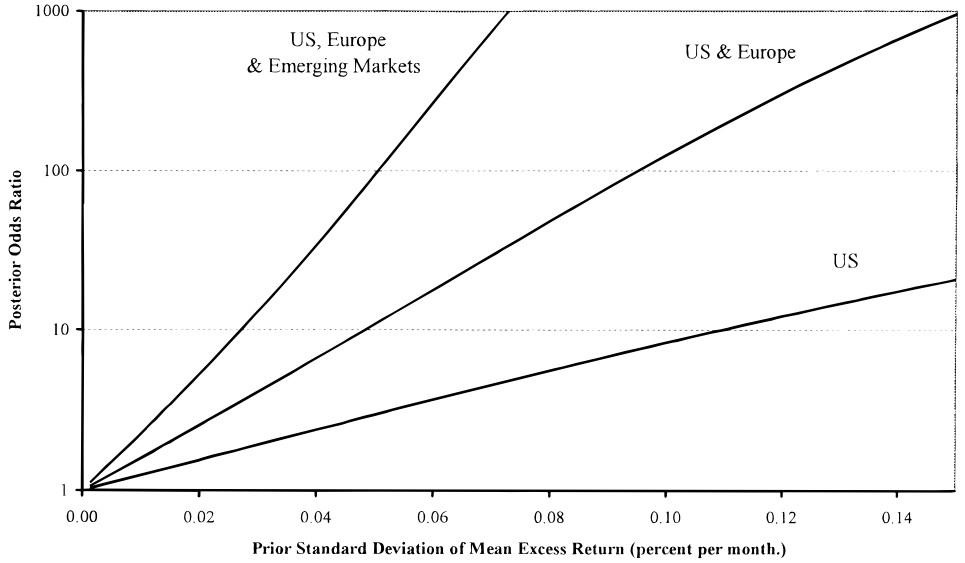

Figure 1. Posterior odds ratio of a positive momentum premium. The posterior odds ratio is defined as the posterior probability that the mean excess return of momentum investing (WML) is positive divided by the posterior probability that the mean return premium is negative. The figure plots the posterior odds ratio for an individual with prior beliefs that the mean return is zero, as a function of the standard deviation of these prior beliefs. The three lines show how this individual updates his prior beliefs using Bayes' Rule, after consecutively observing the sample average excess returns to momentum investing in the United States, Europe, and Emerging Markets.

between the regional sample means, I update the skeptic's initial prior beliefs using the sample means and standard deviations of two momentum portfolios that combine the information from the United States and the international data: The first portfolio combines stocks from both the United States and Europe, the second portfolio is diversified across all three regions. Regions are weighted equally. By forming portfolios across regions, the dependence between the regional returns will be reflected in the sample variances of the combined portfolios.[15] Updating the initial prior beliefs using the sample means of these internationally diversified momentum portfolios increases the posterior odds of a positive momentum premium to about 18:1 and 265:1 respectively. Figure 1 illustrates how the posterior odds are affected by changes in the precision of the prior beliefs. The posterior odds ratios are increasing in the standard deviation of the mean of the prior distribution: As an individual's prior beliefs become more diffuse, more weight will be placed on the information provided by the sample. Therefore, Fig-

[15] To the extent that the portfolios combine time series of different lengths, the variance of the internationally diversified portfolios will be heteroskedastic, even if the regional returns are not. For this reason, a correction for heteroskedasticity is used to compute the standard errors of the average returns that are diversified across regions.

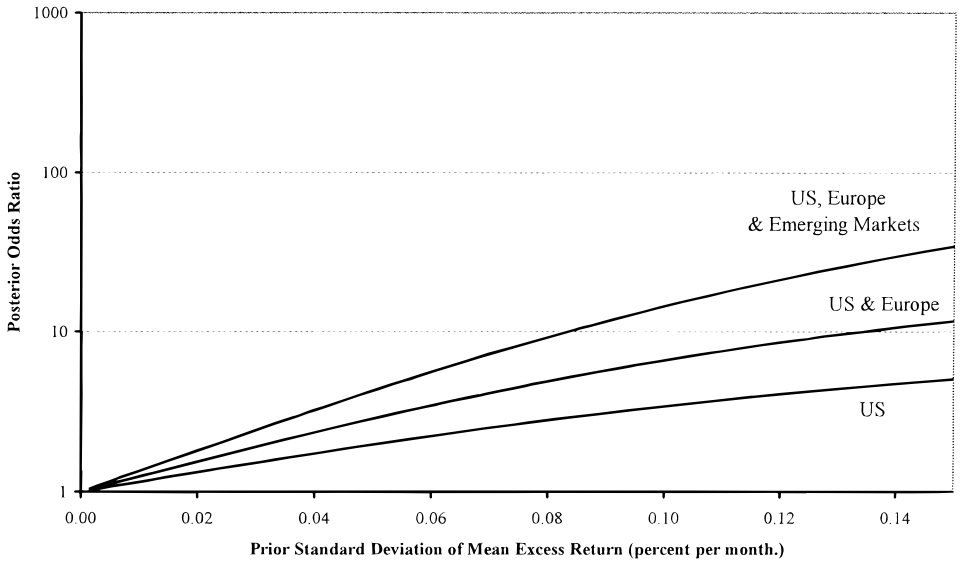

Figure 2. Posterior odds ratio of a positive size premium. The posterior odds ratio is defined as the posterior probability that the mean excess return of size portfolios (SMB) is positive divided by the posterior probability that the mean return premium is negative. The figure plots the posterior odds ratio for an individual with prior beliefs that the mean return is zero, as a function of the standard deviation of these prior beliefs. The three lines show how this individual updates his prior beliefs using Bayes' Rule, after consecutively observing the sample average excess returns of size portfolios in the United States, Europe, and Emerging Markets.

ure 1 shows how confident an individual has to be about his prior beliefs that the mean return of momentum investing is zero, in order for the posterior odds not to exceed a certain ratio.

Figures 2 and 3 show the posterior odds ratios for the size and value premiums. If the same distribution is used to characterize the prior beliefs about size and value premiums, the empirical evidence gives posterior odds ratios of 2.3, 3.4, and 5.6 (size) and 6.5, 14.1, and 34.3 (value). In the case of value investing, the emerging markets evidence influences the beliefs of the skeptic by more than doubling the posterior odds that the return premium for value and momentum is positive, and the posterior probability of a positive value premium exceeding 95 percent. The posterior probability of a positive size premium exceeds 95 percent for investors whose prior standard deviation of the mean premium exceeds 0.12 percent per month.

One of the motivations for examining international samples is to address the potential data-snooping bias in U.S. data. An investor who has prior beliefs that the true return premiums are zero, and that the reported premiums for the United States are the outcome of repeated data snooping, may choose to discard the U.S. evidence entirely and only examine evidence from international developed and emerging markets to update his priors. Unreported results show that if the standard deviation of his prior beliefs about

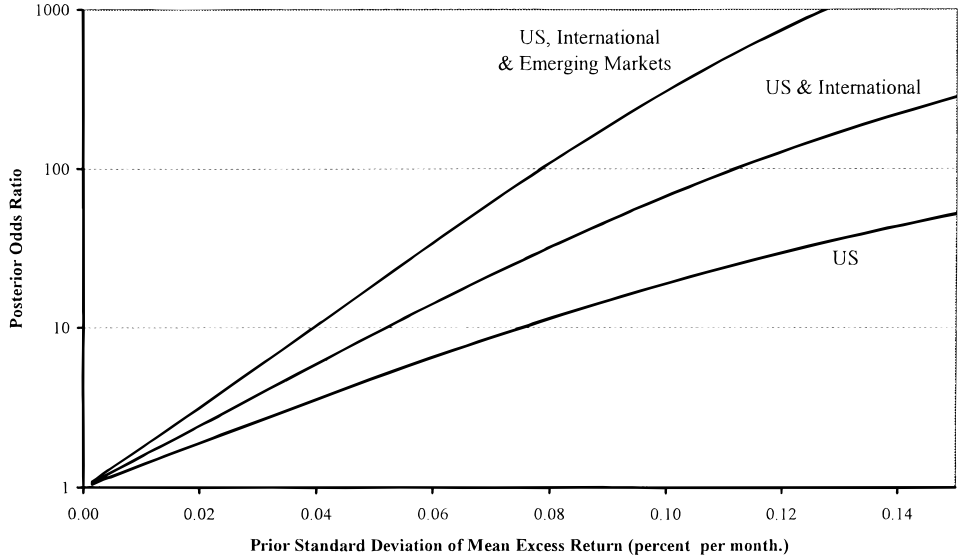

Figure 3. Posterior odds ratio of a positive value premium. The posterior odds ratio is defined as the posterior probability that the mean excess return of High minus Low Book-to-Market portfolios (HML-BM) is positive divided by the posterior probability that the mean return premium is negative. The figure plots the posterior odds ratio for an individual with prior beliefs that the mean return is zero, as a function of the standard deviation of these prior beliefs. The three lines show how this individual updates his prior beliefs using Bayes' Rule, after consecutively observing the sample average excess returns of Book-to-Market portfolios in the United States, Europe, and Emerging Markets.

the mean exceeds 0.08 percent per month, the posterior odds ratio after observing only the international and emerging markets evidence will exceed 20 for each of the return premiums (size, momentum, and value). The conclusion is that unless investors have strong prior beliefs to the contrary, the combined evidence from developed and emerging markets favors the hypothesis that size, momentum, and value are compensated for in average returns around the world.

IV. Share Turnover and Emerging Market Stock Returns

Despite the evidence that similar return factors are compensated for in average returns around the world, an important question remains unanswered: What is the (economic) interpretation of these premiums? Fama and French (1996) interpret the premiums as a rejection of the CAPM in favor of a linear multifactor model of returns. By contrast, Daniel and Titman (1997) show that the premiums in the United States are not related to factors exposure, but instead to firm characteristics. One firm characteristic that is of particular interest to investors in emerging markets is liquidity, and work by Amihud and Mendelson (1986), Hu (1997), Chalmers and Kadlec

Table VI

Average Returns of Turnover Portfolios

At the beginning of each month all stocks with available ranking information are ranked by country into three groups based on share turnover: High (top 30 percent), Medium (middle 40 percent) and Low (bottom 30 percent). Turnover is measured as the number of shares traded in a month as a fraction of the total number of shares outstanding at the beginning of the month. Columns 3–6 report the average return on equally weighted portfolios of High (H) and Low (L) turnover stocks, the average HML-T excess return. $t(\ )$ is the mean excess return divided by its standard error corrected for heteroskedasticity and autocorrelation.

		Average Returns Turnover Portfolios			
Country	Start Date	Low-T	High-T	HML-T	t(HML-T)
Argentina	8701	7.21	5.20	−2.01	−0.90
Brazil	8701	3.91	2.85	−1.07	−0.97
Chile	8701	2.86	2.84	−0.02	−0.04
Colombia	8701	2.00	2.71	0.71	0.90
Greece	8701	1.65	2.80	1.14	1.45
Indonesia	9001	−0.38	1.46	1.84	3.88
India	8701	0.75	1.45	0.70	1.15
Jordan	8701	0.27	0.47	0.20	0.34
Korea	8701	0.97	1.08	0.11	0.19
Malaysia	8701	1.54	1.86	0.32	0.50
Mexico	8701	3.17	2.83	−0.35	−0.48
Nigeria	8701	3.16	1.74	−1.43	−2.08
Pakistan	8701	1.51	1.00	−0.50	−1.12
Philippines	8801	1.36	1.35	−0.01	−0.01
Portugal	8901	0.14	0.91	0.76	1.52
Taiwan	8701	2.90	2.87	−0.03	−0.04
Thailand	8701	0.63	1.26	0.62	0.91
Turkey	8901	3.62	4.77	1.15	0.92
Venezuela	8701	3.01	3.77	0.75	0.64
Zimbabwe	8701	1.97	3.02	1.06	1.12
All 20 markets	8701	1.97	2.11	0.14	0.72

(1998), and Datar, Naik, and Radcliffe (1998) suggests that liquidity is compensated for in expected returns. If small stocks, past medium-term winners, and value stocks are on average less liquid than big stocks, past medium-term losers, and growth stocks, the reported premiums in emerging markets may simply be a compensation for their relative illiquidity.

To examine the potential confounding influence of liquidity, I study the cross section of returns and share turnover. Two questions are of interest: Is there a difference in the average returns of turnover-sorted portfolios? If so, is it possible that a "turnover premium" indirectly drives the returns of the factor portfolios? The returns of turnover-sorted portfolios are summarized in Table VI. There is little evidence of a difference between the average returns of portfolios formed by ranking stocks based on prior turnover. The return on high turnover portfolios exceeds the return on a portfolio of low

turnover stocks in 12 of the 20 countries studied, and the absolute value of the t-statistics for the equality of means exceeds 2 in only two countries, which is only slightly higher than can be expected purely by chance. Averaged across all 20 markets, the excess return of high turnover stocks is insignificantly different from the return on low turnover stocks ($t = 0.72$). These results are much weaker than the findings of Claessens et al. (1998) who report a positive association between average returns and turnover in 17 of 19 markets in an earlier and shorter sample.

By contrast, Table VII shows that there are strong turnover patterns associated with the local factor portfolios of emerging markets. For example, the average median turnover of small stocks is higher than the turnover of the large stocks in 15 of the 20 countries. As pointed out previously in Section I, this is in part a consequence of the sample selection criteria used by the IFC: For a small stock to clear the sample selection hurdle in terms of total value of shares traded, it has to have higher turnover than a large stock. However, size is not the only factor that is associated with turnover. Average turnover is positively associated with beta in 19 of 20 countries, with value in 14 of 20 countries, and momentum in 16 of 20 countries. The results for beta- and size-sorted portfolios are consistent with the findings reported by Lo and Wang (1997), who find in a cross section of U.S. firms that individual stock turnover is positively related to beta and residual standard deviation, and negatively related to firm size. The sample selection bias that leads to the negative cross-sectional correlation between size and turnover may indirectly be responsible for the turnover patterns in the other factor portfolios. For example, high B/M firms are on average smaller than low B/M firms in all 20 markets, and this size-bias likely contributes to the turnover differences between value and growth portfolios. However, size cannot explain the turnover of beta-sorted and momentum portfolios. The relationship between beta and turnover is particularly strong. This is despite the fact that high beta stocks are larger than low beta stocks in 14 of 20 markets, which would attenuate the positive turnover difference between beta-sorted portfolios. A possible explanation is that high beta stocks are on average more volatile, and more sensitive to portfolio rebalancing by investors. At first glance, the turnover difference between momentum portfolios is the weakest among the four factors. However, unreported results show that past Losers are on average smaller than past Winners in all markets, and this size bias is likely to attenuate differences in turnover. Interestingly, the median turnover of the Losers is lower than the turnover of the median stock in 18 of the 20 countries. This somewhat surprising considering the fact that Losers are on average small, and that Losers (as well as Winners) tend to be more volatile than the average stock in a country, because ranking on past return is correlated with volatility. Odean (1998) attributes the low turnover of Losers in the United States to a disposition effect whereby investors are more reluctant to realize losses than take gains. Whether similar turnover patterns are associated with momentum strategies in other developed markets is not known. If so, these data can potentially suggest an

Table VII

Turnover Characteristics of Local Factor Portfolios

The table summarizes the median turnover of individual stocks, averaged over time, of country-factor portfolios that are formed by sorting stocks on local beta, size (market value of equity), momentum (past 6-month return), and book-to-market. For each portfolio the median turnover is computed by month, and the table reports the time-series average of these monthly medians, and the average difference between medians by country. The third column (Full) gives the average median turnover of all stocks in a country. The following columns give the average turnover of the stocks in the country-factor portfolios. The last row is the equally weighted portfolio of stocks from all 20 countries. $t(\ )$ is the average divided by its standard error, corrected for heteroskedasticity and autocorrelation. Turnover is measured as the number of shares traded during a month expressed as a percentage of the total number of shares outstanding at the beginning of that month.

			Beta			Size			Momentum			Book-to-Market		
Country	Start	Full	Low-β	High-β	t(HML-β)	Small	Big	t(SMB)	Losers	Winners	t(WML)	Low-BM	High-BM	t(HML-BM)
Argentina	8701	3.00	2.64	3.01	1.42	2.40	2.81	−1.52	3.61	2.85	−2.29	2.91	4.29	4.19
Brazil	8701	1.82	1.16	2.38	9.20	2.73	1.17	5.67	2.25	1.69	−1.87	1.26	2.52	6.80
Chile	8701	0.49	0.41	0.71	3.96	0.51	0.63	−2.34	0.45	0.56	2.01	0.59	0.60	0.12
Colombia	8701	0.43	0.53	0.45	−2.31	0.53	0.48	0.77	0.42	0.49	1.96	0.38	0.48	2.49
Greece	8701	1.51	1.40	1.56	0.70	2.28	1.44	3.45	1.40	1.61	1.76	1.90	1.49	−3.15
Indonesia	9001	2.42	2.07	3.05	4.97	2.77	2.16	2.15	2.51	2.11	−3.17	2.13	3.18	4.54
India	8701	1.88	2.27	2.94	1.96	2.48	2.12	1.25	2.00	2.34	1.68	1.59	2.45	3.21
Jordan	8701	1.79	1.18	1.91	2.30	4.82	0.86	4.20	1.26	2.50	2.69	4.16	1.07	−4.08
Korea	8701	8.13	6.99	8.67	2.82	13.09	6.39	5.40	7.70	8.77	1.46	8.54	8.06	−1.28
Malaysia	8701	1.89	0.87	3.28	6.80	4.79	0.92	5.93	2.06	1.83	−0.64	1.76	2.45	1.69
Mexico	8701	2.74	1.77	4.05	6.35	2.01	3.42	−6.12	2.53	3.29	3.28	3.24	2.38	−2.74
Nigeria	8701	0.04	0.05	0.05	−0.60	0.04	0.05	−1.69	0.04	0.04	0.78	0.04	0.04	−1.62
Pakistan	8701	0.44	0.25	0.62	7.71	0.53	0.47	0.65	0.45	0.47	0.43	0.04	0.04	−1.62
Philippines	8801	1.78	1.35	3.64	4.14	3.30	1.44	4.04	1.76	1.92	0.53	0.37	0.52	2.59
Portugal	8901	1.34	1.37	1.69	3.02	1.38	1.46	−0.75	1.21	1.60	2.84	1.55	1.45	−0.94
Taiwan	8701	30.22	22.20	38.18	4.29	53.39	12.16	7.41	28.94	32.47	0.78	23.86	37.16	4.39
Thailand	8701	3.48	2.66	4.76	3.47	5.20	2.81	2.23	3.19	3.77	1.58	3.09	3.94	1.49
Turkey	8901	4.29	4.42	4.57	0.24	11.58	2.69	6.53	3.86	5.04	1.69	4.18	8.16	2.51
Venezuela	8701	0.84	0.67	1.83	2.84	1.57	1.42	0.28	0.89	1.21	0.98	0.95	1.37	1.48
Zimbabwe	8701	0.29	0.26	0.34	2.27	0.54	0.22	3.92	0.31	0.35	0.86	0.25	0.57	3.30
All 20 markets		1.74	1.10	2.14	12.46	2.30	1.40	9.41	1.62	1.78	2.38	1.62	1.89	5.89

interesting dimension for distinguishing between various models that attempt to explain return continuation (Hong and Stein (1997), Daniel et al. (1998) and Berk, Green, and Naik (1998)).

The conclusion is that turnover is positively associated with the same attributes that explain cross-sectional differences in average returns. Absent a dynamic theory that links returns to trading activity, these patterns are difficult to explain. However, the empirical evidence suggests that common factors may drive the cross section of returns and turnover, which provides an interesting challenge for theoretical models to explain. And a practical implication of these findings is that portfolio managers who seek to increase their exposure to the return factors in emerging markets can do so without simultaneously increasing their positions in relatively illiquid (low turnover) securities.

V. Conclusion

This paper examines the cross section of returns in 20 emerging markets using return data of 1750 individual stocks. The first conclusion is that the return factors in emerging markets are qualitatively similar to those in developed markets: Small stocks outperform large stocks, value stocks outperform growth stocks and emerging markets stocks exhibit momentum. There is no evidence that local market betas are associated with average returns. The low correlation between the country return factors suggests that the premiums have a strong local character. Furthermore, global exposures cannot explain the average factor returns of emerging markets. There is little evidence that the correlations between the local factor portfolios have increased, which suggests that the factors responsible for the increase of emerging market country correlations are separate from those that drive the differences between expected return within these markets. A Bayesian analysis of the return premiums in developed and emerging markets shows that, unless one has strong prior beliefs to the contrary, the empirical evidence favors the hypothesis that size, momentum, and value strategies are compensated for in expected returns around the world. Finally, the paper documents the relationship between expected returns and share turnover, and examines the turnover characteristics of the local return factor portfolios. There is no evidence of a relation between expected returns and turnover in emerging markets. However, beta, size, momentum, and value are positively cross-sectionally correlated with turnover in emerging markets. This suggests that the return premiums do not simply reflect a compensation for illiquidity.

REFERENCES

Amihud, Yakov, and Haim Mendelson, 1986, Asset pricing and the bid-ask spread, *Journal of Financial Economics* 17, 223–249.

Anchour, Dana, Campbell R. Harvey, Greg Hopkins, and Clive Lang, 1998, Stock selection in emerging markets: Portfolio strategies for Malaysia, Mexico, and South Africa, *Emerging Markets Quarterly* 2, 38–91.

Banz, Rolf W., 1981, The relationship between return and market value of common stocks, *Journal of Financial Economics* 9, 3–18.

Bekaert, Geert, Claude Erb, Campbell R. Harvey, and Tadas Viskanta, 1997, What matters in emerging markets investments?, *Emerging Markets Quarterly* 1, 1–30.

Bekaert, Geert, and Campbell R. Harvey, 1995, Time-varying world market integration, *Journal of Finance* 50, 403–444.

Bekaert, Geert, and Campbell R. Harvey, 1997a, Emerging equity market volatility, *Journal of Financial Economics* 43, 29–77.

Bekaert, Geert, and Campbell R. Harvey, 1997b, Foreign speculators and emerging equity markets, Working paper 1441, Graduate School of Business, Stanford University.

Berk, Jonathan, 1995, A critique of size related anomalies, *Review of Financial Studies* 8, 275–286.

Berk, Jonathan B, Richard C. Green, and Vasant Naik, 1998, Optimal investment, growth options, and security returns, *Journal of Finance*, forthcoming.

Chalmers, John M. R., and Gregory B. Kadlec, 1998, An empirical examination of the amortized spread, *Journal of Financial Economics* 48, 159–188.

Chan, Louis K. C., Jason Karceski, and Josef Lakonishok, 1997, The risk and return from factors, mimeo, University of Illinois.

Claessens, Stijn, Susmita Dasgupta, and Jack Glen, 1998, The cross section of stock returns: Evidence from emerging markets, *Emerging Markets Quarterly* 2, 4–13.

Daniel, Kent, David Hirshleifer, and Avanidhar Subrahmanyam, 1998, Investor psychology and security market under- and overreactions, *Journal of Finance* 53, 1839–1885.

Daniel, Kent, and Sheridan Titman, 1997, Evidence on the characteristics of cross-sectional variation in stock returns, *Journal of Finance* 52, 1–34.

Datar, Vinay T., Narayan Y. Naik, and Robert Radcliffe, 1998, Liquidity and stock returns: An alternative test, Working paper, London Business School.

Fama, Eugene F., and Kenneth R. French, 1992, The cross-section of expected stock returns, *Journal of Finance* 67, 427–465.

Fama, Eugene F., and Kenneth R. French, 1996, Multifactor explanations of asset pricing anomalies, *Journal of Finance* 51, 55–84.

Fama, Eugene F., and Kenneth R. French, 1998, Value versus growth: The international evidence, *Journal of Finance* 53, 1975–2000.

Fama, Eugene F, and James MacBeth, 1973, Risk, return and equilibrium: Empirical tests, *Journal of Political Economy* 81, 607–636.

Goetzmann, William N., and Philippe Jorion, 1999, Re-emerging markets, *Journal of Financial and Quantitative Analysis*, forthcoming.

Harvey, Campbell R., 1995, Predictable risk and return in emerging markets, *Review of Financial Studies* 8, 773–816.

Haugen, Robert A, and Nardin L. Baker, 1996, Commonality in the determinants of expected stock returns, *Journal of Financial Economics* 41, 401–439.

Heston, Steven L., K. Geert Rouwenhorst, and Roberto E. Wessels, 1995, The structure of international stock returns and the integration of capital markets, *Journal of Empirical Finance* 2, 173–197.

Heston, Steven L., K. Geert Rouwenhorst, and Roberto E. Wessels, 1999, The role of beta and size in the cross-section of European stock returns, *European Financial Management* 5, 9–27.

Hong, Harrison, and Jeremy C. Stein, 1997, A unified theory of underreaction, momentum trading, and overreaction in asset markets, Working paper, Sloan School of Management, MIT.

Hu, Shing-yang, 1997, Trading turnover and expected stock returns: The trading frequency hypothesis and evidence from the Tokyo stock exchange, Working paper, National Taiwan University and University of Chicago.

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

Kothari, S. P., Jay Shanken, and Richard G. Sloan, 1995, Another look at the cross-section of expected returns, *Journal of Finance* 50, 185–224.

Lakonishok, Josef, Andrei Shleifer, and Robert W. Vishny, 1994, Contrarian investment, extrapolation and risk, *Journal of Finance* 49, 1541–1578.

Lo, Andrew W., and A. Craig MacKinlay, 1990, Data-snooping biases in tests of asset pricing models, *Review of Financial Studies* 3, 431–467.

Lo, Andrew W., and Jiang Wang, 1997, Trading volume: definitions, data analysis and implications of portfolio theory, Working paper, Sloan School of Management, Massachusetts Institute of Technology.

Loughran, Tim, 1997, Book-to-market across firm size, exchange, and seasonality: Is there an effect?, *Journal of Financial and Quantitative Analysis* 32, 249–268.

MacKinlay, A. Craig, 1995, Multifactor models do not explain deviations from the Capital Asset Pricing Models, *Journal of Financial Economics* 38, 3–28.

Odean, Terrance, 1998, Are investors reluctant to realize their losses?, *Journal of Finance* 53, 1775–1798.

Patel, Sandeep A., 1998, Cross-sectional variation in emerging markets equity returns January 1988–March 1997, *Emerging Markets Quarterly* 2, 57–70.

Rouwenhorst, K. Geert, 1998, International momentum strategies, *Journal of Finance* 53, 267–284.