

**Evidence of Short-Term Price Reversals Following Large One Day Movements  
in the Emerging Markets of Latin America and Asia\***

Mitchell Ratner, Ph.D.  
Associate Professor of Finance  
Rider University  
2083 Lawrenceville Road  
Lawrenceville, New Jersey 08648  
Tel.: (609) 896-5164  
Ratner@Enigma.Rider.Edu

Ricardo Leal, Ph.D.  
Associate Professor of Finance  
COPPEAD, Federal University of Rio de Janeiro  
CP 68514  
Rio de Janeiro, RJ BRAZIL  
21949-900  
Tel.: 55-21-560-6522  
Fax: 55-21-270-3848  
rleal@coppead.ufrj.br

February 1998

**Please send all correspondence to Dr. Leal**

\*The Authors wish to acknowledge the stock exchanges of Buenos Aires, São Paulo, Mumbai, Seoul, Mexico City, Manila, Taipei and Bangkok for providing data. We also would like to acknowledge Morgan Stanley Capital International for the use of their indices.

# **Evidence of Short-Term Price Reversals Following Large One Day Movements in the Emerging Markets of Latin America and Asia**

## **ABSTRACT**

This study examines the equity market overreaction in the ten of the largest emerging stock markets using daily data from January 1982 through March 1995. Market overreaction is observed in some emerging markets, but the evidence for the majority of the emerging markets is contrary to the market overreaction hypothesis. A logit analysis reveals that movements in the Japanese, U.S., and world indexes explain some of the large one-day movements in the emerging markets, particularly in the Asian markets. Given the generally insignificant abnormal returns following a large one-day movement, it is unlikely that a short-term trading strategy based on market overreaction would be beneficial.

## **I. INTRODUCTION**

Investors traditionally assume some level of capital market efficiency in the developed markets. Relatively little is known about the world's emerging markets, which are increasingly catching investor's attention. At the end of 1996, the emerging markets accounted for 11% of the \$20 trillion capitalization of world equity markets, compared with just 4% in 1986.

The purpose of this study is to examine the overreaction of stock prices in ten of the world's largest emerging markets. The countries in our sample represent 67% of the market capitalization of the emerging markets at the end of 1996 (IFC, 1997).<sup>1</sup> The results of the emerging markets are mixed - some markets demonstrate positive overreaction, while others a negative overreaction. A logit analysis reveals that the price movements in several of the emerging markets can be significantly explained by movements of the Japanese, U.S., and World stock indexes.

---

<sup>1</sup>Important markets omitted include South Africa (which was not listed by the IFC as an emerging market when we collected the data), Indonesia (which was smaller than our tenth smallest market, the Philippines, when our data collection was initiated in 1992), and China (which does not have a long enough time series).

## II. LITERATURE REVIEW

The efficient market hypothesis (EMH) is based on the belief that past price patterns in security movements are consistent with a random walk. Market efficiency tests in the literature are numerous and include early support for the EMH as in Fama (1970)<sup>2</sup>. However, a wealth of anomalous effects exist including the P/E effect, January effect, turn-of-the-month effect, and others in many international markets [Hawawini and Keim (1995); Cadsby and Ratner (1992)]. Emerging market seasonal anomalies have also been identified by Aggarwal and Rivoli (1989) and Agrawal and Tandon (1994). These patterns conflict with both the theoretical and empirical notions of rational expectations and market efficiency.

Two other efficiency-based hypotheses have been identified in the recent literature. The overreaction hypothesis (OH) suggests that extreme movements in equity prices are followed by “corrective” movements in the opposite direction of the initial overreaction. Cox and Peterson (1994) find significant reversals, but attribute them to bid-ask bounce and market liquidity. Their evidence does not support the OH in U.S. data. Earlier studies supporting the OH hypothesis include the following: Shiller (1981), Rosenberg, Reid, and Lanstein (1985), De Bondt and Thaler (1985), Howe (1986), Brown and Harlow (1988), Atkins and Dyl (1990), Lehman (1990), Jegadeesh (1990), Bremer and Sweeney (1991), and Chopra, Lakonishok, and Ritter (1992). A study supporting the OH in Brazil is Da Costa (1994).

Other researchers provide evidence contrary to the market overreaction anomaly. The uncertain information hypothesis (UIH) asserts that the abnormal returns following both positive and negative events should be positive [Beaver and Landsman (1981), Copeland and Mayers

---

<sup>2</sup>A survey of the world-wide predictability of stock returns can be found in Hawawini and Keim (1995) while Fama (1991) provides a review of the recent empirical work on the EMH.

(1982), and Davidson and Dutia (1989)]. One explanation of this apparent contradiction is offered by Dissanaikie (1994) who examines the methodology employed in most overreaction-type studies. Dissanaikie identifies an “arithmetic method” for cumulating security returns which he contends is sufficiently biased to affect the conclusions regarding market overreaction.

There is some evidence on overreaction in the emerging stock markets. Da Costa (1994) finds that the Brazilian stock market is over-reactive and that price reversals are asymmetric for a data set of Brazilian stocks. Harvey (1995a) finds that autocorrelation is much higher in emerging markets than in developed markets. He also suggests that the level of autocorrelation is directly associated with the size and the degree of concentration of the market. Higher autocorrelation would imply persistence in the sign of the returns, and consequently, predictability.

Erb, Harvey, and Viskanta (1995a) find that equity returns and volatility are predictable for a group of 40 countries by using credit risks obtained from *Institutional Investor* as the sole explanatory variable. Diamonte, Liew, and Stevens (1996) indicate that changes in political risk measures are capable of predicting the returns in emerging markets better than in developed markets. Erb, Harvey, and Viskanta (1995b) find evidence that negative U.S. performance influences other markets negatively, but positive U.S. performance produces mixed reactions. Harvey (1995b) addresses predictability utilizing pricing models and contends that emerging market returns seem to be more influenced by local rather than international risk factors. Bekaert and Harvey (1997) conclude that emerging market stock returns are increasingly influenced by world factors compared to local factors. Finally, Harvey (1995) and Defusco, Geppert, and Tsetsekos (1996) show diversification benefits of investing in emerging markets due to their low correlation with developed markets.

### **III. THE DATA**

The sample consists of ten of the largest emerging markets. Daily index levels are obtained for Argentina (Bolsa Indice General), Brazil (Indice BOVESPA), Chile (Indice General de Precios), India (Bombay Sensitive), Korea (Seoul Composite Index), Malaysia (Kuala Lumpur Composite Index), Mexico (Indice de Precios y Cotaciones), Philippines (Manila Composite Index), Taiwan (Taipei Weighted Price Index), and Thailand (Bangkok S.E.T.). The daily index returns are collected beginning in January 1982 through March 1995. The beginning period of January 1982 is selected arbitrarily. The indices for the United States (S&P 500), Japan (Nikkei 225) and the *Morgan Stanley World Index* (MSWI) are also included in the sample<sup>3</sup>. The daily returns are computed as the natural log difference in prices,  $\ln(P_{i,t}/P_{i,t-1})$ . To compute dollar returns, the exchange rate for each country is obtained from the Wall Street Journal. If a given exchange rate is missing due to a U.S. holiday, we input that day's rate as the average of the two surrounding days.

The indices utilized are preferred over other indices such as the IFC indices or the Morgan Stanley indices. The IFC indices are available only for a weekly frequency. The Morgan Stanley indices are new and did not become available until recently. We are aware that there may be a liquidity problem due to infrequent trading for some of the shares in our indices. However, these indices are broader than the ones computed by the IFC. The IFC selects the companies that comprise its indices based on their size, industry, and liquidity [Harvey (1995b)]. To verify how close the national indices resemble the IFC indices we computed the correlations between the IFC indices and the national indices for weekly returns in dollars for the 1989-1993 period for which we had IFC data and found an average correlation coefficient of 81% for the ten countries. The correlation coefficients between our indices and the monthly IFC total return indexes for the full

---

<sup>3</sup> The MSWI is a value-weighted index that includes the most liquid securities

period is 95%. This suggests that the national indices closely resemble the more widely used IFC indices.

Table 1 provides some measures for the ten markets. Most markets are above the \$U.S. 100 billion capitalization mark. Since our sample goes up to March 1995, we present the market capitalization as of December 1994 according to the IFC. Taiwan was the largest market by year-end 1994 and Argentina the smallest. In local currency, the highest mean returns are those for Argentina, Brazil, Chile, and Mexico - consistent with the high inflation rates prevailing in Latin America during the sample period. The standard deviation of the daily natural log differences of the index levels indicates that all Latin countries, except Chile, are the most volatile. Taiwan also demonstrates high volatility. The results reported in \$US are similar to the local returns results.

#### **IV. METHODOLOGY & RESULTS**

To maintain consistency across countries, daily stock returns are analyzed following large one-day price movements. A large one-day price movement, the event, occurs when a market changes in percentage terms more than three standard deviations from the mean of its index series. Two separate sets of tests are conducted; one set on large price declines, and the other on large price advances. The level of three standard deviations is chosen because it produces the greatest number of non-overlapping price movement events in each series. Given the volatility surrounding the world market crash of 1987, the month of October is excluded when identifying price movements. To account for the high level of inflation in some emerging markets, the tests are conducted on local currency returns and US\$ returns.

---

from 22 countries. The only emerging market included in the MSWI is Malaysia.

Both mean and market model returns are estimated over two 100-day trading periods consistent with Cox and Peterson (1994). The pre-event period is identified as 105 through 6 trading days prior to the large price change. The post-event period is from 21 through 120 days following the large price change. Mean returns and market model betas are averaged across events within each country. Statistical characteristics for markets having one-day price declines of at least three standard deviations are presented in Table 2. Matched pair t-tests of mean difference indicate that the pre-event and post-event means are not significantly different (with the exception of the Philippines in the local currency sample and Thailand in the US\$ sample). Market model betas are consistent in both pre-event and post-event periods, except for Brazil in the local sample and Japan and India in the US\$ sample. Average event day (day 0) returns vary from a high in Chile (-4.27%) to a low in Brazil (-16%) in local currency terms. In US\$ terms, the U.S (-4.33%) has the smallest price decline, while Brazil (-15.72%) still maintains the largest drop. Average world market day 0 returns are provided for comparison purposes. Also provided is the value of three standard deviations and the number of large declines in each country.

Abnormal returns for days 1 through 20 are determined with a market model approach using an average of the pre-event and post-event betas and the return of the MSWI as the market index. The abnormal returns are then averaged for each national market index. Cumulative average returns are then obtained for selected periods from days 1 to 20 after the price decline. The results are contained in Table 3.

According to the overreaction hypothesis, the returns following a large decline should “correct” themselves and significant positive returns should occur. The same result is expected under the uncertain information hypothesis. In the local returns sample, the only evidence of reversals occurs in Japan, Malaysia and the US at the 5% level of significance. Korea, Thailand,

Argentina, and Mexico provide weak evidence of a reversal at the 10% level of significance, while India provides evidence of continued negative returns in day 1 with the Philippines and Brazil with marginally significant negative returns at the 10% level. Brazil, however, demonstrates a longer-term reversal in days 4 through 20 at the 10% level.

In the US\$ sample, the evidence is similar to the local sample for Japan and India. Brazil indicates weak (10%) evidence of a short-term price reversal, while Mexico indicates a longer-term negative reaction in days 4 through 20 significant at the 5% level. In summary, there is no consistent pattern across markets and our emerging market evidence does little to support either the overreaction hypothesis or the uncertain information hypothesis.

#### *Explaining Large Declines in Emerging Market*

A logit model is applied to the time series data, where a large decline in an emerging market is transformed into a dependent dichotomous variable. In this model, the emerging market series is input as a dummy variable, where “1” represents a large decline in the market, and “0” is the alternative. The market returns of Japan and the US are selected as the independent variables<sup>4</sup>. A logit model is based on the cumulative logistic probability function and can be generally defined as

$$P_i = F(Z_i) = F(a + BX_i) = \frac{1}{1 + e^{-Z_i}} = \frac{1}{1 + e^{-(a + bX_i)}} \quad (1)$$

where  $P_i$  is the cumulative probability function,  $Z_i$  is assumed to be a continuous random variable determined by the independent variable  $X_i$ , and  $e$  represents the base of natural logarithms. Table 4 contains the results of the logit analysis.

---

<sup>4</sup> The correlation between the sample period returns of the MSWI with the S&P500 and the Nikkei returns are 73% and 63%, respectively. The correlation

Japan and the US have some significance in explaining the large declines in the emerging markets. In local returns terms, the Japanese local returns impact significantly Korea, Malaysia, the Philippines, and Thailand and, as expected, none of the Latin American countries. The US impacts all Asian countries significantly but for India. When the returns for the Latin countries are measured in dollars the US impacts Chile and Mexico significantly. In both local currency and U.S. dollars, the explanatory variables have generally more significance in the Asian emerging markets than in the Latin markets. India, which was one of the closed markets in the period showed no influence from the two major world markets, as did Latin America for most of the models.

#### *Tests Explaining Large One-Day Price Advances*

The previous tests are repeated on a separated sample of large one-day price advances, and are presented in tables 5-7. There is no evidence of any price reversals consistent with the overreaction hypothesis in the day 1 returns. From table 6, significant positive returns are evident in Korea, the Philippines, Brazil, and Mexico for the local returns and for Taiwan with dollar returns, which are consistent with the uncertain information hypothesis. Thailand is the only evidence of a reversal. All other markets do not indicate any significant day 1 returns. Once again, our results are not supportive of the occurrence of price reversals in emerging markets. The logit analysis in table 7 reveals that the developed markets of the U.S. and Japan account for some of the price advances in most markets in local terms and for a few markets in dollar terms.

## **V. CONCLUSIONS**

---

between the Nikkei and the S&P500 is a low 12%. Therefore, we did not use the MSWI in the logit model together with the S&P500 and the Nikkei.

This study examines the overreaction hypothesis and the uncertain information hypothesis in the 10 largest emerging equity markets in Asia and Latin America from January 1982 through March 1995. In the U.S. and Japan, the abnormal returns following a large one-day price drop are generally consistent with the overreaction hypothesis and the uncertain information hypothesis in that the returns following the large drop are positive and significant. The emerging market findings are not consistent with either theory, in that the abnormal returns following a large one-day price movements in these markets are generally insignificant.

There is minimal evidence supporting the hypotheses in Malaysia, Korea, Thailand, Argentina, and Mexico showing significant positive abnormal returns following a large decline on day zero. Moreover, there is evidence contrary to these hypotheses with significant negative abnormal returns following large declines in the Philippines and Brazil. In all of these cases, but for Malaysia, the level of significance is weak at 10%. The incidences of significant returns are even less evident in the results following the large one-day price advances.

A logit analysis examines the effect of the equity returns of Japan and the U.S. in explaining large one-day movements in the emerging markets. In the local currency tests, the developed markets explain some portion of large drops in Korea, Malaysia, the Philippines, and Thailand at the 5% level. The US and Japan seem to drive the large upward movements in most markets in local terms. In general, the east and southeast Asian markets seem to be more strongly influenced by the markets in Japan and in the US than the Latin American markets and India.

Given the low level of significance of the abnormal returns among the emerging markets, this evidence is not supportive of the overreaction hypothesis and the uncertain information hypothesis. This conclusion is consistent with the findings of Cox and Peterson (1994) who test

U.S. data. As such, these results do not indicate the likelihood of profitable short-term trading profits based on market overreaction.

## REFERENCES

- Aggarwal, R. and P. Rivoli, "Seasonal and day-of-the-week effects in four emerging stock markets," *Financial Review* 24, November 1989, 541-550.
- Agrawal, A. and K. Tandon, "Anomalies or Illusions? Evidence from Stock Markets in Eighteen Countries," *Journal of International Money and Finance* 13, February 1994, 83-106.
- Atkins, A., and E. Dyl, "Price Reversals, Bid-Ask Spreads, and Market Efficiency," *Journal of Financial and Quantitative Analysis* 25, 1990, 535-547.
- Beaver, W. and W. Landsman, "Note on the Behavior of the Residual Security Returns for Winner and Loser Portfolios," *Journal of Accounting and Economics* 3, March 1981, 233-241.
- Bekaert, G. and C. Harvey, "Emerging Equity Market Volatility," *Journal of Financial Economics* 43, 1997, 29-77.
- Bremer, M. and R. Sweeney, "The Reversal of Large Stock-Price Decreases," *Journal of Finance* 46, 1991, 747-754.
- Brown, K. and W. Harlow, "Market Overreaction: Magnitude and Intensity," *Journal of Portfolio Management* 14, 1988, 6-13.
- Cadsby, C. and M. Ratner, "Turn-Of-Month and Pre-Holiday Effects on Stock Returns: Some International Evidence," *Journal of Banking and Finance* 16, 1992, 497-510.
- Chopra, N., J. Lakonishok and J. Ritter, "Measuring Abnormal Performance: Do Stocks Overreact?" *Journal of Financial Economics* 31, 1992, 235-268.
- Copeland, T. and D. Mayers, "The Value Line Enigma (1965-1978): A Case Study of Performance Evaluation Issues," *Journal of Financial Economics* 10, November 1982, 289-321.
- Cox, D. and D. Peterson, "Stock Returns following Large One-Day Declines: Evidence on Short-Term Reversals and Longer-Term Performance," *Journal of Finance* 49, 1994, 255-267.
- Da Costa, N., "Overreaction in the Brazilian Stock Market," *Journal of Banking and Finance* 18, 1994, 633-642.
- Diamonte, R., J. Liew, and R. Stevens, "Political Risk in Emerging and Developed Markets," *Financial Analysts Journal* 52, May/June 1996, 71-76.
- Dissanaike, G., "On the computation of returns in tests of the stock market overreaction hypothesis," *Journal of Banking and Finance* 18, 1994, 1083-1094.
- Davidson, W. and D. Dutia, "A Note on the Behavior of Security Returns: A Test of Stock Market Overreaction and Efficiency," *Journal of Financial Research* 12, Fall 1989, 245-252.
- De Bondt, W. and R. Thaler, "Does the Stock Market Overreact?" *Journal of Finance* 40, July 1985, 793-805.

Defusco, R., Geppert, J., and G. Tsetsekos, "Long-Run Diversification Potential in Emerging Stock Markets," *Financial Review* 31, 1996, 343-363.

Erb, C., C. Harvey, and T. Viskanta, "Country Risk and Global Equity Selection," *Journal of Portfolio Management* 21, Winter 1995a, 74-83.

Erb, C., C. Harvey, and T. Viskanta, "Do World Markets Still Serve as a Hedge?," *Journal of Investing*, Fall 1995b, 23-46.

Fama, E., "Efficient capital market: a review of theory and empirical work," *Journal of Finance* 25, 1970, 382-417.

Fama, E., "Efficient capital market, II," *Journal of Finance* 46, 1991, 1575-1617.

Harvey, C. "The Cross-Section of Volatility and Autocorrelation in Emerging Markets," *Finanzmarkt und Portfolio Management* 9, 1995a, 12-34.

Harvey, C. "Predictable risk and returns in emerging markets," *Review of Financial Studies* 8, 1995b, 773-816.

Hawawini, G. and D. Keim, "On the predictability of common stock returns: world-wide evidence," in: R. Jarrow, V. Maksimovic and W. Ziemba, editors, *Handbooks in Operations Research and Management Science - Finance*, 9, Elsevier, 1995, 497-544.

Howe, J. "Evidence on Stock Market Overreaction," *Financial Analysts Journal* 42, July/August 1986, 74-77.

Jegadeesh, N., "Evidence of Predictable Behavior of Security Returns," *Journal of Finance* 45, July 1990, 881-898.

Lehman, B., "Fads, Martingales and Market Efficiency," *Quarterly Journal of Economics* 105, February 1990, 1-28.

Rosenberg, B., K. Reid, and L. Lanstein, "Persuasive Evidence of Market Inefficiency," *Journal of Portfolio Management* 11, Spring 1985, 9-16.

Shiller, R., "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *American Economic Review* 71, June 1981, 421-436.

**TABLE 1**

**Sample Statistical Properties. Size and Descriptive Statistics of the Daily Returns for the January 1982 to March 1995  
Natural Log Differences of Daily Index Levels**

Market	Table Identifiers	Local Currency Returns			U.S. Dollar Returns			Market Characteristics by December 1994*	
		Number of Obsvrs.	Means	Standard Deviation	Number of Obsvrs.	Means	Standard Deviation	US\$ Market Capitalization	Number of Listed Firms
<i>Developed:</i>									
World	MSW	3450	.05	.69	3450	.05	.69	8821.9	36038
Japan	JAP	3108	.03	1.24	3087	.05	1.41	3719.9	2205
U.S.A.	USA	3260	.05	.98	3260	.05	.98	5081.8	7770
<i>Asian:</i>									
India	IND	2241	.07	1.72	2225	.02	1.85	127.5	7000
Korea	KOR	3116	.08	1.29	3100	.08	1.92	191.8	699
Malaysia	MAL	3077	.05	1.07	3057	.06	1.18	199.3	478
Philippines	PHI	3128	.11	1.93	3106	.09	2.06	55.5	189
Taiwan	TAI	3050	.10	2.14	3032	.12	2.17	247.3	313
Thailand	THA	3052	.09	1.44	3032	.10	1.62	131.5	389
Argentina	ARG	3164	.61	3.58	3146	.23	4.29	36.9	156
Brazil	BRA	3114	.83	3.78	3096	.15	4.17	189.3	544
Chile	CHI	3198	.14	1.03	3178	.09	1.67	68.2	279
Mexico	MEX	3164	.28	2.37	3146	.14	2.86	130.2	206

\*Source: IFC, "Emerging Stock Markets Factbook," 1997.

**TABLE 2**

**Statistical Characteristics for Emerging Equity Markets with 1-Day Price Declines of at Least 3 Standard Deviations.**

Samples are based on daily market index returns from January 1982 through March 1995, excluding October 1987. Average pre-event mean returns and market model betas are estimated from 105 through 6 trading days before the event day (day 0). Post-event statistics are estimated from 21 through 120 trading days following the event day. All statistics reported as percentages. Market identifiers defined in Table 1.

<i>Local Returns</i>	JAP	USA	IND	KOR	MAL	PHI	TAI	THA	ARG	BRA	CHI	MEX
<b>Pre-event Mean Daily Return</b>	-.01	.11	.15	.03	.02	.33	.03	.08	.03	.15	.16	.02
<b>Post-event Mean Daily Return</b>	-.02	.08	.11	.07	-.01	<b>-.04*</b>	.00	.02	.07	.11	.18	.06
<b>Pre-event Market Model Beta</b>	1.58	1.12	1.11	.69	.75	-.01	1.00	1.00	1.07	.76	1.04	1.11
<b>Post-event Market Model Beta</b>	1.89	.93	.90	.72	.81	.35	1.07	.90	1.16	<b>1.07*</b>	.91	.72
<b>World Return</b>	-1.70	-2.20	.39	-.58	-1.25	.04	-.13	-1.27	.12	-1.60	.07	-.37
<b>Day 0 Return</b>	-4.56	-4.33	-6.53	-5.38	-4.61	-11.64	-8.42	-6.21	-13.47	-16.00	-4.27	-11.31
<b>3 Standard Deviations</b>	3.72	2.94	5.16	3.87	3.21	5.79	6.42	4.32	10.74	11.34	3.09	7.11
<b>Number of Events</b>	10	6	6	8	6	7	6	8	5	5	7	5

*U.S. \$ Returns*

<b>Pre-event Mean Daily Return</b>	-.03	.11	.03	-.12	.09	.04	.06	.24	-.03	.34	-.05	.02
<b>Post-event Mean Daily Return</b>	.01	.08	.14	-.10	.03	-.04	.01	<b>.01*</b>	.02	-.01	.13	.12
<b>Pre-event Market Model Beta</b>	1.32	1.12	1.28	1.53	.59	1.14	1.35	.40	.37	1.04	.33	.67
<b>Post-event Market Model Beta</b>	<b>1.95*</b>	.93	<b>1.50*</b>	1.42	.75	1.32	1.14	.35	.33	.43	.55	-.24
<b>World Return</b>	-1.62	-2.20	.29	-.15	-1.15	.34	-.03	-.38	-.05	.08	.35	-.51
<b>Day 0 Return</b>	-6.00	-4.33	-7.28	-11.32	-6.33	-8.39	-8.08	-10.08	-14.62	-15.72	-10.53	-18.59
<b>3 Standard Deviations</b>	4.23	2.94	5.55	5.76	3.54	6.18	6.51	4.86	12.87	12.51	5.01	8.58
<b>Number of Events</b>	7	6	8	4	8	9	9	11	8	9	12	5

\* indicates significant mean difference at the 5% level

**TABLE 3****Average Abnormal Returns of Emerging Equity Markets Following a One-Day Price Decline of at Least 3 Standard Deviations.**

Samples are based on daily market index returns from January 1982 through March 1995, excluding October 1987. Daily abnormal returns are calculated by subtracting the market model expected return from each country's mean event return. The market model is estimated with the average of pre and post-event betas and the MSWI representing the market. Day 0 is the date when the large market decline occurred. The returns reported are the cumulative average abnormal returns for all declines. All statistics reported as percentages. Market identifiers defined in Table 1.

*Local Returns:*

	<b>JAP</b>	<b>USA</b>	<b>IND</b>	<b>KOR</b>	<b>MAL</b>	<b>PHI</b>	<b>TAI</b>	<b>THA</b>	<b>ARG</b>	<b>BRA</b>	<b>CHI</b>	<b>MEX</b>
<b>Day 1</b>	.39	1.33*	-1.80**	1.17	-.12	6.66	1.22	-.97	5.85*	-10.18*	.23	9.82*
<b>Day 2</b>	1.03**	-.21	-.49	-.25	.34	.57	.07	1.40*	1.35	-4.48*	.80	.27
<b>Day 3</b>	-.03	.13	1.30	.77*	.23	-.86**	-.14	-1.44	.20	5.40	.46	-1.28
<b>Days 1 - 3</b>	1.39	1.25**	-.99	1.69	.44	6.37	1.15	-1.01	7.40	-9.26	1.48	8.81
<b>Days 4 - 20</b>	-1.82	-.13	-5.00	1.01	5.63**	2.20	-9.46	2.01	18.44	19.39*	.15	-2.63

*US\$ Returns:*

<b>Day 1</b>	.35	1.33*	-2.17**	-2.91	-.59	5.15	1.70	-.32	-1.13	1.64	1.66	2.63
<b>Day 2</b>	.87*	-.21	.72	-.46	-.86	.48	.02	-1.12	-.67	1.31	-.28	.47
<b>Day 3</b>	.02	.13	.49	.04	-.77	-.57	-.38	-.40	2.73	3.95**	-.38	2.97
<b>Days 1 - 3</b>	1.25*	1.25**	-.96	-3.33	-.23	5.05	1.33	-1.84	.93	6.89*	1.00	6.08
<b>Days 4 - 20</b>	-1.59	-.13	.28	.08	1.43	.91	-5.98	4.13	-7.30	2.54	2.12	-23.65**

\*\* and \* indicate significance at the 5% and 10% levels, respectively.

**TABLE 4****Logit Analysis Examining the Explanatory Effect of the Developed Market Returns on the Emerging Market Declines.**

Binary series of 0's and 1's, where 1 represents a large decline (of at least 3 standard deviations) in an emerging market index regressed on the daily returns of Japan and the United States from January 1982 through March 1995.

Country	Local Currency Returns			U.S. Dollar Returns		
	Constant	Japan	U.S.	Constant	Japan	U.S.
India	-4.75*	-.17	.22	-4.73*	-.16	.14
Korea	-5.50*	.57*	.40*	-6.49*	.40	.13
Malaysia	-5.46*	.63*	.62*	-5.32*	.36*	.76*
Philippines	-5.71*	.40*	.69*	-5.24*	.15	.47*
Taiwan	-4.66*	.17	.37*	-4.72	.25*	.01
Thailand	-5.03*	.54*	.91*	-4.80*	.33*	.76*
Argentina	-5.98*	.05	.21	-4.79*	.16	.06
Brazil	-6.09*	.18	.03	-5.04*	.29*	.02
Chile	-5.28*	.08	.35	-4.76*	.05	.14*
Mexico	-5.57*	.29	.10	-4.45*	.04	.27*

\* indicates significance at the 5% level

**TABLE 5**

**Statistical Characteristics for Emerging Equity Markets with 1-Day Price Advances of at Least 3 Standard Deviations.**

Samples are based on daily market index returns from January 1982 through March 1995, excluding October 1987. Average pre-event mean returns and market model betas are estimated from 105 through 6 trading days before the event day (day 0). Post-event statistics are estimated from 21 through 120 trading days following the event day. All statistics reported as percentages. Market identifiers defined in Table 1.

<i>Local Returns</i>	JAP	USA	IND	KOR	MAL	PHI	TAI	THA	ARG	BRA	CHI	MEX
<b>Pre-event Mean Daily Return</b>	-.10	-.04	.07	.00	.03	.02	-.06	.04	.03	.00	.02	.00
<b>Post-event Mean Daily Return</b>	-.05	.07*	-.05	.00	.01	.09	.06	.09	.01	.03	.08	.17*
<b>Pre-event Market Model Beta</b>	1.72	1.32	.99	1.15	1.52	.83	1.37	1.19	1.00	1.37	.87	.86
<b>Post-event Market Model Beta</b>	1.72	1.25	1.46	1.24	1.34	.79	.98	1.22	.98	1.39	.89	.82
<b>World Return</b>	1.95	.27	-.07	.14	1.21	.21	.68	.69	.07	.20	-.26	1.23
<b>Day 0 Return</b>	5.79	4.05	5.65	5.00	5.64	12.47	7.47	6.26	12.11	14.38	4.85	11.51
<b>3 Standard Deviations</b>	3.72	2.94	5.16	3.87	3.21	5.79	6.42	4.32	10.74	11.34	3.09	7.11
<b>Number of Events</b>	7	4	7	13	7	9	9	12	11	8	13	7

*U.S. \$ Returns*

<b>Pre-event Mean Daily Return</b>	.00	-.04	.09	-.01	.10	.08	.13	.06	.08	.03	.10	.01
<b>Post-event Mean Daily Return</b>	.02	.07*	-.02	-.12	.01	-.01	.02	.10	.18	.12	.11	.13
<b>Pre-event Market Model Beta</b>	1.47	1.32	1.79	1.20	.50	.44	.31	.42	.48	.51	.34	.33
<b>Post-event Market Model Beta</b>	1.55	1.25	1.55	1.26	.79	.51	.51	.33	.23*	.54	.28	.17
<b>World Return</b>	1.39	.27	-.41	.10	1.08	.27	.19	.69	.15	.38	-.07	.03
<b>Day 0 Return</b>	6.19	4.05	6.93	23.52	5.14	13.31	7.66	8.68	20.53	15.08	7.70	16.09
<b>3 Standard Deviations</b>	4.23	2.94	5.55	5.76	3.54	6.18	6.51	4.86	12.87	12.51	5.01	8.58
<b>Number of Events</b>	10	4	4	4	8	9	8	11	6	7	12	7

\* indicates significant mean difference at the 5% level

**TABLE 6****Average Abnormal Returns of Emerging Equity Markets Following a One-Day Price Advance of at Least 3 Standard Deviations.**

Samples are based on daily market index returns from January 1982 through March 1995, excluding October 1987. Daily abnormal returns are calculated by subtracting the market model expected return from each country's mean event return. The market model is estimated with the average of pre and post-event betas and the MSWI representing the market. Day 0 is the date when the large market advance occurred. The returns reported are the cumulative average abnormal returns for all advances. All statistics reported as percentages. Market identifiers defined in Table 1.

*Local Returns:*

	JAP	USA	IND	KOR	MAL	PHI	TAI	THA	ARG	BRA	CHI	MEX
<b>Day 1</b>	1.41	2.20	-.33	1.28*	-.07	1.99*	-.10	1.67	2.42	.01	1.51	1.96*
<b>Day 2</b>	-.14	-.43	-.25	.17	-1.03	-1.18*	-.52	-1.11*	.53	1.07	1.55	-.34
<b>Day 3</b>	-.48	.44	-.34	.11	.14	-1.31	-.60	-.24	-.81	1.82	.72	-2.21
<b>Days 1 - 3</b>	.79	2.20	-.93	1.55	-.15	-.50	-1.22	.33	2.14	2.89	1.75	-.59
<b>Days 4 - 20</b>	5.13	.71	-.32	-.38	-.04	3.79	3.42	1.43	19.18*	22.71*	.75	-.29

*US\$ Returns:*

<b>Day 1</b>	-.85	2.20	-1.15	-5.66	-1.59	-.54	.92	1.07	-1.76	.32	-.20	1.14
<b>Day 2</b>	.11	-.43	-.57	-5.38	-.18	-.41	.07	-.99	.18	1.36	-.68	-.28
<b>Day 3</b>	.18	.44	.33	.30	.02	.66	.77	-.32	-1.66	1.26	-.17	-.83
<b>Days 1 - 3</b>	-.56	2.20	-1.39	-10.74	-1.75	-.28	1.76	-.24	-3.24	2.94	-1.05	.03
<b>Days 4 - 20</b>	4.47	.71	-1.37	-2.90	1.73	3.91	10.74*	-.85	11.89	6.28	2.56	1.94

\* indicates significance at the 5% level.

**TABLE 7****Logit Analysis Examining the Explanatory Effect of the Developed Market Returns on the Emerging Market Advances.**

Binary series of 0's and 1's, where 1 represents a large advance (of at least 3 standard deviations) in an emerging market index regressed on the daily returns of Japan, the United States, and the World Index from January 1982 through March 1995.

Country	Local Currency Returns				U.S. Dollar Returns		
	Constant	Japan	U.S.		Constant	Japan	U.S.
India	-4.70*	.30*	.20		-4.93*	.05	.13
Korea	-4.58*	.01	.56*		-5.85*	.05	.19
Malaysia	-5.03*	.27*	.65*		-5.19	.22*	.33
Philippines	-4.94*	.18	.34		-4.78*	.11	.16
Taiwan	-4.84*	.17	.73*		-4.66*	.10	.39*
Thailand	-5.26*	.48*	.85*		-5.32*	.41*	.44*
Argentina	-4.35*	-.10	.03		-4.80*	.01	.04
Brazil	-4.82*	.25*	.35		-5.09*	.11	.15
Chile	-4.50*	.02	-.08		-4.42*	.02	.08
Mexico	-4.79*	.24*	.46*		-5.20	.07	.58*

\* indicates significance at the 5% level

