

Investing in Latin American Equity Markets, 1975-1998

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In the last two decades, some Latin American economies have experienced hyperinflation, political upheaval, and a long series of bloody wars. The region went through a massive debt crisis, which led to devastating currency devaluations, nationalizations of private companies, and repeated and abrupt changes in political direction. Corruption has allegedly been rampant, and some countries in the region have only recently had democratic forms of government.

This doesn't sound like a prescription for investment success, does it? Yet Exhibit 1 shows that a dollar invested in a value-weighted index of equities in Argentina and Chile at the end of 1975 and held through February 1998 would have outperformed a similar investment in the Standard & Poor's 500 index (S&P 500); a similar Mexican investment would have produced approximately the same compound value as the S&P 500. Only Brazil of these four markets underperformed the S&P 500 in terms of compound value.

Exhibit 1 is based on data available in the Emerging Markets Data Base (EMDB) provided by the International Finance Corporation (IFC). It shows the compound value over time of a \$1.00 investment and is based on total returns expressed in U. S. dollars.¹

The level of volatility in Latin America's equity markets has been among the highest in the world in the past twenty years.

Currency values have regularly depreciated against global currencies, notably the U. S. dollar, and economic policies have undergone profound changes between the highly restrictive and inward-looking and the open and outward-looking. The region has been characterized by frequent changes of direction as one failed economic policy after another has been prescribed, only to be replaced shortly thereafter by yet another.²

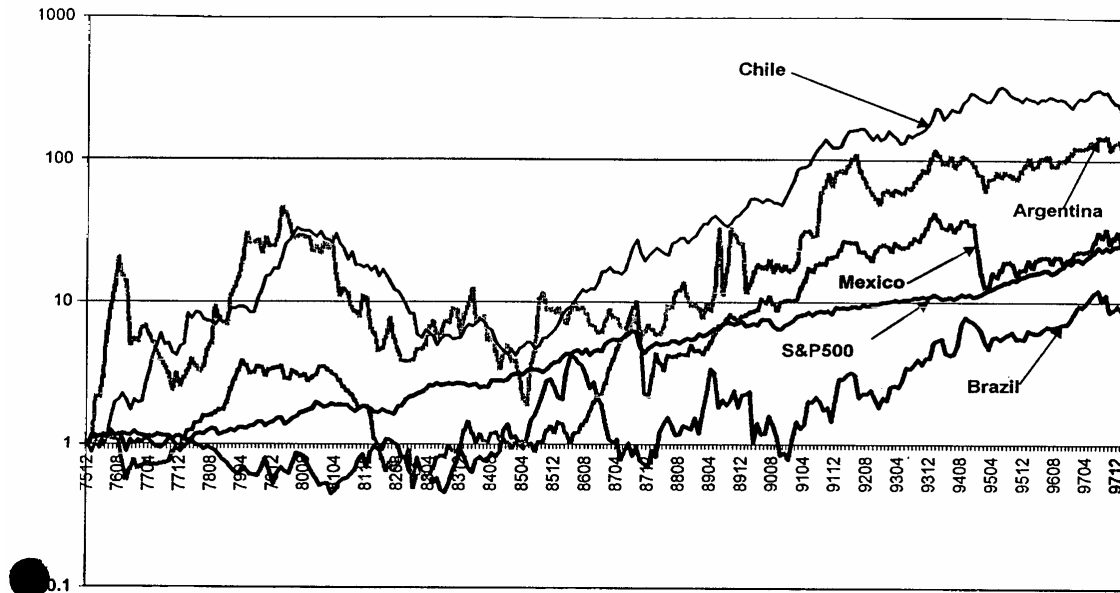
To illustrate these points in greater detail, Exhibit 2 highlights the performance of the Mexican equity market. Included is also a representation of the performance of the Mexican peso over the same period. Note that the peso lost 99.8% of its value as measured in U. S. dollars over this period even though the dollar also lost value through inflation.

One point of this graph is to illustrate that the patient investor in Mexican equities did not lose in the end (relative to U.S. investments) as a result of peso devaluations. While each devaluation was accompanied by a sharp decline in the Mexican market, it was also followed by recovery. In the case of the December 1994 devaluation, the Mexican market had almost fully recovered its losses as of February 1998.

Exhibit 2 clearly illustrates the results of the Latin American debt crisis and the very sharp effects of the October 1987 global "Black Monday." Finally, in the spring of 1994, political events in Mexico led to a rel-

EXHIBIT 1

Compound Value of U.S.\$1.00 Invested in Four Latin American Markets from December 1975



actively sharp decline in the market. There were political uprisings in the southern state of Chiapas, and then the leading presidential candidate was assassinated. Following the assassination, the Mexican Bolsa was closed for one day, and the United States and Canada announced a US\$6 billion program to bolster the peso. Of course, the 1994 devaluation surprised the markets and also precipitated important declines in the markets of Argentina and Brazil (as shown in Exhibit 1).

Thus, Mexico illustrates the case of a typical Latin American market: very high short-term volatility but substantial long-term rates of return.

This article provides an overview of the investment performance of the region's major equity markets over the past twenty-three years using data in the Emerging Markets Data Base.³ It provides details on the risk and return of those markets, and it identifies portfolio characteristics of the markets that make them desirable for inclusion in portfolios based in developed markets.

The results show that while these markets have been highly volatile across time, over the long term

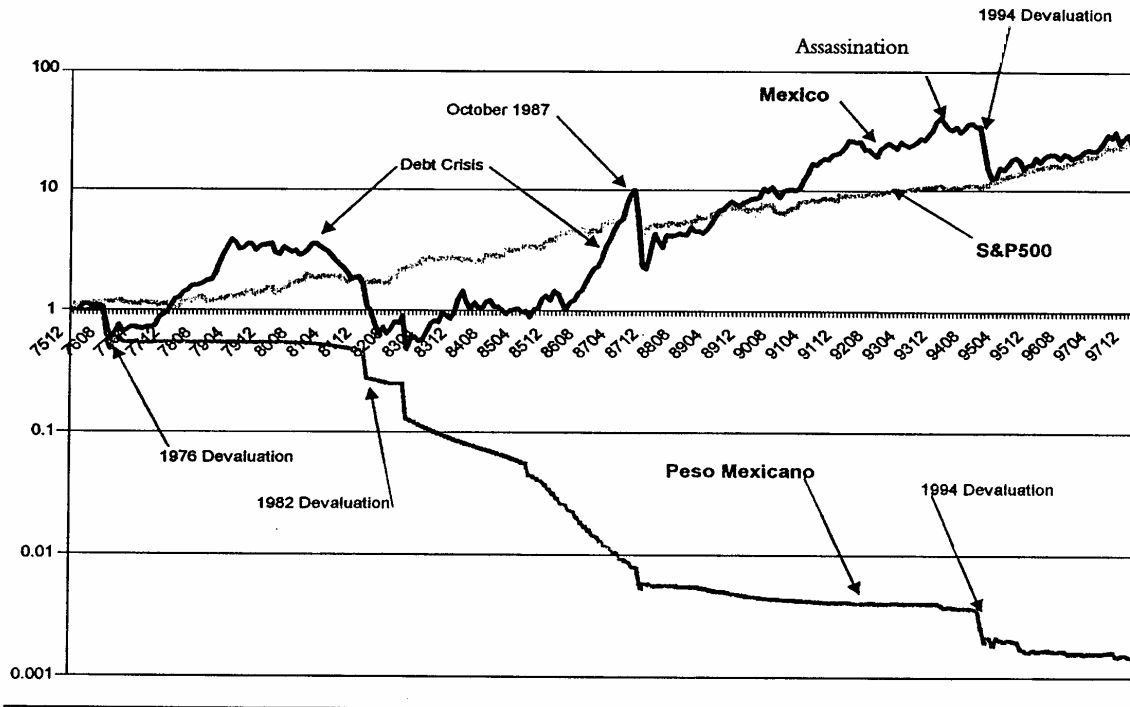
they have in some instances performed well in the sense of producing compound returns comparable to or above those of the U.S. market. The article also shows that low correlation among Latin American markets provides diversification opportunities for investors whose portfolios are based on securities in just one of these markets.

LATIN AMERICA MARKETS: SIZE, RISK, RETURN, AND CORRELATIONS

Data from the U. S. Bureau of the Census International Data Base shows that the population in Latin America has grown from 119% of the U.S. population in 1975 to an estimated 150% of the U.S. population in 1998. Economic growth has, of course, varied widely across time in Latin America. Data in 1998 *World Development Indicators* show that annual average real growth in gross domestic product (GDP) for Latin America (combined with the Caribbean) was below the U.S. rate for 1980 through 1990, averaging 1.8% versus 2.9% in the U.S. On the other hand, during the 1990s (through 1996), real GDP growth averaged 3.2% in Latin Ameri-

EXHIBIT 2

Performance of Mexican Equity Market, S&P 500, and Mexican Peso in U.S.\$ Terms, December 1975 - February 1998



ca versus 2.4% in the U.S.

Furthermore, the performance for the markets included in the EMDB has improved much more dramatically. Of the seven Latin American markets included in the EMDB (Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela), the median GDP growth rate was only 1.1% (Mexico and Peru) for the decade of the 1980s. From 1990 through 1996, the median growth rate was 4.5% (Colombia). These markets are in many respects undergoing dramatic improvements in economic potential.

Market Size

Exhibit 3 examines the growth of equity markets from 1990 through 1997. It shows market sizes and number of companies listed for the seven countries with available data. These markets have grown dramatically in this period as economic policymakers have

opened the markets to foreign investors, privatized many formerly state-run companies, and relaxed broader economic policies to open the markets to competition. The number of companies listed has been relatively flat across 1990-1997, but the dollar value of market capitalization in these markets has not. It has grown from less than \$7 billion in 1990 to almost \$600 billion by the end of 1997.

This same period has seen outstanding performance in the U.S. market as well. The market value of equities listed in the U.S. rose from \$3.1 trillion to \$11.1 trillion. At the same time, Latin American equity as a fraction of the size of the U.S. market has grown from 2.5% to 5.3%. Thus, the growth in market capitalization in Latin America has been more than double that of the impressive performance of the U.S. market.

Two of the largest emerging markets in the world are in Latin America: Brazil and Mexico. At the end of 1997, Brazil's market had the second-highest capitaliza-

EXHIBIT 3

Market Capitalization and Number of Domestic Companies Listed in Latin American Markets End of 1990 and 1997*

Market	Number of Companies Listed		Market Capitalization (\$B)	
	1990	1997	1990	1997
Brazil	581	536	16.4	255.5
Mexico	199	198	32.7	156.6
Chile	215	295	13.6	72.0
Argentina	179	136	3.3	59.3
Colombia	80	189	1.4	19.5
Peru	294	248	0.8	17.6
Venezuela	76	91	8.4	14.6
Totals	1624	1693	76.6	595.1

*Market capitalization is the total market value of all shares listed on organized exchanges in the country, measured by the sum of closing stock price multiplied by number of shares out-standing at the end of the period. Source: *Emerging Stock Markets Factbook 1998*.

tion of all emerging markets in the world (after Taiwan, which was about 12% larger). Mexico had the fifth-largest emerging market in the world. Chile — with a population of only 12 million — was the ninth-largest, and Argentina was the tenth. Thus, four of the ten largest emerging equity markets in the world are in Latin America.

Further, as measured by the IFC's investability numbers, Latin America accounted for 41% of the investable market value of emerging markets at the end of 1997.⁴ Brazil's market had transaction volume (measured in dollars of trades) in excess of \$200 billion, a volume greater than that of G-7 member Italy.

Risk and Return Across Time

Throughout this study, we report results based on total returns from equity investments in the U.S. (as represented by the S&P 500 index), in Latin American markets, and a composite of all Emerging Markets (EMs). The results are based on data in the EMDB. Barry, Peavy, and Rodriguez [1997a] provide an overview of the EMDB and explain the calculations of rates of return for securities and portfolios based on the EMDB. This article follows a similar methodology.⁵

Exhibit 4 shows the average monthly rates of return, compound values, and standard deviations of monthly returns for the seven Latin American markets (LAMs) we study. It also provides results for a composite index constructed from all markets included in the

EMDB, for a regional index of all the Latin American markets studied, an index computed using all data from non-LAM emerging markets in the EMDB, an index for the Asian markets in the EMDB, the S&P 500 index, and the EAFE index (Europe, Australia, and the Far East).

All the results are based on total returns, including dividends and price appreciation, from December 1975 through February 1998. Arithmetic means are the simple average of monthly returns. Geometric means show the rate at which index values have compounded on average to produce the final terminal index value.

For measuring ex post performance, geometric means are generally regarded as more appropriate than arithmetic means.⁶ The geometric mean returns are lower than arithmetic returns as a mathematical necessity, and in general the difference between geometric means and arithmetic means will be greater for markets with greater volatility. "Terminal index values" are the compound values of a one-unit (U.S.\$ or other currency as indicated) investment in the market throughout the period for which data were available in the market.

The results based on local currencies demonstrate more than anything that the currencies in the LAMs have had terrible overall performance. That is, returns in local currencies (measured by arithmetic or geometric means) have been dramatically higher than the results based on U.S.\$ returns. These comparisons reflect the difficulties of economic management throughout the region, especially in the 1970s and 1980s.

Since the start of the 1990s, monetary and fiscal

EXHIBIT 4

Return Characteristics ■ December 1975 through February 1998

Market	Panel A Local Currency Based Returns				Panel B US \$ Based Returns			
	Arithmetic Average	Geometric Average	Standard Deviation	Terminal Index Value	Arithmetic Average	Geometric Average	Standard Deviation	Terminal Index Value
Argentina	14.47%	10.33%	37.82%	224,854,541,654	4.72%	1.86%	26.63%	134.94
Brazil	13.42%	11.43%	22.40%	3,176,172,331,904	2.11%	0.84%	16.13%	9.30
Chile	4.10%	3.61%	10.38%	12,558	2.60%	2.08%	10.60%	237.34
Colombia*	4.12%	3.78%	8.73%	352	2.51%	2.17%	8.59%	29.84
Mexico	4.39%	3.76%	11.41%	18,353	2.10%	1.25%	12.42%	26.90
Peru*	2.73%	2.33%	9.24%	4.18	1.85%	1.44%	9.30%	2.43
Venezuela*	4.54%	3.91%	11.69%	428	2.11%	1.16%	13.48%	6.21
Composite					1.18%	0.66%	5.82%	5.83
L. America					2.09%	1.00%	9.01%	14.14
Non-Latin**					1.06%	0.69%	5.46%	6.27
Asia					0.99%	0.44%	6.22%	3.21
S&P 500					1.52%	1.25%	4.18%	27.10
EAFE					1.42%	1.19%	4.77%	23.44

*Data for Colombia and Venezuela begin in December 1984. Data for Peru begin in December 1992.

**Non-Latin is all available emerging markets in the EMDB that are not in Latin America.

performance has dramatically improved, but the results show the impact of the longer-run failures. Of course, in the case of Peru all the data are from the 1990s.

In U.S. dollar-based terms in Panel B, Latin America outperformed all other markets presented in terms of arithmetic but not geometric average returns, reflecting the high volatility of the LAMs. That result is confirmed by the high standard deviations in the LAMs. Of course, standard deviations for the individual Latin markets should not be compared to the remaining results since the latter results reflect much more diversified portfolios than the individual LAMs. Finally, we see that the terminal values achieved in the LAMs have varied dramatically across the region. Among the markets with data for the entire time series, Chile provided the highest value (\$237 U.S.) while Brazil provided the lowest value (\$9 U.S.).

Exhibit 5 provides an analysis of compound values of U.S.\$1.00 investments in the portfolios for successive five and a half-year periods. Here, results are included only for those markets for which data were available for the full period of the study: Argentina, Brazil, Chile, and Mexico.

Look first at Argentina and Chile. Both experienced huge returns from January 1976 through June

1981 (1114% in Argentina and 2250% in Chile), and then registered massive losses of value in the subsequent five and a half-year period (49% in Argentina and 31% in Chile). Brazil had the least volatile performance of any of the four LAMs, in spite of its comparatively high standard deviation of monthly returns.

The results of Exhibit 5 are illustrated also in Exhibit 6, which facilitates comparisons. One important point shown in both Exhibit 5 and Exhibit 6 is that the region was much less unstable than any individual market. These results also demonstrate that volatility in performance measured by monthly standard deviations is not just a short-run phenomenon. It has been very difficult to anticipate relative performance even in five and a half-year increments. Chile and Argentina are especially illustrative of the point.

Latin America versus Asia and Their Recent Crises

Investors interested in emerging markets have seen some very challenging times recently. They have faced the Mexican peso crisis, which began in December 1994 and worsened until a dramatic rescue package was enacted by the U.S., the International Monetary

EXHIBIT 5

Compound Value of a US\$1.00 Investment in Latin American Markets from December 1975 and in Alternative Markets in Consecutive 5 1/2-Year Intervals*

Market	Five and One-Half Year Interval				Full Period 1/76-12/97
	1/76-6/81	7/81-12/86	1/87-6/92	7/92-12/97	
Argentina	12.14	0.51	13.46	1.63	136.51
Brazil	0.56	3.47	1.12	4.36	9.47
Chile	23.50	0.69	10.29	1.51	252.82
Mexico	2.56	0.91	9.68	1.37	30.83
Latin America	1.39	1.30	4.21	1.99	15.16
Non-Latin EMs	1.80	1.25	2.25	1.10	5.59
Asia	3.31	1.37	2.33	0.85	9.02
S&P 500	1.90	2.38	2.03	2.72	25.00
EAFE	2.35	3.51	1.38	1.85	21.06

*The value in a cell represents the compound value of a US\$1.00 investment in the indicated market or region made at the start of the first date listed in the column and held through the end of the last date shown in the column.

EXHIBIT 6

Market Performance in 5 1/2-Year Increments

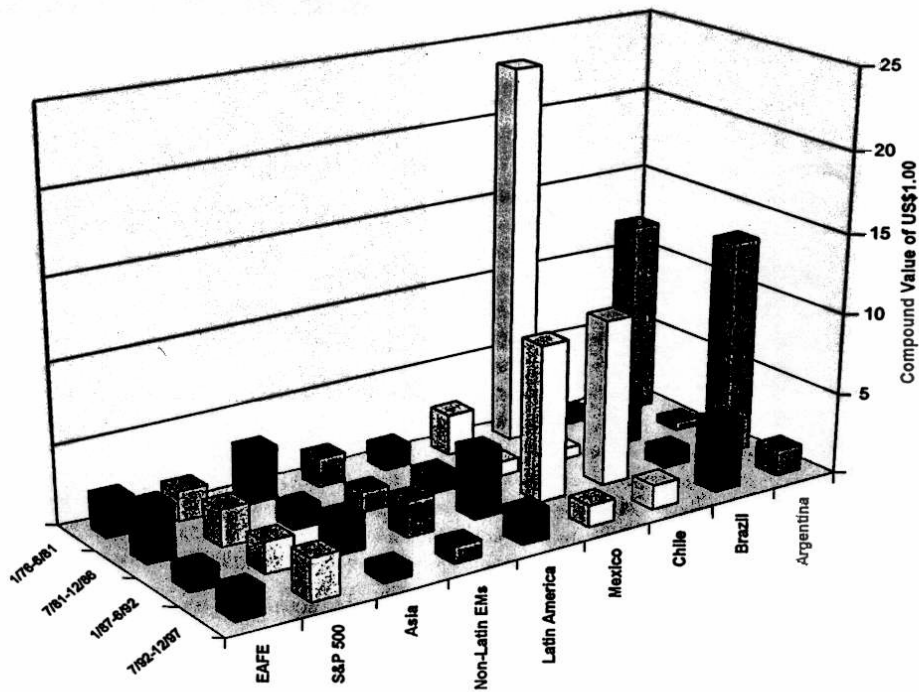
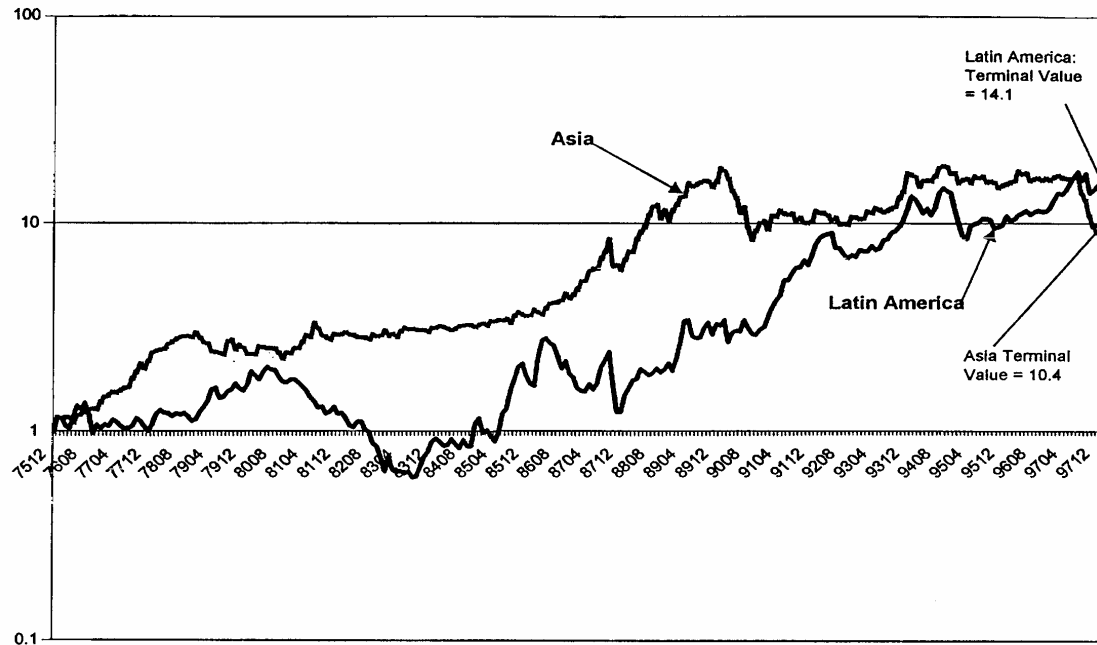


EXHIBIT 7

Compound Value of U.S.\$1.00 Invested in Asia and Latin America ■ December 1975 - February 1998



Fund, and others in March 1995. Securities markets in Latin America and in other regions were negatively affected. More recently, beginning in the latter half of 1997, several markets in Asia have experienced currency crises and registered substantial declines in market value. We can compare these two regions and their performance across these troubled years.

Exhibit 7 provides compound values for an index of Asian emerging markets and the LAMs for the period December 1975 through February 1998. It shows that in the earlier periods the Asian index substantially outperformed the Latin America index. This holds through early 1988, and reflects very clearly the Latin American debt crisis that began in the latter part of 1979. From about 1988 and on, the LAMs have reversed the results, substantially outperforming Asia (see Exhibit 5 for details).

Toward the right-hand side of Exhibit 7 we see the relative performance during the recent crises. Exhibit 8 highlights this period by restarting the indexes at the end of 1993. It demonstrates that the Mexican peso cri-

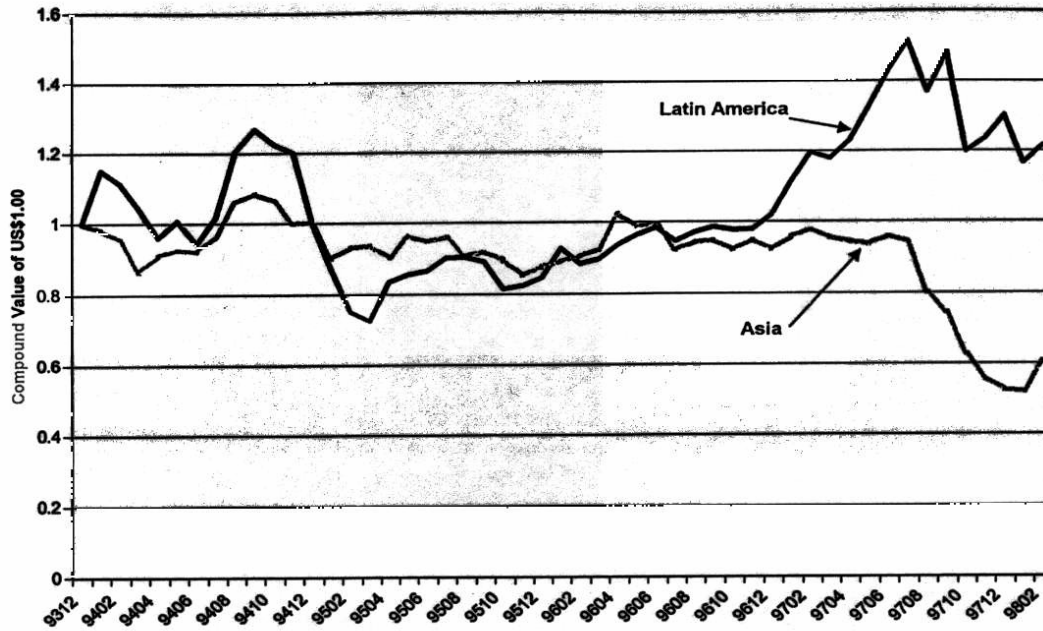
sis had very important effects within the Latin American region and was associated with relatively milder negative performance in Asia at the same time. By mid-1996, Latin America had overcome the effects of its crisis, achieving parity with Asia in terms of performance.

Then the Asian currency crises began in about July 1997. From that point forward, there is a sharp and prolonged spread between the two regions. Whether the two will converge in the near future is questionable, as many see the Asian crises as requiring much more fundamental change than did the problems in Latin America when the peso was devalued.

The major Latin American markets had already undergone widespread opening and liberalization, including profound changes in the underlying structure of economic activity when the peso crisis occurred. They had already borne many of the startup costs of economic transformation. But in Asian emerging markets, more of the fundamental work remains to be done, and the required changes may mean that markets will take longer to recover their lost values.

EXHIBIT 8

Latin America versus Asia: Peso Crisis of 1994-1995 and Asian Currency Crises in 1997



Correlations Among Markets

Given the high individual market volatility associated with LAMs, their inclusion in a portfolio of non-LAM portfolios will depend largely on the degree of correlation between the LAMs and other markets. Also, Latin American investors, facing very high risk compared to other investment opportunities, would be well advised to consider diversification opportunities outside their domestic market.⁷

One of the key motives for including emerging market investments in an investment portfolio is to gain the benefits of diversification. Ultimately, this requires that markets not move in lockstep. Exhibits 1 and 7 provide at least a visual sense that the markets do not move entirely synchronously, offering the possibility of diversification benefits.

Exhibit 9 verifies the intuition provided by these Figures. It provides simple correlations among Latin American markets, the broader set of emerging markets, the S&P 500, and EAFE. The "northeast" portion

shows values for the first eleven years of data in the EMDB, and the "southwest" portion pertains to the latter eleven years (and two months).

For developed market investors outside the U.S. and for some American pension fund investors, the correlations with EAFE may be especially pertinent. Emerging market investments are often treated as a component of the subportfolio labeled "foreign" or "international" in a U.S. pension fund. Thus, the benefits of Latin American markets for an investor in non-U.S. developed markets are shown by the correlations in the row and column associated with EAFE.

For the seven LAMs in our study, the range of correlations with EAFE is as low as -0.067 (Venezuela) and as high as 0.119 (Chile) in the first eleven-year period. In the second eleven-year period, correlation ranges from -0.046 (Venezuela) to 0.088 (Mexico). All of these correlations would be considered low in the sense that minimum-variance portfolio combinations of each of the LAMs with the EAFE index would include substantial investments in the LAMs taken individually.

EXHIBIT 9

Correlations of U.S. Dollar-Denominated Returns in Latin American Markets and Indexes in Developed Markets

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	Composite	S&P 500	L. America	EAFE	Asia
Argentina	1.000	0.110	0.129	-0.165	0.111	NA	0.048	0.336	-0.029	0.395	0.007	-0.151
Brazil	-0.106	1.000	-0.103	-0.276	-0.115	NA	0.159	0.705	0.009	0.829	0.078	-0.113
Chile	0.088	0.226	1.000	0.247	0.046	NA	-0.002	0.190	-0.115	0.101	-0.119	0.067
Colombia	-0.036	0.118	0.086	1.000	0.231	NA	-0.019	-0.311	-0.144	-0.247	-0.040	-0.165
Mexico	0.235	0.136	0.362	0.006	1.000	NA	0.101	0.258	0.094	0.207	0.077	0.059
Peru	0.447	0.416	0.460	0.204	0.482	1.000	NA	NA	NA	NA	NA	NA
Venezuela	0.059	-0.095	-0.056	0.172	-0.020	0.147	1.000	0.319	-0.086	0.230	-0.067	0.166
Composite	0.075	0.355	0.501	0.098	0.578	0.392	-0.101	1.000	0.113	0.987	0.335	0.376
S&P 500	0.128	0.144	0.317	0.030	0.466	0.059	-0.016	0.378	1.000	0.054	0.362	0.090
L. America	0.117	0.759	0.524	0.106	0.662	0.581	-0.071	0.635	0.378	1.000	0.171	-0.072
EAFE	-0.028	0.156	0.053	0.005	0.288	0.260	-0.046	0.373	0.494	0.256	1.000	0.199
Asia	0.040	0.148	0.396	0.065	0.406	0.227	-0.074	0.937	0.309	0.374	0.355	1.000

Correlations using all available data over the period Jan. 1976 through Dec. 1986

Correlations using all available data over the period Jan. 1987 through Feb. 1998

This also holds for the broader regional portfolio identified as "L. America" in Exhibit 9. The correlation increases from a small 0.171 in the first period to a still relatively small 0.256 in the latter period.

Correlations between the LAMs and the S&P 500 are considerably higher than between the LAMs and EAFE, perhaps reflecting the closer economic ties that the U.S. has with these markets. For the two periods, the correlation between the regional Latin America portfolio and the S&P 500 increases from 0.054 to 0.378. The same is true for some of the individual LAMs: The correlation between the S&P 500 and Mexico increases from 0.094 to 0.466, reflecting a strong association in the latter period. With the exceptions of Mexico and Chile, however, correlations between the S&P 500 and individual LAMs remain quite low in the latter period, although they are generally higher than in the prior period.

For an investor who lives in Latin America, the correlations among LAMs may be especially interesting. Of course, the correlations with non-LAMs indicate the value of diversifying outside the region, but even within the region the potential benefits of diversifying are reflected. It may be easier for some investors in

Latin American countries to diversify into nearby markets than into distant markets, partly because of similarities in economic systems, common languages, and distance. The good news is that, except for the case of Peru, the correlation among these markets is typically quite low in both the subperiods we examine.

An investor who wants to take advantage of diversification benefits across international borders is likely to find this costly and time-consuming. For that reason, many U.S. investors prefer to invest in closed-end stock funds that specialize in a desired country or region rather than invest directly in individual securities in the target market.

Bekaert and Urias [1996] show that a U.S. closed-end fund that specializes in a given market may not provide the diversification benefits of the underlying market. (See also Barry, Peavy, and Rodriguez [1997b].) In other words, the investor's closed-end fund portfolio will generally move with the market in which it is traded as well as the market in which the fund invests. Thus, closed-end funds generally have lower diversification benefits than do the markets in which those funds invest their assets.

A further problem is that correlation is generally measured across relatively long periods of time. It can

change as countries integrate their markets more closely together and reduce impediments to the free flow of goods, services, and capital. Thus, estimates of correlations made in one period may prove to be too low when applied in a subsequent period so that diversification benefits that were expected may not be realized. Exhibit 9 reflects this effect in some instances. Further, contagion effects of crises suggest that at times when the diversification benefits are most needed, they may not be present.

Frankel and Schmulker (1996) and Sachs, Tornell and Velasco (1996) investigate contagion effects associated with the Mexican peso devaluation of December 1994. They find substantial contagion effects in the sense that the fall of the Mexican stock market following the devaluation was accompanied by sharp declines in other EMs globally, most notably Argentina and Brazil. This effect is visible to a degree also in Exhibit 1. Greenwood [1998] examines the common origins of the Asian currency crises, and Erb, Harvey, and Viskanta [1998] examine both the Asian crises and the Mexican peso crisis and show that the use of historical data may cause investors to systematically underestimate the effects of a crisis on a region.

The point is that the low correlations among LAMs and between Latin American markets and other

markets are subject to change and should be relied upon with caution.

LIQUIDITY AND CONCENTRATION OF LATIN AMERICAN MARKETS

The usefulness of a security market depends to a degree on the extent to which the market is liquid and diverse. In a liquid market, large amounts of securities can be bought or sold without greatly affecting the prices of the securities. In general, in a liquid market a substantial fraction of the market's total equity value will regularly turn over or trade. Thus trading volume in a period divided by the market's total equity value is a measure of market liquidity.

In a liquid market, investors may alter their portfolios without making large price concessions. Price concessions are a cost of transacting in a market.

Exhibit 10 provides data on the liquidity of seven LAMs. Liquidity is measured by the value of transactions undertaken in a given market in 1997 (in U.S.\$ terms) divided by the value of all securities listed on the market as of the end of 1997. The Latin markets are listed in order of decreasing liquidity.

For comparison, in 1997 the U. S. had a total vol-

EXHIBIT 10

Liquidity of Latin America's Emerging Markets Compared to Selected Markets — 1997

	Transaction Volume in 1997 (\$millions)	Market Capitalization, End of 1997* (\$millions)	Turnover: Volume as a % of Market Capitalization
Brazil	203,260	255,478	79.6%
Argentina	25,702	59,252	43.4%
Mexico	52,646	156,595	33.6%
Venezuela	3,858	14,581	26.5%
Peru	4,033	17,586	22.9%
Chile	7,445	72,046	10.3%
Colombia	1,894	19,529	9.7%
Latin America	296,944	575,538	51.6%
All Emerging Markets	2,641,600	2,229,500	118.5%
United States	10,216,074	11,308,779	90.3%
Japan	1,251,750	2,216,699	56.5%
United Kingdom	829,131	1,996,225	41.5%
World	19,484,706	23,541,385	82.8%

*Market capitalization is the total market value of all shares listed on organized exchanges in the country, measured by the closing stock price multiplied by number of shares outstanding at the end of the mentioned period. Transaction volume is the total U.S. dollar value of equity transactions that occurred in all organized exchanges in the market.

Source: *Emerging Stock Markets Factbook 1998*.

turnover over ending market value of about 90%, and the worldwide turnover was about 83% of market value. As Exhibit 10 shows, no LAM achieved the average liquidity of world equities markets, but Brazil had the highest liquidity among LAMs at almost 80%. No other LAM achieved as much as 45%, and the weighted average turnover across the LAMs was under 52%, a result that is heavily influenced by the Brazilian results (Brazil is the largest market in the region).

LAMs experienced lower liquidity than emerging markets throughout the world overall (51.6% versus 118.5%). Chile and Colombia had especially low liquidity in their local markets, both experiencing turnover of about 10%.

Some good news is that other than Chile and Colombia, the LAMs experienced increases in liquidity in recent years. Barry and Rodriguez [1998] report some of the figures for market year 1995. Argentina, for example, had turnover in 1995 of only 15%, and yet achieved in excess of 43% in 1997. This represents a dramatic improvement.

Our liquidity measures do not include the trading of domestic securities through the vehicle of listings in foreign markets, most notably in the form of ADRs (American Depository Receipts) or, more generally, GDRs (Global Depository Receipts). For example, it is estimated that in 1995 two times the volume of Argentine securities traded in New York rather than Buenos Aires. Statistics in Exhibit 10 do not include trading of each market's securities in external markets.

A necessary condition for a diversified market is that the largest companies in the market do not constitute a large fraction of the value of the entire market. If only a few securities in a market are sizable, and the remaining companies are very small, investors with substantial funds will be unable to meaningfully diversify their holdings within a single market. In fact, large institutional portfolios (such as the fast-growing private pension funds in the region) will be unable to diversify broadly without moving the prices of some of the securities that they buy. Such price concessions are a direct cost of illiquidity in a market. If size is limited for all but a few securities, diversification will be limited by illiquidity.

Exhibit 11 shows concentration statistics for the seven LAMs. In all of them, five securities make up at least 30% of the total market value of the market, while ten securities make up at least 42% of the total market value. Most concentrated in Latin America is Venezuela, where five stocks make up more than half

EXHIBIT 11

Percentage of Market Values in Largest Companies Among the Seven Largest Latin American Markets*

	Number of Companies				Companies Listed in Market
	1	3	5	10	
Argentina	15%	31%	40%	52%	136
Brazil	14%	33%	42%	53%	536
Chile	9%	21%	30%	44%	295
Colombia	15%	28%	37%	50%	189
Mexico	11%	23%	30%	42%	198
Peru	19%	32%	43%	55%	248
Venezuela	17%	40%	51%	63%	91

*Values are market value of the largest N companies in the market divided by the total market value of all companies listed in the market. Market value is defined as closing share price times number of shares outstanding at the end of 1997.

the market; the remaining eighty-six listed firms are thus rather small.

The largest securities in the U.S. include mammoth GE and Microsoft, each with a market value over \$280 billion U.S., which is larger than any Latin American equity market. Yet the largest ten U.S. firms represent only about 16% of the total U.S. market value.

Heavy concentration in a market imposes a practical limitation on the ability of participants in the market to diversify their risk. All the markets depicted in Exhibit 11 reflect a high degree of concentration compared to the U.S. stock market. These market concentration statistics further demonstrate the importance to domestic investors in LAMs of being free to invest outside their own markets.

Again, there is some relatively good news. The good news is that concentration numbers in some of these markets in 1997 are down considerably from 1995. For example, the ten largest Argentine companies at the end of 1995 made up more than 80% of the total market capitalization. Today, that value is down to 52%. This is still high, but the trend shows improvement over time. It is less difficult to diversify an Argentina-only portfolio today than it was just two or three years ago.

INVESTMENT RESTRICTIONS AND INFORMATION COSTS

As increasing numbers of Latin American firms

list their American Depository Receipts in New York, U.S. investors gain increasingly easy access to information about these firms. For firms that do not have exchange-listed ADRs, interpretation (or even, literally, translation of information) may be problematic since accounting reporting requirements vary significantly across markets. It remains the case that information may be subject to broader interpretation and less readily available to U.S. investors for Latin American securities than for U.S. domestic firms.

Furthermore, some of the most interesting assets in Latin America are simply not available for foreign investors (or, for that matter in some cases, domestic investors). For example, the assets of Mexico's national petroleum company, PEMEX, are sometimes estimated to be worth the value of the entire Mexican equity market. But Mexico steadfastly refuses to consider the privatization of any but the most marginal PEMEX assets or activities. The national copper company of Chile, CODELCO, remains one of the world's most efficient producers of copper, and there are other natural resources assets in Latin America that are not available for private ownership of any kind, let alone foreign ownership.

In addition to national companies, much of the wealth of Latin America remains in large, private family holding groups, and only small fractions of selected subsidiaries are offered to the public. This situation may change, as more and more of these companies find that access to the relatively less-expensive capital in global securities markets offers a competitive advantage that cannot be ignored. The foreign investor will, in turn, have opportunities to participate in the growth and development of those enterprises.

Some Latin American firms are not classified as "investable" by the IFC for reasons of investment restrictions (even though they are public companies) or size or liquidity concerns. Nevertheless, four Latin American markets (Mexico, Brazil, Chile, and Argentina) rank among the top six emerging markets in the world in terms of total amount of investable market capitalization. Investability is less of a concern in Latin America than it is among emerging markets in all other regions of the world.⁸

SUMMARY AND CONCLUSIONS

This article uses the Emerging Markets Data Base provided by the International Finance Corpora-

tion to examine the risk, return, diversification, and other characteristics of Latin American equity markets. The data period of the sample is December 1975 through February 1998.

Taken as a whole, Latin American equity markets achieved compound growth below that of the U. S. market (as measured by the S&P 500 index) during the period examined, although a number of individual Latin American markets outperformed the S&P 500 on the basis of compound returns.

Latin American markets are accurately characterized as being among the riskiest capital markets in the world. Historically, they have experienced extreme highs and extreme lows in response to frequent changes of direction in economic policies in the region. Chile has been the exceptional performer in the Latin American markets, reflecting its relatively early adoption of market-oriented economic policies and its subsequent stability.

Low correlations among Latin American markets and between these markets and other markets suggest that Latin American markets provide important diversification benefits to global investors. Furthermore, because Latin American markets generally experience thin trading (or low liquidity) and are heavily concentrated in a few large securities, the opportunity to diversify *out of* these markets can be even more important to domestic investors than the opportunity to diversify *into them* is to global investors.

ENDNOTES

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¹Data are available in the Emerging Markets Data Base over the full period of our study, December 1975 through February 1998, for only Argentina, Brazil, Chile, and Mexico.

In each market included in the EMDB, the IFC attempts to represent the market by including both larger firms in the market and also a representative cross-section. That is, some stocks may be included that are smaller than some excluded stocks, but they are needed so that the index encompasses the variety of industries available for investment in the market.

See the IFC's *Emerging Stock Markets Factbook 1998* for details about the securities included, index construction, and the like. The results we provide for Latin America are based on a market value-weighted index that includes all securities in the data base from all available Latin American markets (Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela). Data for Colombia and Venezuela begin in December 1984, and data for Peru begin in December 1992.

²Knight [1996] and Thorp and Lowden [1996] provide overviews of political developments in Latin America and their interaction with economic models since 1945. Edwards [1995] provides rich details of economic reforms in Latin America over the period 1982-1994.

³Latin American markets are considered to be "emerging markets." We use the term "emerging markets" as it is used by the International Finance Corporation: an equity market in a developing country. The IFC uses the World Bank's definition of a developing country: one whose per capita gross domestic product places the nation in the lower or middle income categories globally. As of the end of 1997, the cutoff level of per capita national income was U.S.\$9,385. See the *Emerging Stock Markets Factbook 1998* for details.

⁴The EMDB includes "global" indexes and "investable" indexes for each market. The IFC classifies securities as partly or completely investable according to legal restrictions on foreign share ownership (those without such restrictions are relatively more investable) and size and liquidity. See the *Emerging Markets Factbook 1998* for more details.

⁵The primary distinction is that for this article we use data in the "capital adjustment rate" field in the EMDB; in Barry, Peavy, and Rodriguez [1997a] we computed our own adjustment rate. Each methodology leads to index values very similar to those available from the IFC's Global Indexes.

⁶For example, if an investor begins with \$1,000 and gains 50% in the first period and loses 50% in the second period, there will be only \$750 at the end of the two periods. The arithmetic mean is just the average of +50% and -50%, or zero. It seems to suggest that the investor broke even, which was not the case. The geometric mean would be about -12%, suggesting the (correct) impression that the investor had a compound loss of about 25% for the two periods.

⁷Many EMs prohibit their citizens from investing in portfolio assets outside the domestic market. For example, a major source of new capital in LAMs is the newly enacted pension funds in Latin American countries. Domestic holders of pension assets are often prohibited from investing those assets in other than domestic securities. Chile has recently enacted a law to permit foreign portfolio investment of Chilean pension assets, pending approval of specific assets that can be used in such a program. Thus, in many cases the practical ability of domestic LAM investors to diversify out-

side the domestic market does not exist. Ultimately, politicians must balance the goal of domestic capital accumulation against allowing their citizens to protect themselves from the wide swings of the domestic market.

⁸Investability data are regularly reported by a number of data sources, including the EMDB, and they are summarized in the *Emerging Markets Factbook 1998*. Barry, Mann, and Rodriguez [1998] find that investability is closely associated with investment performance in emerging markets.

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