Understanding Emerging Market Bonds

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The 1990s represented for nearly a full cycle of sentiment emerging market bonds have seen. After a decade of default and turmoil, the strong performance of emerging market bonds attracted considerable attention and some measure of acceptance. Between 1991 and the summer of 1997, the average returns on emerging market bonds exceeded the Standard & Poor's 500 index. Then, in 1997 and 1998, the world capital markets saw two bouts of severe economic and financial crisis. These setbacks produced poor returns and some subsequent defaults, while diminishing interest in the asset class.

Much of the research into emerging market bonds predates these economic and financial declines. A number of authors had pointed out some of the benefits to emerging market debt. While highlighting the risks involved, Nemerever [1996], Dahiya [1997], and Froland [1998] all made the case for investment in emerging market bonds. Erb, Harvey, and Viskanta [1997b] argued that any judgment on the viability of emerging market bonds as an asset class was difficult, given 1) the short history of data, and 2) the measurement of characteristics over a long bull market.

Emerging market equities have attracted a great deal more research attention. Harvey [1995] finds that standard asset pricing models fail when applied to these markets. He attributes the failure to the lack of integration of the emerging capital markets with global capital markets. Bekaert and Harvey [1995, 1997] test models of expected returns in emerging markets that explicitly take the degree of market integration into account. Erb, Harvey, and Viskanta [1996a] propose a model of expected returns that is based on risk ratings in emerging market countries.

With nearly a decade of data, we are now more aware of both the opportunities and the pitfalls in emerging market debt. Our objectives in this article, beyond a brief exploration of the history of emerging market lending, are to examine the recent performance of emerging market bonds and note the unique statistical properties of emerging market bond returns, including their correlation with other asset classes. We show the importance of country risk in the pricing and returns of emerging market bonds, and document some new statistical insights on emerging market bonds. Finally, we note how investors and plan sponsors might approach potential investment in emerging market bonds.

HISTORICAL PERSPECTIVE

Global bond investing has a long and storied history. Through at least the First World War, London was the center of global finance. The United States was for much of the nineteenth century viewed as an emerging market. It too experienced periodic eras of default. According to Chernow:

During the depression of the 1840s — a decade dubbed the Hungry Forties — state debt plunged to fifty cents on the dollar. The worst came when five American states — Pennsylvania, Mississippi, Indiana, Arkansas and Michigan — and the Florida Territory defaulted on their interest payments [1990, p. 5].

Latin American lending was quite widespread in the nineteenth century. Chernow notes that

As early as 1825 nearly every borrower in Latin America had defaulted on interest payments. In the nineteenth century, South America was already known for wild borrowing sprees, followed by waves of default [1990, p. 71].

By the 1920s, foreign lending in the United States had developed. In fact, the sale of repackaged foreign bonds to individual investors, and the subsequent losses, played a role in the enactment of the Glass-Steagall Act in 1933.

Volatility has been a hallmark of emerging market bonds throughout time. Exhibit 1-A shows the yield on Argentine and Brazilian bonds from 1859 through 1959. One can clearly see periodic bouts of distress and

volatility. This long-term historical perspective gives us some context for the volatile decade of the 1990s. Exhibit 1-B shows the stripped yields over U.S. Treasuries for Argentina and Brazil from 1991 through 1999. Again we see both high relative yields and ample volatility.[1]

DATA

Data on emerging market bonds is limited in large part by the short history of many of these instruments. J.P. Morgan Securities provides a good source of data on emerging market bonds, and we use its data throughout. Morgan track a number of indexes including the EMBI (Emerging Market Bond Index), EMBI+, and EMBI Global (EMBIG). EMBI consists of U.S. dollar-denominated Brady bonds.[2] EMBI+ includes other non-local currency-denominated bonds and has more restrictive liquidity requirements. As of September 30, 1999, the EMBI Global included bonds from twenty-seven countries.

Another problem is market survivorship. Goetzman and Jorion [1999] demonstrate that emerging market equity markets reenergized after a period of dormancy have returns for some initial period that are higher than their long-term expected return. This upward bias should be evident in emerging market bond markets as well. The
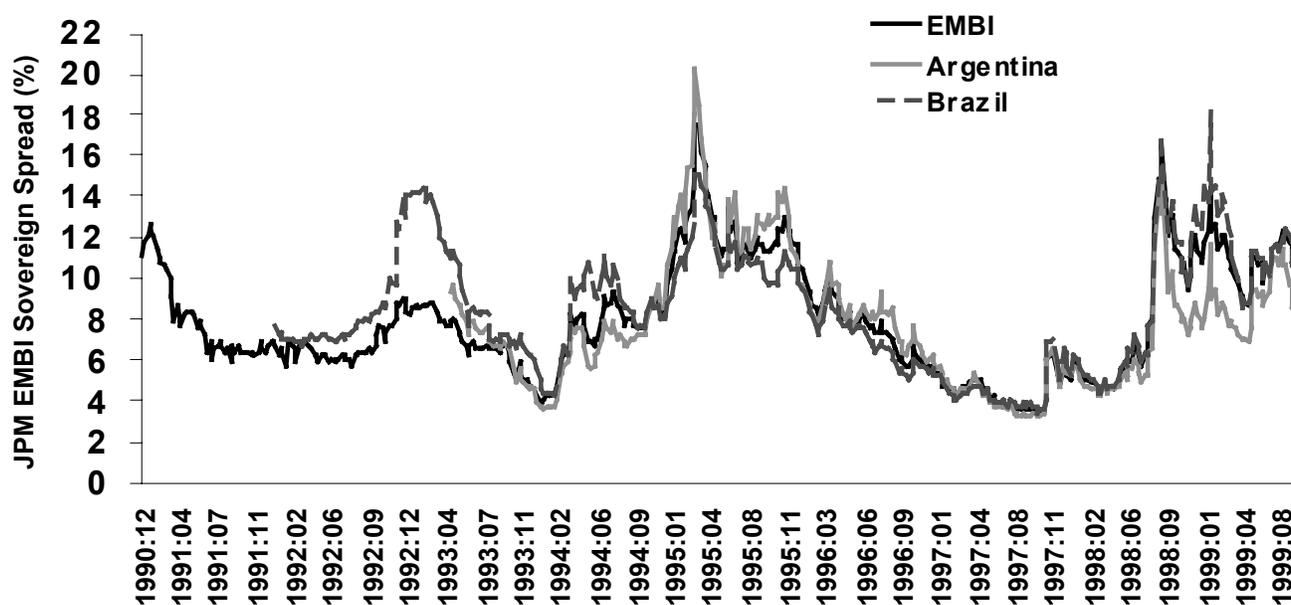
E X H I B I T   1 - A
Historical Perspective — Long-Term Historical Yields
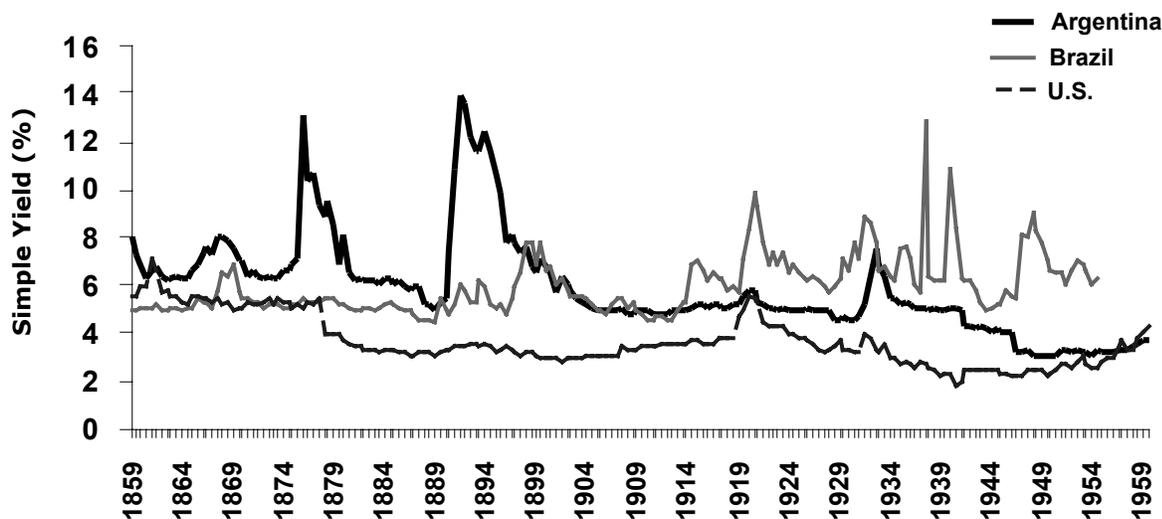
Semiannual observations.
Source: Global Financial Database.

EXHIBIT 1-B
Historical Perspective — Recent Yield

Weekly observations.
Source: J.P. Morgan Securities, Inc.

aftermath of debt renegotiation and market liberalization likely drove returns for a period above their sustainable long-term average. Therefore, these data need to be interpreted with great care.

J.P. Morgan also produces the ELMI+ (Emerging Local Market Index), a local currency-denominated money market index that covers twenty-four countries. It differs from the earlier indexes in a number of respects. First, it includes securities denominated in a country's local currency. Second, the index has a short duration (forty-eight day average life as of September 30, 1999). Third, the country composition differs materially from the hard currency indexes.

To date, most foreign emerging market investment has been in the longer-duration hard currency bonds. Given the problems many emerging markets have suffered because of the currency mismatch between revenues and debt service requirements, we should not be surprised to see a preference for local currency-denominated debt. The issue is finding investors willing to take on the not inconsiderable currency risk.[3]

RISK AND EXPECTED RETURNS OF EMERGING MARKET BONDS

One must exercise caution in any historical analysis of emerging market bond performance. The J.P. Morgan EMBI dates back only to January 1991, while returns data for emerging market equities, from the International Finance Corporation (IFC), date back to 1976. There are great dangers in drawing inferences from such short samples. For example, in the summer of 1997 the average performance of the EMBI exceeded that of the S&P 500 and considerably exceeded that of the U.S. high-yield index. Such return differentials have often been used to promote investment in emerging market bonds.

Two years makes a huge difference. Both emerging market equities and bonds were subject to massive sell-offs beginning in August 1997. Average returns have decreased, and volatility has increased.

In Exhibit 2-A emerging market bonds (JPM EMBI) stand out in the northeast portion of the graph. Over the January 1991–September 1999 period, emerging market bonds have higher returns than emerging mar-

EXHIBIT 2-A
World Capital Markets — Risk, Return, and Relative Capitalization
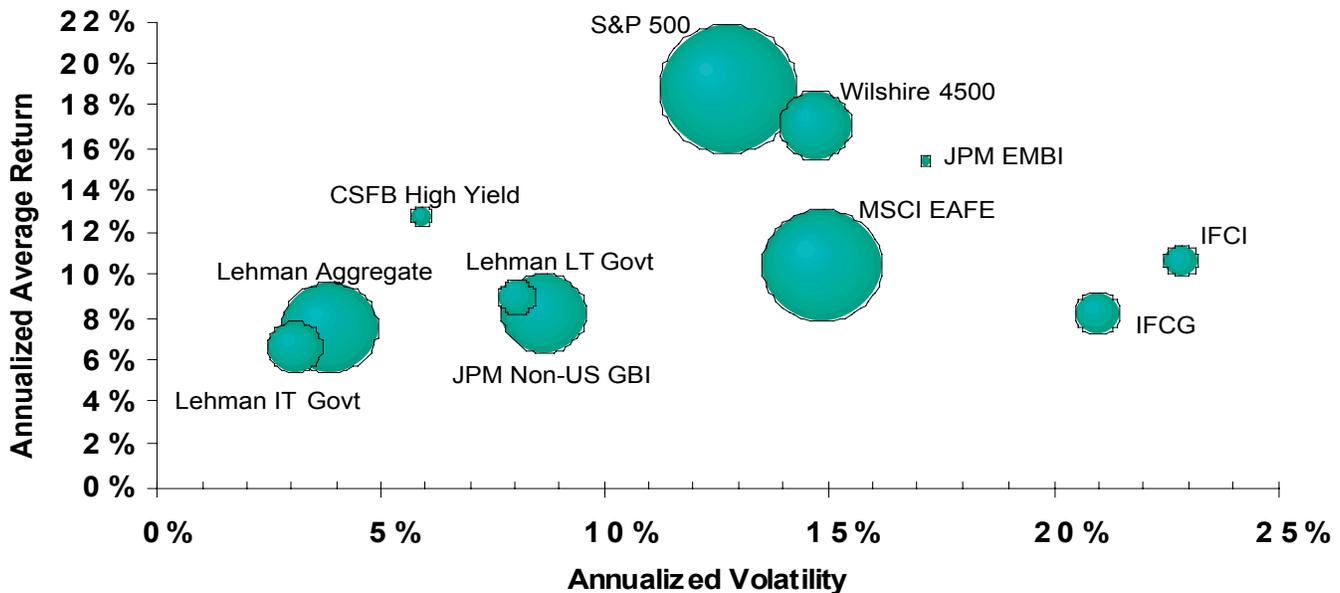
Data: Monthly U.S. dollar total returns (January 1991–September 1999).

|	
CSFB High Yield	Credit Suisse First Boston High Yield Bond Index
IFCI	International Finance Corporation Investable Composite
IFCG	International Finance Corporation Global Composite
JPM EMBI	J.P. Morgan Emerging Market Bond Index
JPM EMBI+	J.P. Morgan Emerging Market Bond Index Plus
JPM EMBIG	J.P. Morgan Emerging Market Bond Index Global
JPM Non–US GBI	J.P. Morgan Non-US Global Bond Index (unhedged)
Lehman Aggregate	Lehman Brothers Aggregate Bond Index
Lehman LT Government	Lehman Brothers Long Term Government Bond Index
Lehman IT Government	Lehman Brothers Intermediate Term Government Bond Index
MSCI EAFE	Morgan Stanley Capital International Europe, Australasia, and Far East Index
S&P 500	Standard & Poor's 500 Index
Wilshire 4500	Wilshire Associates 4500 Stock Index

ket equities (IFCG and IFCI) and U.S. high–yield corporate debt (CSFB High Yield). The return advantage, however, came with the cost of higher volatility, which we will see for emerging market bonds is largely idiosyncratic in a style analysis framework.

Exhibit 2-B shows that emerging market bonds (JPM EMBI, EMBI+, and EMBIG) continue to stand alone in the northeast part of the graph. Over the January 1994–September 1999 period, emerging market bonds continue to have higher returns than emerging market equities (IFCG and IFCI) and U.S. high yield corporate debt (CSFB High Yield), but their advantage over domestic high–yield has narrowed dramatically and comes at the expense of substantially higher volatility.

In both graphs, it is also evident that emerging market bonds have considerably smaller market capitalization than other major global asset classes. This is demonstrated by the size of the bubbles, which represent relative U.S. dollar market capitalization as of September 1999. It is hard to even compare emerging market bonds with major equity indexes (S&P 500, MSCI EAFE) or major bond indexes (Lehman Aggregate or J.P. Morgan Non-US GBI). More apt comparisons for emerging market bonds are domestic high-yield bonds (CSFB High Yield) or emerging market equities (IFCI or IFCG). While there remains a market capitalization gap, but at least the comparisons are closer in size. J.P. Morgan's EMBI Global is, however, a larger opportunity set, given its inclusion of

World Capital Markets — Risk, Return, and Relative Capitalization
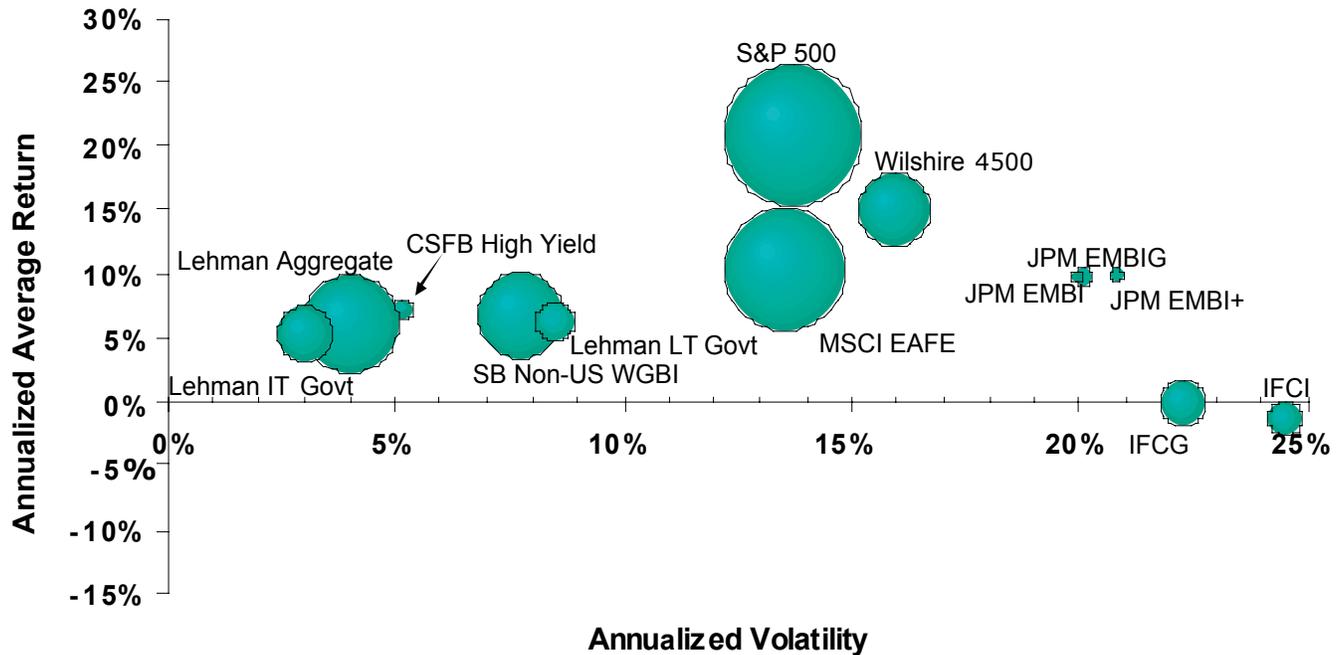
Data: Monthly U.S. dollar total returns (January 1994–September 1999).

a number of countries excluded from its prior standard benchmark, EMBI+.

DISTRIBUTIONAL CHARACTERISTICS OF EMERGING MARKET BONDS

Research into the distributional characteristics of emerging market equities has shown significant deviations from normality. Bekaert and Harvey [1997] and Bekaert et al. [1998] demonstrate that emerging market equities exhibit skewness and excess kurtosis. They show that, given a typical investor's preferences, optimal investment weights should reflect the asset's contribution to portfolio skewness.

The intuition for this is straightforward. People like assets that deliver high positive skewness and are willing to accept low (or even negative) expected returns for these assets (lottery tickets, option payoffs). Investors do not like negative skewness. To take on negative skewness, investors demand a higher expected return.[4]

One difficulty with measuring skewness is that it likely changes through time. Therefore, looking at past data may give no indication of future expected skew-

ness. This is the so-called peso problem in economic theory. Looking at past currency movements, you may see little variation in rates during a managed float regime, but there is a probability of a devaluation that you cannot detect from looking at past data. This is the definition of negative skewness.

That we cannot detect negative skewness using past data does not appear to be relevant for emerging market bonds. For example, in the January 1991-May 1997 period, the EMBI has a negative skewness of -0.8. In the January 1994-May 1997 period, the negative skewness is -0.6. During this same period, the EMBI+ has a negative skewness of -0.8. There was considerable evidence — before the emerging market meltdown — that emerging market bonds have negative skewness. This negative skewness is consistent with the high expected returns.

The events beginning in the summer of 1997 caused an even greater measured negative skewness. Exhibit 3-A shows that the skewness for the EMBI portfolio in the January 1991-September 1999 period is -1.9. From January 1994 through September 1999 we see skewness of -1.6, -2.0, and -2.0 for EMBI, EMBI+, and EMBIG, respectively.
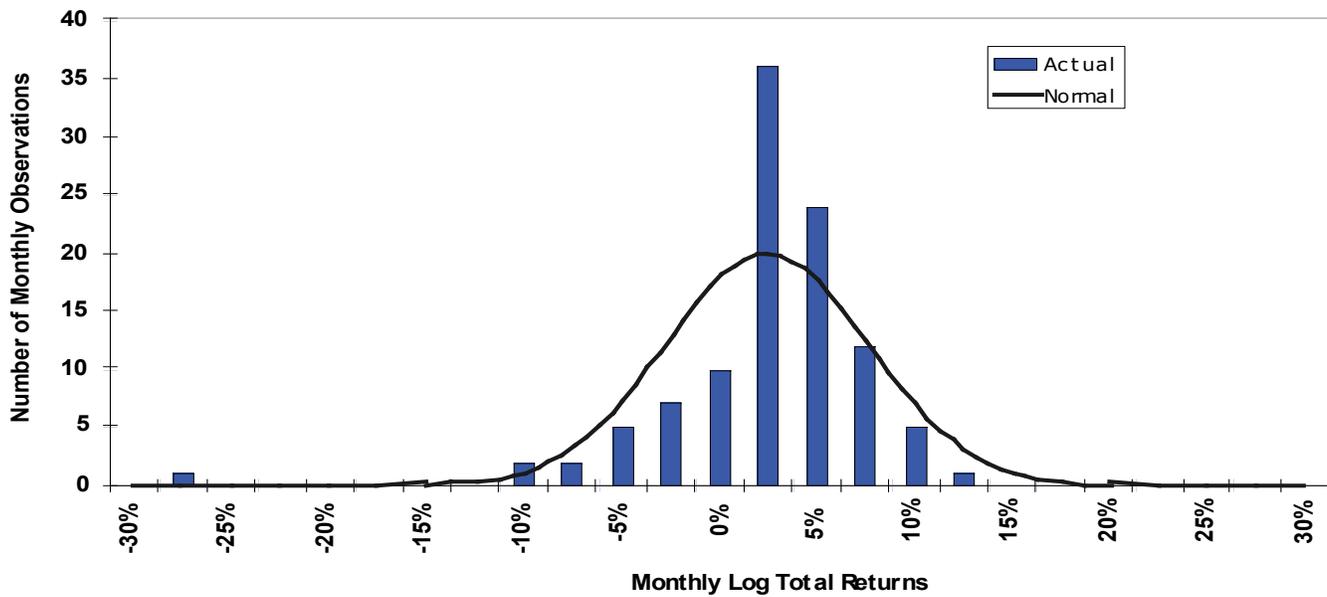
E X H I B I T   3 - A
World Capital Markets — Skewness
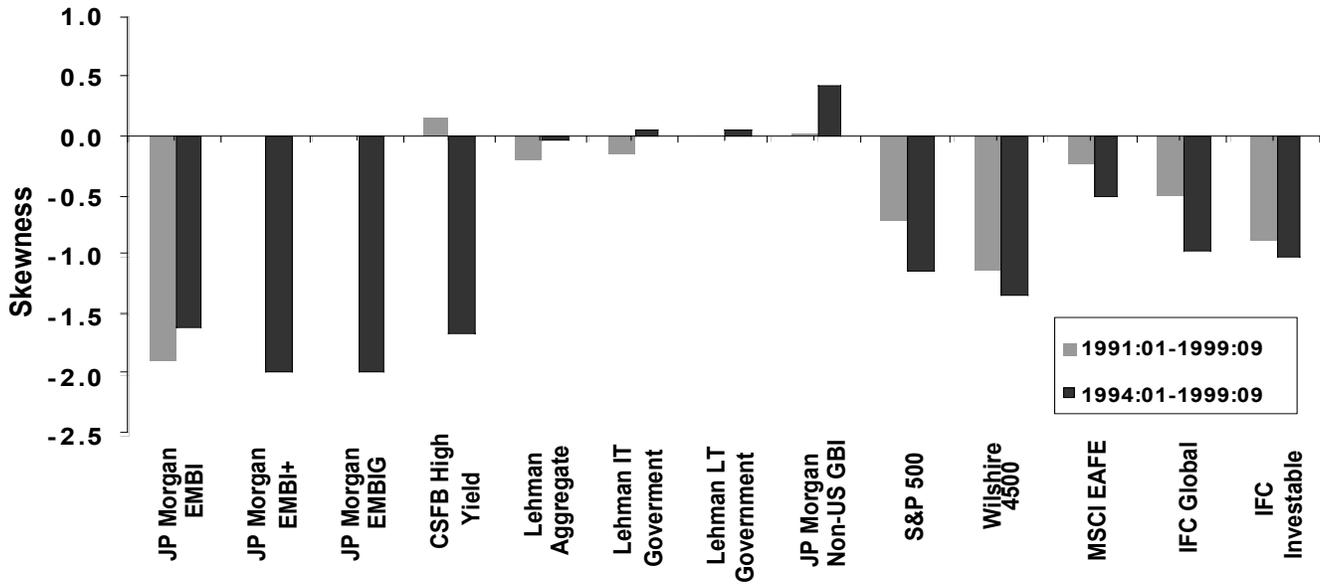
Data: Monthly U.S. dollar total returns.

E X H I B I T   3 - B
Emerging Market Bonds — Distribution of Actual versus Normalized Returns

Data: January 1991–September 1999.
J.P. Morgan EMBI U.S. dollar total returns.

We can see in Exhibit 3-B that this skewness is driven in part by a large negative observation. A -25.6% return for EMBI in August 1998 shows on the left. Even when we exclude this observation from the entire January 1991 to September 1999 sample, we still see skewness of -0.8.

ASSET CLASS CORRELATIONS

Exhibit 4 presents the correlation of J.P. Morgan's EMBI with other asset classes. The subperiods capture the results leading up to the initial emerging market crisis, and the subsequent time period. We use EMBI because it has the longest history. The results would not be affected by the use of broader benchmarks, because the correlations between EMBI and EMBI+ or EMBIG are very high at 0.98 and 0.99.

For the data through July 1997, the highest correlations are with the two IFC emerging market indexes. Correlations with other U.S. dollar bond indexes hover around 0.40 up to July 1997. While a first look at the data suggests that emerging market bonds are somewhat unique in their return patterns, there is an extraordinary shift in the patterns when the most recent data are examined.

In the twenty-six months after July 1997, the correlation with the CSFB High Yield index increases over 50%. The correlation with the S&P 500 is greater than 0.75 and is only slightly smaller than that with the IFC indexes. The correlation with the government bond indexes shifts from positive in the earlier period to negative in the most recent period.

Another way to approach this question is to examine emerging market bond returns in a multivariate setting. We choose a "Sharpe-style" attribution methodology to examine both the overall and time series properties of the asset class.[5] If we can determine which asset classes emerging market bonds correlate with, we gain a better understanding of the role they might play in a portfolio context.

Exhibits 5-A and 5-B show the results of an analysis of the January 1991-September 1999 period. Over the full sample, the greatest contributor to variation in emerging market debt returns is the IFC index. The CSFB High Yield index is the second-most important, followed by the S&P 500 and long-term U.S. government bonds.

One can see in Exhibit 5-B that emerging market bonds have gone through three distinct phases. The first phase, which ends around June 1995, is characterized by a great deal of volatility in asset class contributions. The CSFB High Yield index begins as the most

E X H I B I T   4
Emerging Markets Bonds — Asset Class Correlations
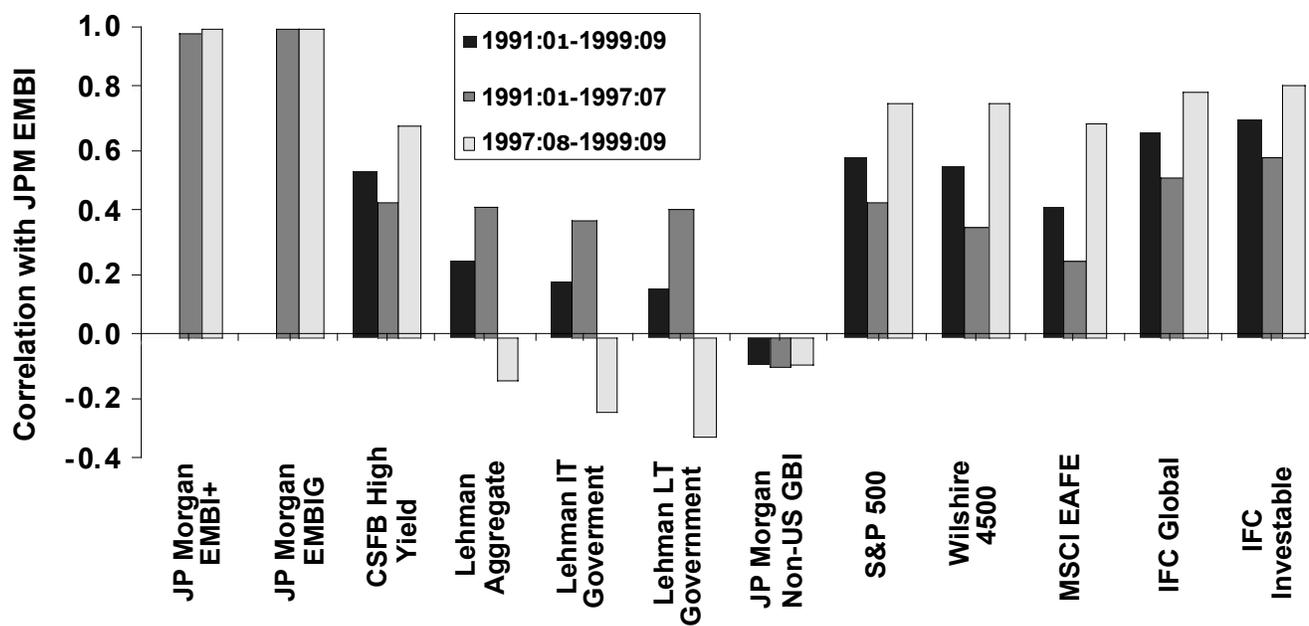
Data: Monthly U.S. dollar total returns.

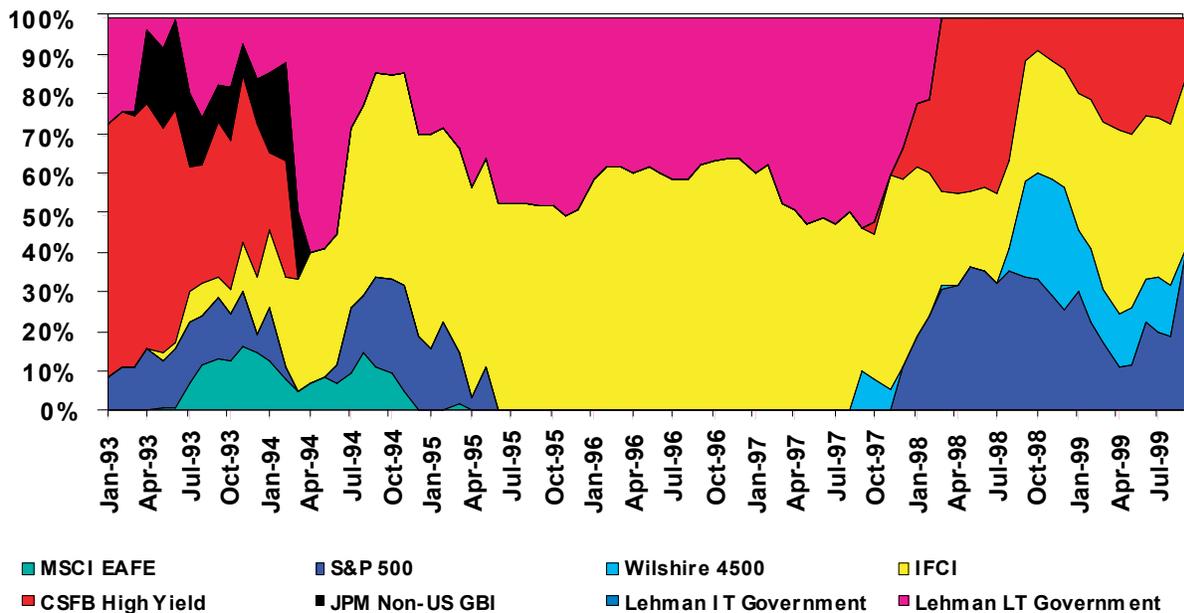**Emerging Market Bonds — J.P. Morgan EMBI Overall Style Analysis**
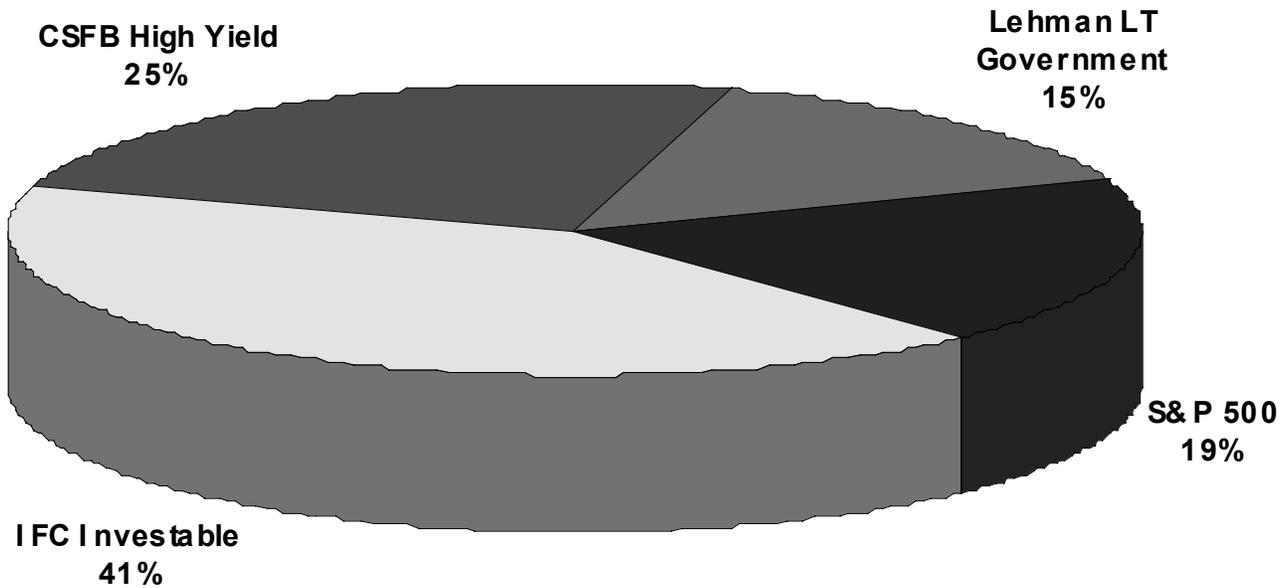
Data: January 1991–September 1999.
R–squared: 59%.

Emerging Market Bonds — Rolling Style Analysis: J.P. Morgan EMBI

Source: Ibbotson Associates EnCorr Attribution.
Twenty-four–month rolling window.
Data: January 1991–September 1999.1

prominent contributor. This should not be surprising, because initially emerging market bonds were viewed, and sold, as a viable domestic high-yield substitute. Emerging market bonds began showing up in what were previously purely domestic portfolios. High-yield bonds eventually give way to the IFC Investable and Lehman Long Term Government Bond Index. This period shows the lowest R-squares, averaging some 54%.[6]

In the next period, from July 1995 through September 1997, emerging market bonds are described solely by two asset classes: emerging market equities and long-term U.S. Treasuries. Volatility decreases, and the sovereign spreads on emerging market debt steadily narrow to what would be their historic low in September 1997. The explanatory power of these asset classes increases to some 63%.

This era of relative tranquility gives way to a crisis-filled period. The returns on emerging market bonds effectively decouple from U.S. Treasuries, and are now associated with three major asset classes: emerging market equities, U.S. equities, and U.S. high-yield. We see the highest R-squares, of around 71%.

From this analysis, we can see that over as short a period as a decade we cannot truly summarize the asset class influences on emerging market bonds. They clearly depend on the type of return regime expected. If emerg-

ing market bonds return to a more placid period, we would expect to see a higher correlation with U.S. Treasuries and a continued influence of emerging market equities.
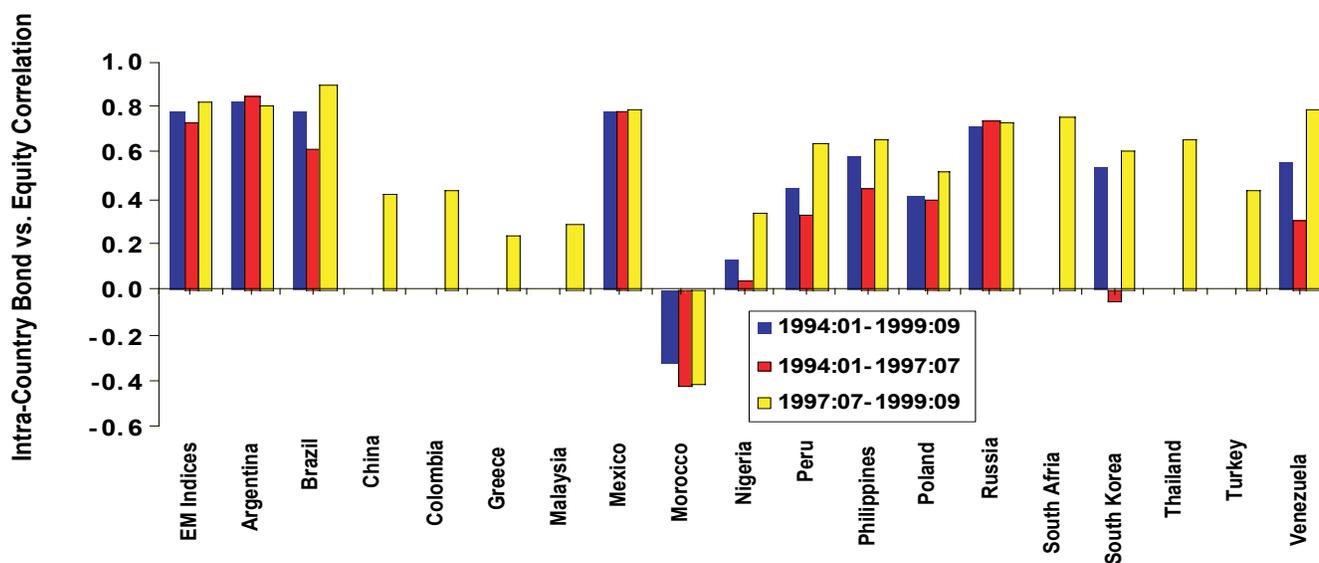
BONDS AND EQUITIES

Are emerging market equities and bonds substitutes? Intuition suggests that high-yield bonds should behave similarly to equities, especially in times of distress. Our intuition is that emerging market stocks and bonds should have higher intramarket correlations than those in the developed markets because of their country-specific risk. This would allow an investor the chance to more readily substitute bonds and stocks within an emerging country. This could be very helpful in markets where liquidity and/or investibility are issues.

Kelly, Martins, and Carlson [1998] document this exact relationship between emerging market equities and bonds. They find that the lower a country's perceived creditworthiness, the higher the correlation between its bond and equity markets. They also document the fact that credit shocks, both positive and negative, have had the anticipated effect on correlations.

Exhibit 6 details the equity-bond correlations for eighteen countries and the major emerging market bond

E X H I B I T   6
Emerging Market Bonds — Intramarket Equity versus Bond Index Correlations

Data: Monthly U.S. dollar total returns.
Equities: IFC Investable; Bonds: J.P. Morgan EMBI Global.

and equity indexes for three periods: January 1994–September 1999, January 1994–July 1997, and August 1997–September 1999. The third period isolates the emerging market sell-off and subsequent rebound.

The correlations are generally high, which is consistent with our intuition. The most striking pattern in Exhibit 6 is the increase in the intramarket correlations during the most recent period. Brazil, Peru, South Korea, and Venezuela all show increased intramarket correlations. For the index as a whole, the correlation increases from 0.73 in the period up to July 1997 to 0.84 in the most recent period.

It is also the case that intramarket bond–equity correlations increase with perceived risk. This relationship is documented in Kelly, Martins, and Carlson [1998] and Erb, Harvey, and Viskanta [1999]. In Exhibit 7 we can see that for the period January 1994 through September 1999 intramarket bond versus equity correlations increase as creditworthiness decreases, as measured by the *Institutional Investor* country credit ratings. Were it not for two prominent outliers (Morocco and Nigeria), the R–square measure would increase from 11% to 50%. One can also see that the bond–equity correlations for the

developed and emerging markets are substantially different (nearly 0.60).

## COUNTRY RISK RATINGS AND EMERGING MARKET BONDS

Investors in the emerging markets need to concern themselves with three primary sources of risk. The first is interest rate risk. This concern is non-trivial in regard to some emerging market bonds. Some of the bonds issued through loan restructurings have complex structures that need to be properly modeled to capture the interest rate sensitivities. This becomes all the more important because many emerging market bonds have relatively long durations.

The second risk is currency risk. We have not focused on currency risk because most of our analysis is of U.S. dollar-based debt. Yet local currency bond issuance will likely grow in the future, and the management of currency risk will undoubtedly become more important over time.

The third type of risk is sovereign or country risk. Emerging market countries represent not only a wide geographic area, but also a wide range of situations. Most observers, for example, would recognize that the issues

E X H I B I T 7
Country Risk — Intramarket Equity versus Bond Index Correlations

Institutional Investor Country Credit Rating (9/99)
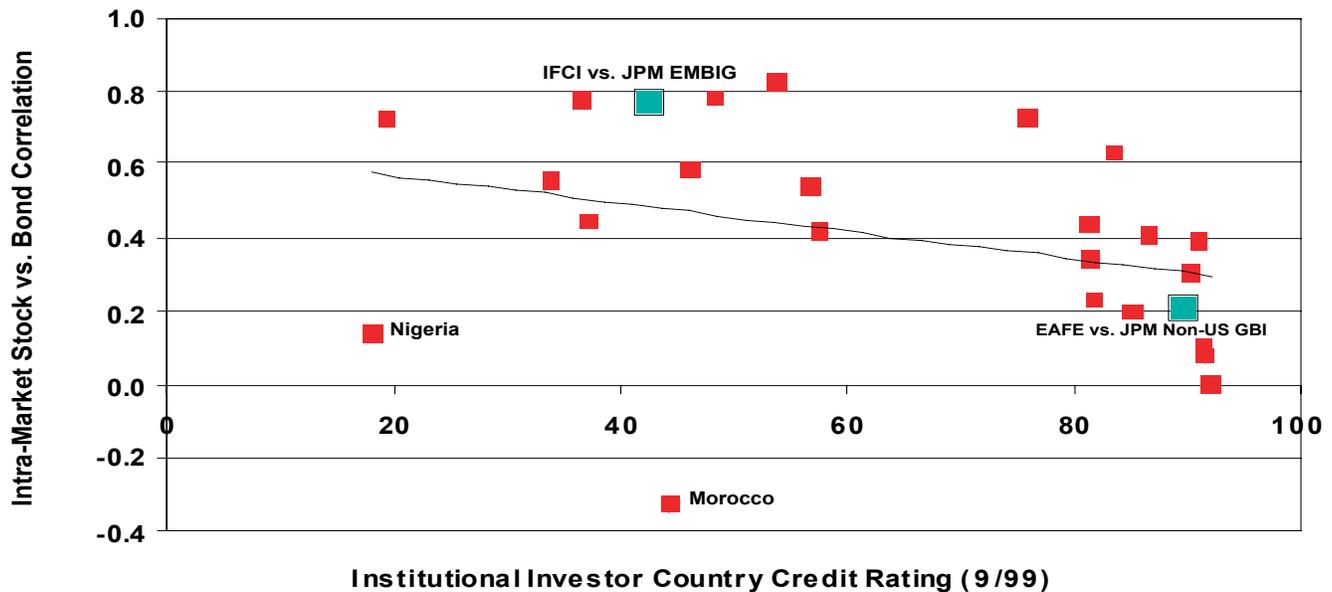
U.S. dollar total returns: January 1994–September 1999.
Bonds: J.P. Morgan Global Bonds and EMBI Global.
Stocks: MSCI EAFE and IFC Investables.

facing Brazil are quite different from those facing Russia or the Philippines. Accordingly, researchers are focusing more effort on explaining the pricing of sovereign risk and how various services rate and rank sovereign risk.

Eichengreen and Mody [1999] study the fundamental determinants of yield spreads on emerging market debt. They determine that sentiment played a key role between 1991 and 1996. Cantor and Packer [1996] in an examination of the factors that go into determining sovereign ratings find that macroeconomic factors are able to explain a large amount of the variation in commonly used sovereign ratings. They also examine the impact of changes in ratings on sovereign credit spreads. Dym [1997] uses a model to derive credit sensitivities for a number of emerging markets that he applies in a credit model investment strategy. Purcell [1996] also examines the sources of sovereign risk and its role in emerging market bond investing. Erb, Harvey, and Viskanta [1997a] model various commercial rating services' country risk ratings using macroeconomic variables, and examine their use in the portfolio management process.

A simple way to test the value of publicly available country risk ratings is to use them to form portfolios. In Exhibit 8 we show the results of a portfolio simulation using the J.P. Morgan EMBI Global universe of countries. Every month we sort the countries into two portfolios, depending on the prior month's ICRG composite rating. One can see that the riskier portfolio outperforms the less risky portfolio and the benchmark, but at substantially higher volatility and beta. The most recent high–risk sort includes: Algeria, Brazil, Colombia, Cote d'Ivoire, Croatia, Ecuador, Lebanon, Malaysia, Nigeria, Russia, South Africa, Turkey, and Venezuela. While this exercise does not necessarily provide us an investible strategy, it does give us some confidence for country risk to discriminate between high and low expected return countries.

Given this research, we should not be surprised to see that perceptions of country risk are reflected in sovereign yields and country bond returns. Erb, Harvey, and Viskanta [1996b] show that commonly used country risk ratings do an impressive job in explaining the cross-section of real yields in a sample of developed market bonds. Evaluation of bonds denominated in U.S. dollars

E X H I B I T   8
Country Risk — Portfolio Exercise

	High Credit Portfolio (EW)	Low Credit Portfolio (EW)	All-Country Portfolio (EW)	JP Morgan EMBI Global
Arithmetic Returns	8.8%	17.2%	12.8%	9.7%
Geometric Returns	8.0%	14.8%	11.3%	7.8%
Standard Deviation	14.5%	25.1%	19.7%	19.9%
Beta with JP Morgan EMBI Global	0.69	1.21	0.95	1.00
Skewness	-1.5	-1.5	-1.6	-2.0
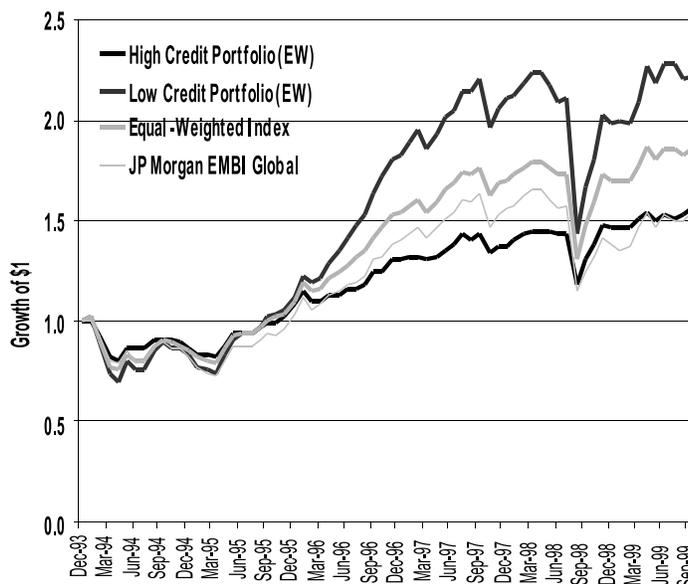
Monthly data: January 1994–September 1998.
J.P. Morgan EMBI Global Universe.
Total returns in U.S. dollars.
Monthly portfolio rebalancing.

allows us to directly examine cross-country yield spreads over the appropriate (maturity-adjusted) Treasury yields.

Exhibit 9 shows the relation between *Institutional Investor*'s country credit ratings and the spread over U.S. Treasuries for the EMBIG universe of countries. To simplify the analysis, and to keep it in two dimensions, we estimate for each country the spread over Treasuries for a four-year spread duration.[7]

To add value above and beyond a given benchmark, analysts need to concern themselves with the reasons behind the deviations from the calculated relationship between spreads and risk ratings. In the case of outliers, deciding whether the market is improperly estimating country risk or mispricing certain bonds is the key to active emerging market bond selection.

Part of the issue may be that the market is already anticipating credit risk adjustments. Exhibit 10 lists the countries in the major emerging market indexes, Political Risk Services International Country Risk Guide Composite Rating, ICRG's one-year forecast Composite Rating, and contemporaneous and forecasted yield spreads. One can see that Political Risk Services is fore-

casting reversals of fortune for Thailand (down) and Turkey (up). Forecasting future risk profiles adds another dimension to the analyst's job in active bond management.

SLOPE OF THE SOVEREIGN YIELD CURVE

Pricing emerging market bonds is important not only for its own sake, but also for our understanding of other emerging market assets. All financial valuation models require some estimate of the discount function. Understanding the dynamics of emerging market interest rates can help us accurately discount cash flows in the emerging markets.

Analysts have recognized in the emerging markets an upward-sloping term structure of sovereign spreads (interest rates over comparable U.S. Treasuries) in many of the emerging markets. We can see in Exhibit 11 that the credit yield curve is upward-sloping in a number of major emerging markets.

In Exhibit 11, which covers only Eurobonds for reasons of comparability, we see that there are exceptions

E X H I B I T   9
Country Risk — Current Statistics Emerging Markets
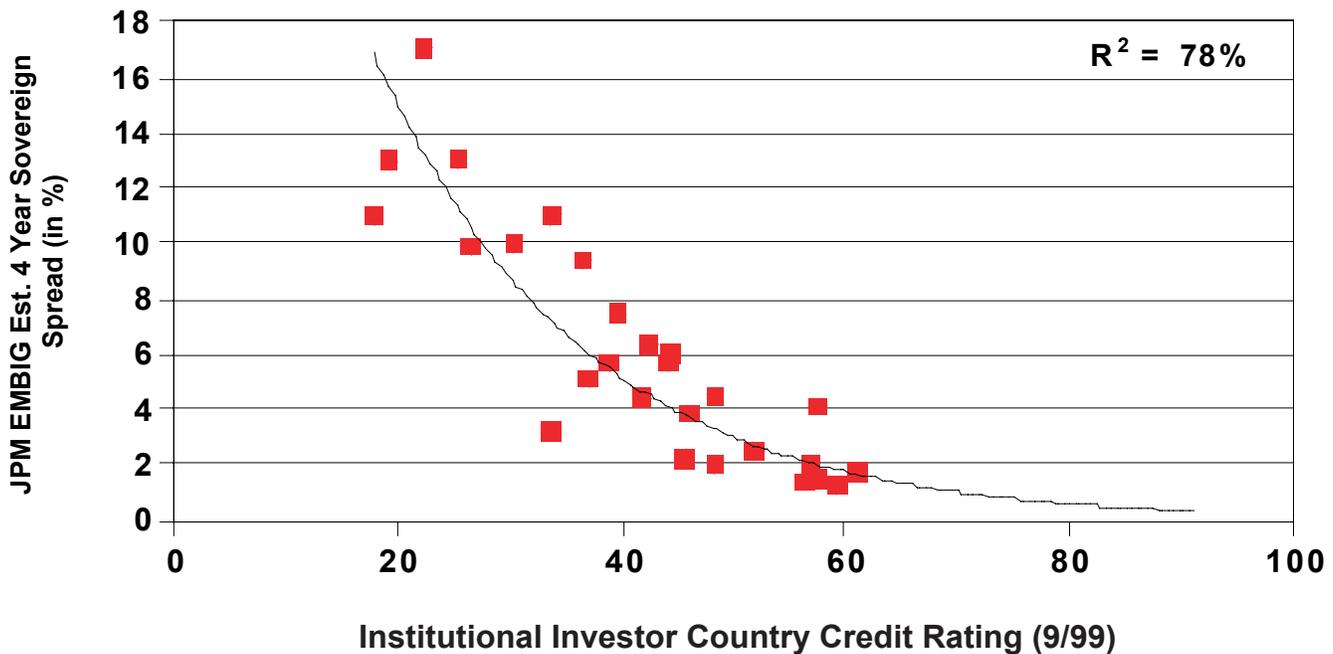
Data: September 30, 1999.
J.P. Morgan EMBI Global Universe.

E X H I B I T   1 0
Country Risk — Estimated and Forecast Sovereign Spreads (%)

Country	Country Weight in: EMBIG	IFCI	ICRG Composite	ICRGC Forecast	Sovereign Spread Fitted	Forecast
Algeria	0.5%		51.8	57.5	10.4%	8.7%
Argentina	21.3%	2.5%	73.0	69.5	4.2%	5.2%
Brazil	19.8%	7.6%	29.0	57.5	8.3%	8.7%
Bulgaria	1.9%		73.8	74.5	4.0%	3.8%
Chile	0.3%	4.4%	70.5	73.5	4.9%	4.1%
China	1.6%	2.3%	72.0	72.5	4.5%	4.4%
Colombia	1.1%	0.4%	53.3	58.0	9.9%	8.6%
Cote d'Ivoire	0.1%		67.8	63.3	5.7%	7.0%
Croatia	0.7%		70.3	69.0	5.0%	5.4%
Czech Republic		0.4%	75.5	75.0	3.5%	3.6%
Ecuador	0.9%		57.0	58.0	8.9%	8.6%
Egypt		0.5%	68.3	69.0	5.6%	5.4%
Greece	1.0%	9.4%	74.8	76.0	3.7%	3.3%
Hungary	0.7%	1.2%	75.3	76.0	3.6%	3.3%
India		2.6%	63.8	64.0	6.9%	6.8%
Indonesia		1.8%	48.3	52.5	11.4%	10.2%
Israel		2.4%	67.3	65.0	5.9%	6.5%
Jordan		0.2%	74.3	74.0	3.9%	3.9%
Lebanon	0.6%		53.8	55.5	9.8%	9.3%
Malaysia	3.0%	6.5%	72.0	69.0	4.5%	5.4%
Mexico	14.9%	10.1%	68.8	65.5	5.4%	6.4%
Morocco	1.1%	0.9%	71.8	72.0	4.6%	4.5%
Nigeria	1.7%		57.8	56.5	8.6%	9.0%
Pakistan		0.3%	54.0	58.0	9.7%	8.6%
Panama	1.9%		72.0	71.5	4.5%	4.6%
Peru	1.2%	0.8%	67.5	64.5	5.8%	6.7%
Philippines	2.9%	1.2%	70.5	69.0	4.9%	5.4%
Poland	2.7%	1.0%	77.0	78.5	3.1%	2.6%
Russia	5.2%	1.1%	53.0	48.0	10.0%	11.5%
Slovakia		0.1%	71.8	77.0	4.6%	3.1%
South Africa	0.6%	10.8%	69.5	65.5	5.2%	6.4%
South Korea	7.5%	13.2%	76.8	73.0	3.1%	4.2%
Sri Lanka		0.0%	64.3	62.5	6.8%	7.3%
Taiwan		12.9%	83.3	82.0	1.2%	1.6%
Thailand	0.4%	1.2%	73.0	67.5	4.2%	5.8%
Turkey	0.9%	3.7	53.5	60.5	9.9%	7.8%
Venezuela	5.6%	0.6%	63.5	61.0	7.0%	7.7%
Zimbabwe		0.0%	55.3	49.0	9.4%	11.2%
Weighted Average	67.1	70.9				
	5.91%	4.81%				

Data: J.P. Morgan EMBIG (9/99), IFC Investables (9/99), ICRGC (9/99).
Estimated sovereign spreads fitted on EMBIG universe (4–year duration).
One year ICRG forecast.

to this rule. Distress tends to invert the curve. Prominent examples of this at the moment are Ecuador and Russia (neither shown). In Exhibit 11, Venezuela also seems to be significantly inverted.

The notion of an upward-sloping sovereign yield curve is contrary to theory for risky issuers. Helwege and Turner [1999]'s survey of the literature finds theoretical and empirical support for inverted credit yield curves. Once credit quality is held constant for any given issuer, however, the credit yield curve slopes upward.

Although the topic requires additional study, we can have some added confidence that the general notion of upward-sloping yield curves in the emerging markets is confirmed in other risky bond markets.

EMERGING MARKET BOND SENTIMENT

Many analysts view the premium (or discount) on closed-end funds as a sentiment measure of small investors. While we do not have the data to confirm the composition of ownership of domestically traded closed-end emerging market bond funds, we can still examine the collective premium/discount on these funds and see if it has some ability to discriminate among return regimes.

In Exhibit 12 we can see the average premium on up to ten domestic closed-end emerging market bond funds plotted against the J.P. Morgan EMBI+ total return on a weekly basis. Investors tend to bid up premiums during times of distress and reduce them during periods of relatively positive market returns. This relationship seems to point to investors having a preference for yield stabilization; i.e., when NAVs are high, market prices are low; when NAVs are low, market prices are high.

It is interesting to note that it took crisis in the fall of 1997 and the summer of 1998 to really shift sentiment dramatically. This measure can provide emerging market bond investors with an indicator not dependent upon bond prices themselves.

Another sentiment measure worth examining is the relative in- and outflows into and from dedicated open-end emerging market bond funds. While neither of these would be a precise timing tool, they could be helpful in gauging market sentiment.
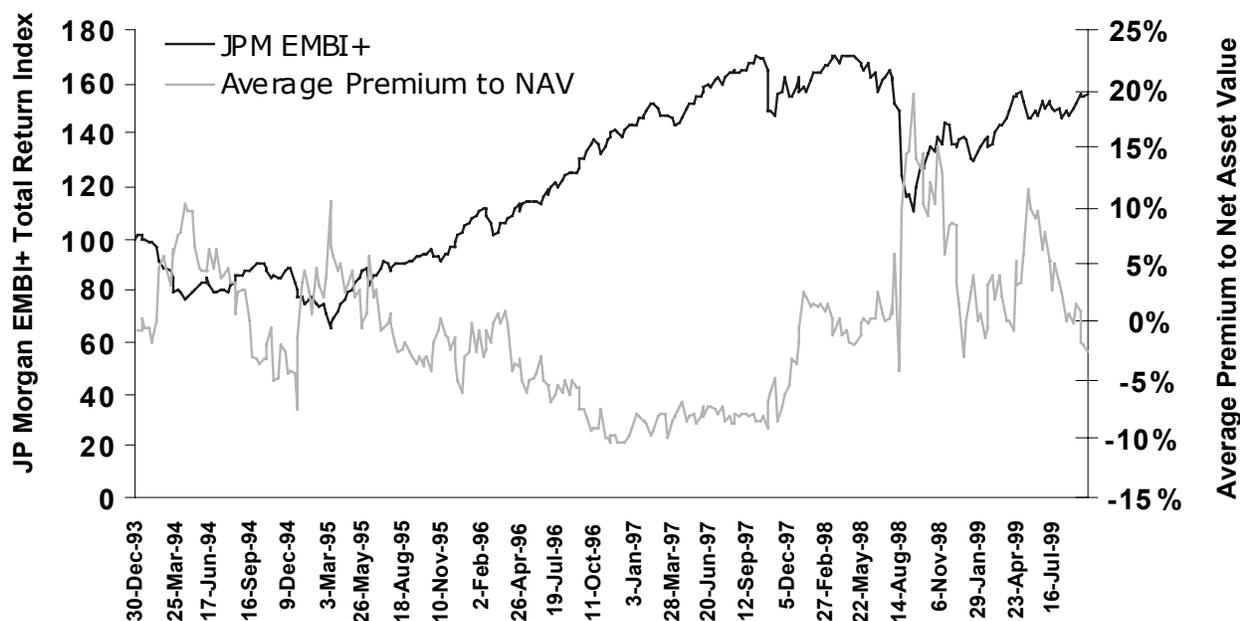
E X H I B I T **11**

Research Findings — Slope of Emerging Market Eurobond Yield Curve
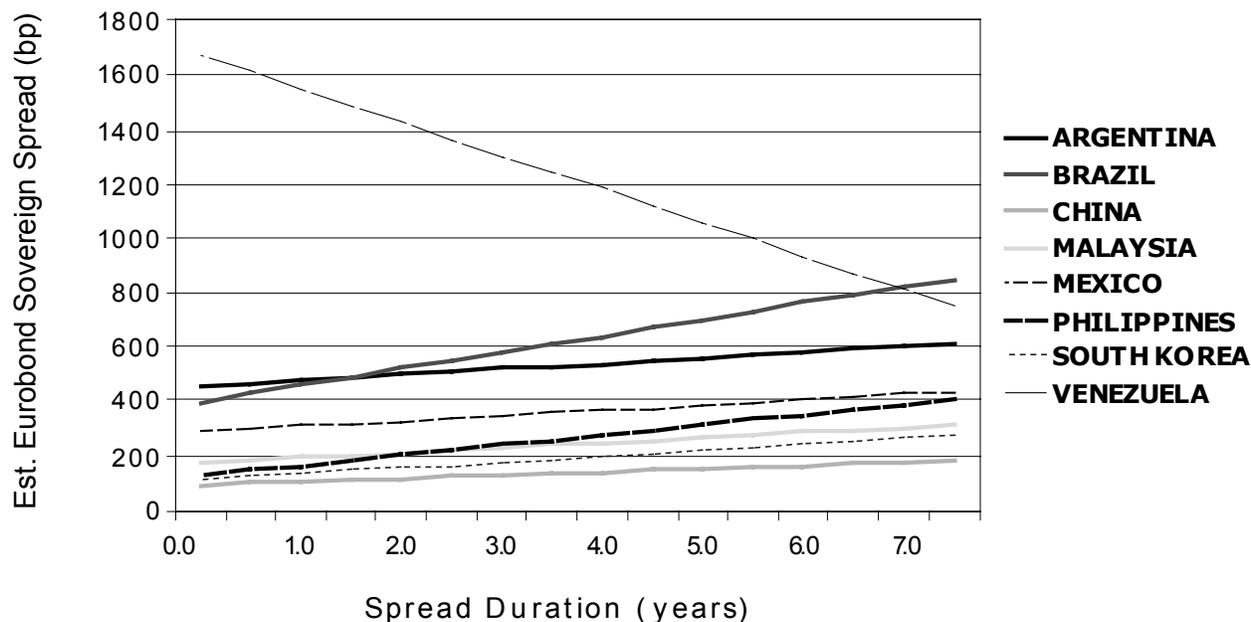
Source: J.P Morgan Securities, Inc.
Data: September 30, 1999.

E X H I B I T   1 2

Sentiment — Closed-End Fund Premiums versus Index Levels

Weekly observations.
Source: J.P. Morgan Securities, Inc.

Of course, the closed-end fund discount/premium need not simply reflect sentiment. Bekaert and Urias [1996] link the discount/premium to the degree of integration and diversification potential of closed-end country funds. Arora and Ou-Yang [1999] present a dynamic model of premiums and discounts on closed-end funds within a rational expectations framework.

PORTFOLIO CONTEXT

For many investors, the numerous practical issues involved with emerging market bonds will prevent them from making any sort of strategic commitment. Indeed, there are a number of reasons to pass up emerging market bonds, starting with their small relative market capitalization and limited liquidity. Emerging market bond returns are also highly volatile and negatively skewed. From a practical perspective, emerging market bond investments require additional analytic capabilities to cover some two dozen countries and markets. For these reasons and others, many investors will find the costs outweigh the potential benefits of investing in what is a minor world investment opportunity.

For others, the potential return opportunities are simply too large to ignore. In a world of low single-digit equity risk premiums, the nearly 1000-basis point sovereign spread on EMBI Global, as of September 30, 1999, begins to look attractive. For these investors, some practical issues involved with emerging market bonds need to be addressed.

The first issue is one of benchmark selection. As with many asset class benchmarks the issue of benchmark efficiency is an obvious one. For example, J.P. Morgan had, until recently, certain liquidity requirements for inclusion in its indexes. This led to benchmarks that were highly weighted toward Argentina, Brazil, and Mexico. Even in the expanded benchmark, EMBI Global, these three countries make up 55% of the index. For many investors, this sort of concentration is simply not acceptable. J.P. Morgan has addressed this issue with EMBI Global Constrained, which attempts to limit this over-concentration; Argentina, Brazil, and Mexico fall to some 36% of the index.

Many investors will feel more comfortable with a self-structured portfolio. This is already a common practice with emerging market equity portfolios that can be

applied to emerging market bonds as well.[8] For example, an investor could structure a benchmark so as to target a specific level of country risk, or limit any individual country's benchmark weight.

Given that a strategic commitment to emerging market bonds may not be feasible, many investors have tried to squeeze emerging market bonds into a related asset class in the hope of at least capturing some of the inherent return opportunities. Unfortunately, this is a business risk, given the high tracking errors between emerging market bonds and domestic high-yield and non-U.S. government bond indexes. For example, from January 1994 through September 1999, EMBI Global had annualized tracking errors of 17% and 22%, respectively, with the CS First Boston High Yield index and the J.P. Morgan Non-U.S. Government Bond index. This makes a tactical decision between emerging market bonds and its asset class partners particularly treacherous.

Some have concluded that investing in emerging market bonds in conjunction with emerging market equities is a viable solution; see, for example, Kelly, Martins, and Carlson [1998]. From January 1994 through September 1999, J.P. Morgan EMBI Global and IFC Investable had annualized tracking errors of 15%. Despite its variability, this seems a more feasible solution. There are other benefits from a balanced emerging market portfolio, including potentially greater liquidity and greater diversification opportunities.

CONCLUSIONS

Despite nearly a decade of data, there is much left to learn about modern-day emerging market bonds. As we have seen, emerging market bond returns have been highly variable through time. In relatively good times, emerging market bonds seem to have unique return characteristics, but in times of crisis, returns are highly correlated with equity market returns. The bonds have shown negative skewness that, if expected to continue, needs to be offset by higher expected returns. For many potential investors, this combination of a relatively small market capitalization, high volatility, and negative skewness makes it impractical to invest in emerging market bonds.

Despite this, many emerging markets will require continuing capital inflows. The bond markets seem to be a preferred way of funneling capital to sovereign and quasi-sovereign entities. Undoubtedly the crises of 1997 and 1998 have made it difficult for many investors to view emerging markets as a viable investment opportunity.

Although the emerging bond markets are no longer priced at crisis levels, neither have they regained the level of performance seen in fall 1997. Given the volatile history of these markets over the past decade, this middle ground may, in fact, be a reasonable starting point for the next decade.

ENDNOTES

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[1]One can argue that Argentina is a relatively well-developed country. Its equity market capitalization in the early 1920s exceeded that of England.

[2]Brady bonds are bonds issued under a "Brady Plan" restructuring. A Brady Plan debt restructuring, named after former U.S. Treasury Secretary Nicholas Brady, generally exchanges debt for freely traded bonds, reduces the overall level of debt and interest payments, and often offers new bonds with a pledge of U.S. Treasury zero-coupon bonds.

[3]See Harvey and Roper [1998].

[4]In the context of a portfolio, we measure the contribution to the skewness of a portfolio, or coskewness. This measure is analogous to the beta for contribution to variance. See Harvey and Siddique [1999].

[5]The asset class factor model seeks to explain the target returns using a predefined set of asset class returns. This can give us some insight into the strength of the relationship among asset classes. See Sharpe [1992] for an introduction to the style measurement process.

[6]Strictly speaking, the R-square statistics from a Sharpe style analysis are not true r-square statistics. Because of the constraints on the analysis, at best we should characterize them as quasi-R-squares.

[7]For each country we used the spread over Treasuries and spread duration for a number of sovereign bonds in each country. We then fit a linear regression for each country and calculate the spread over Treasuries for a four-year duration. We choose four years because that approximates the overall spread duration on the J.P. Morgan EMBIG.

[8]See Masters [1998] for a discussion of the issues involved with emerging market equity indices. Many of these same issues are present with any emerging market bond index.

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