

C A M B R I D G E   A S S O C I A T E S   L L C

## HIGH-YIELD BONDS

2001

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**ABSTRACT**

1. From modest beginnings in the 1970s through the fraudulent excesses of Michael Milken in the late 1980s, high-yield bonds have evolved into a global asset class with a total market capitalization of \$668 billion. During the relatively short period for which reliable data exist (1983-84 to date), a diversified portfolio of U.S. high-yield bonds returned 10.0% annually, while investments in U.S. intermediate- and long-term investment-grade corporate bonds returned 9.4% and 10.2%, respectively. In other words, high-yield bond investors have not been adequately compensated for assuming the greater risk inherent in low-quality debt, although there have been interim periods during which returns have been exceptional. Despite our reluctance to extrapolate normative expectations from a relatively brief return series, these data reinforce our long-held view that most investors should consider only tactical allocations to this asset class, buying when yield spreads skew the risk/reward ratio heavily in their favor, and liquidating their holdings when spreads narrow again.
2. For the period January 1, 1987 through December 31, 2000, the Lehman Brothers Government/Credit Bond index returned 8.0%, with a Sharpe ratio of 0.49, while the Lehman Brothers High-Yield Bond index returned 8.4% with a Sharpe ratio of 0.37. This suggests that, on a risk-adjusted basis, high-yield investors, *on average* and *in aggregate*, have been slightly underpaid. However, when one examines each tier of the high-yield market, the picture changes considerably. B-rated-bonds, with a return of 8.1% and a Sharpe ratio of 0.33, look very much like the high-yield market as a whole, but nothing like the higher and lower tiers. Caa-rated bonds, with an average annual compound return (AACR) of 6.0% and significantly higher variability, have a Sharpe ratio of only 0.01, but Bb-rated bonds not only returned the most at 9.4%, but did so with far greater consistency, resulting in a very high Sharpe ratio of 0.76. We would emphasize, however, that all such analysis of the high-yield market are highly period-specific—inescapable when an asset class has a relatively short history.
3. The returns of the lowest quality (Caa) high-yield bonds have shown some correlation with the returns of small-cap value stocks (0.49) and lower correlations with the returns of investment-grade bonds (0.10 versus the Lehman Brothers Government/Credit and 0.11 against Lehman Brothers Aggregate Bond indexes). As one would expect, the correlations with investment-grade fixed income increase as one moves up the credit quality scale, from Caa to B and then to Bb-rated issues; for example, the returns of B-rated bonds have a correlation of 0.39 with those of the Lehman Brothers Aggregate Bond index, while the correlation of Bb-rated high-yield returns with those of the Aggregate index is 0.64. As these data suggest, however, Bb-rated bonds should not be regarded simply as an extension of investment-grade fixed-income securities,

nor Caa-rated bonds viewed as a proxy for low-quality, small-cap stocks, despite some characteristics in common. The correlation data also indicate that the addition of high-yield bonds would provide some incremental diversification benefits to most investors' portfolios. In light of the questionable risk/return history of the asset class, however, we suspect that few investors would find these benefits sufficient to justify a policy allocation to high-yield.

4. As of year-end 2000, spread ratios for all tiers of high-yield bonds had widened beyond previous highs established at the end of 1990, when the market had collapsed and default rates surpassed 10%. For Caa-rated issues, the average spread ratio for the period 1987-2000 is 2.37, while at year-end 2000 it was 5.44. For B- and Bb-rated bonds the average spread ratios are 1.76 and 1.47, and the year-end 2000 ratios, 2.90 and 2.01. Because the level of interest rates is substantially lower today than in 1990, however, *absolute* spreads (i.e., the difference in basis points between the high-yield and ten-year treasury bond yields) are not as high, although still well above the long-term means for each tier of the high-yield market. Whether today's wide spreads represent as juicy a buying opportunity as in 1990 (high-yield bonds returned 46.2% in 1991), depends entirely on whether the current deterioration in the economy proves a run-of-the-mill cyclical recession (already discounted by the high-yield market) or something more virulent and prolonged.
5. In recent years, the composition of the U.S. high-yield market has been affected by the proliferation of Collateralized Debt Obligations (CDOs). CDOs are asset-backed securities consisting of some combination of high-yield loans, high-yield bonds, and emerging markets bonds. The securities are pooled and reissued to investors in tranches: senior, mezzanine, and subordinated. CDOs come in two basic forms—Cash Flow CDOs and Market Value CDOs—both of which invest a significant portion of the underlying assets in high-yield bonds. Although these investment products broaden the high-yield bond investor base and increase liquidity, their highly leveraged bets may pose a serious risk to the market in the event of a massive round of defaults. As an investment alternative to high-yield bonds, CDOs have several prohibitive characteristics, including the use of significant leverage in Cash Flow CDOs and the exorbitant fees levied against equity investors in both Cash Flow and Market Value CDOs.
6. Although U.S. high-yield bond issuance experienced a significant slowdown in 1999-2000, from the record high issuance levels seen in 1997-98, European issuance continued to surge. The nascent European high-yield market has increased four-fold since 1997 as more and more European companies use the capital markets rather than banks for their funding needs. To date, European high-yield bonds have been heavily concentrated in the media and telecom sectors, but as the market becomes broader and deeper, global high-yield bond investors' opportunity set will expand and their ability to diversify their portfolios will be enhanced. Despite a slowing global economy,

European new issuance has continued in 2001, albeit at a less dramatic pace than in recent years. For example, approximately \$2.9 billion of new European high-yield bonds were issued between January 1, 2001 and March 19, 2001, and market forecasters expect an additional \$4.5 billion (€5.0 billion) of new issues to come to market throughout the rest of 2001.

7. The majority of high-yield managers have outperformed the Lehman Brothers High-Yield bond index over three-, five-, and ten-year periods. However, only four of the 58 managers profiled have ranked consistently in the 30th percentile or higher and only three of the managers have ranked consistently in the 70th percentile or lower over three-, five-, and ten-year periods. Although almost all managers in existence since 1988 have outperformed the broad-based Lehman Brothers High-Yield index on a risk-adjusted basis (by Sharpe ratio), only three of these managers generated higher risk-adjusted returns than the Bb-rated subindex. High-Yield managers that have experienced tremendous one-year returns have tended to perform relatively poorly in subsequent years. For example, the highest-performing managers in 1991 and 1993 generated returns that were approximately twice those of the median manager. However, these managers have underperformed the median manager over the most recent three-year period.

## SUMMARY

### Introduction

From modest beginnings in the early 1970s, high-yield bonds now constitute a global market of \$668 billion and account for approximately 15% of all U.S. publicly traded corporate bonds (see Exhibits 1 and 2). The relatively short history of this asset class, which was tainted and disrupted by the fraudulent excesses of Michael Milken in the mid- to late-1980s, makes it difficult to extrapolate long-term assumptions from empirical evidence. For example, if risk/return relationships hold, investors should receive ample reward for assuming the higher risk inherent in lower quality debt. However, during the period 1984-2000,<sup>1</sup> a diversified portfolio of high-yield bonds had an average annual compound return (AACR) of 10.0%, while investments in intermediate-term and long-term investment-grade corporate bonds returned 9.4% and 10.2%, respectively. During the sub-period 1991-2000, high-yield bonds returned 11.2%, a significant and arguably adequate premium over the 8.1% and 8.4% returns achieved by intermediate-term and long-term corporate bonds, but if one excludes the spectacular 46.2% return of 1991, this premium all but evaporates.

### The Composition of the High-Yield Bond Market

As Exhibit 2 indicates, the global high-yield market has grown tremendously in the past few years. While new U.S. issuance fell significantly in 1999-2000 from the record high issuance levels in 1997-98, new issuance has swelled in Europe, whose market has increased more than four-fold since 1997 as privatization and disintermediation have gained significant momentum. As European corporations continue to migrate from bank financing, which currently provides 72% of capital, to direct capital market financing, which currently provides 28% of capital,<sup>2</sup> European capital markets in general, and the high-yield market in particular, should continue to grow significantly. Although the nascent European high-yield market is concentrated in telecom and media issues, the future growth and broadening of the market should offer global high-yield investors the means for greater diversification. Recently, an onslaught of new high-yield funds have buoyed overall demand and, despite a weakening global economy, new issuance has continued in 2001, albeit at a less dramatic pace. For example, approximately \$2.9 billion of new European high-yield bonds were issued between January 1, 2001 and March 19, 2001, and market

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<sup>1</sup> The Lehman Brothers High-Yield Bond Index series starts in 1984. The Credit Suisse First Boston Global High-Yield Index series extends to 1983, but is not confined to the U.S. market. The character of the high-yield market changed so thoroughly in the 1980s that older return data are of marginal value.

<sup>2</sup> Source: International Monetary Fund. In the United States, these percentages are almost reversed, with bank loans providing 33% of the financing, while capital markets fund the remaining 67%.

forecasters expect an additional \$4.5 billion (€5.0 billion) of new issues to come to market throughout the rest of 2001. Falling risk-free interest rates may also be underpinning the flow of new high-yield bonds, despite a sharp slowdown in corporate profitability. For example, in the United States, rapidly declining interest rates and an increase in leveraged buyout (LBO) activity caused a spike in new issuance in the first quarter of 2001—approximately \$25 billion of new high-yield bonds were issued in the first quarter of 2001, significantly higher than the \$4.2 billion of high-yield bonds issued in the fourth quarter of 2000.<sup>3</sup> However, to the extent that the outlook for corporate profits remains murky and default levels escalate, the recent surge in new issuance is unlikely to persist.

In terms of credit quality and economic exposure, the high-yield market is diverse (see Exhibits 3 and 4). Although the average high-yield issue has a B-credit rating, 36.6% of the market is composed of near-investment grade (Bb-rated) issues, and 8.3% of issues that are rated Caa and below. Not surprisingly, these different sectors of the market have produced quite different rates of return. For example, during the 1991-93 bull market in high-yield bonds, the AACR for Bb-rated issues was 17.5%, while that for Caa-rated bonds was 39.3% (see Exhibit 7). The reason for this disparity is that the lower quality high-yield bonds have very little in common with conventional, investment-grade bonds, whereas Bb-rated issues often behave like other fixed income securities. Consequently, Bb-rated bonds may perform reasonably well in a weakening economy with declining interest rates, as they did in 1989 and 1990 (returning 7.8% and 0.1%), while lower-rated junk bonds will tend to perform more like low-quality stocks, which are typically hammered in such an environment (Caa-rated issues returned -14.3% and -22.6% in 1989 and 1990).

The high-yield quality sub-sectors have unique characteristics and, as a result, it is irrational to treat all bonds that are less than investment grade as a uniform asset class, measured against a single benchmark, and designed to play a single role in an institutional portfolio. It follows that investors who have not clearly delineated the role they want high-yield bonds to play in their portfolios cannot properly determine what risks they should be incurring or avoiding, what rate of return is sufficient to compensate for those risks, how to evaluate results, and how to assess current valuations.

### **Collateralized Debt Obligations**

As Exhibit 2 also indicates, Collateralized Debt Obligations (CDOs) have been another area of rapid growth in recent years in both the high-yield and investment-grade sectors of the bond market. CDOs are asset-backed securities composed of a diversified portfolio of assets including, but not limited to, high-yield loans, high-yield bonds, and emerging markets bonds. The securities are pooled and reissued to investors in tranches: senior, mezzanine, and subordinated. The underlying pool of assets

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<sup>3</sup> Source: *The Wall Street Journal*.



may have an average rating of B or Bb, but the senior tranche is over-collateralized and the most subordinated tranche (typically an equity tranche) absorbs the initial losses in the occurrence of default. As a result, senior tranches are often rated investment grade, mezzanine tranches low investment-grade (Baa or A) or high sub-investment grade (Bb), and equity tranches are not rated.

CDOs take many different forms and hybrids abound, but the most common CDOs come in two basic forms: Cash Flow CDOs and Market Value CDOs. Cash Flow CDOs are typically composed of a mix of high-yield loans and high-yield bonds, and are often significantly leveraged (average 5:1) in an attempt to arbitrage favorable spreads between sub-investment grade and investment-grade debt. The use of leverage magnifies returns on both the upside and the downside, but investors are often lured by the opportunity to invest in investment-grade-rated tranches, which pay the equivalent of sub-investment grade yields. Although the most senior tranches should be well sheltered when default levels are average or lower, there is potential for significant losses in the event of a rapid rise in defaults. In addition, such losses may be magnified by the rules included in the covenants: for example, managers are often restricted to trading only when assets appear to be in danger of a downgrade and positions that fail minimum principal recovery tests (typically 30% to 40% for high-yield bonds) must be liquidated. As a result, Cash Flow CDOs can be forced to sell deteriorating credits at severely depressed prices and, while they do broaden the investor base for high-yield bonds, these leveraged bets may pose a tremendous risk to the market should defaults escalate. However, there is no historical evidence of these risks because CDOs are a creation of the late 1980s and the market was still in its infancy during the last round of massive defaults in 1990 (see Exhibit 2). As an investment alternative to high-yield bonds, these vehicles may be advantageous for investors seeking higher yields, but confined to investment-grade bonds (e.g., some insurance companies). However, investors should carefully monitor the amount of leverage and remain cognizant of the fact that CDOs have not undergone the test of a prolonged credit crunch. The equity tranches may offer the potential for blockbuster returns, but in most CDOs even these potential rewards are rarely sufficient to compensate for the risks inherent in occupying the first line of defense.

Market Value CDOs are structured somewhat differently in that the underlying collateral pool is typically invested in a 75%/25% split between assets to fund liabilities to bond investors and assets invested to produce relatively high returns for equity investors. The 75% of assets used to fund liabilities (income and principal payments) are often structured like Cash Flow CDOs. However, Market Value CDOs use significantly lower leverage than Cash Flow CDOs and the remaining 25% of the assets is used to trade opportunistically and seek outsized gains for equity investors. As a result, equity investors in Market Value CDOs may realize higher *risk-adjusted* returns than equity investors in Cash Flow CDOs.

One additional strike against CDOs is their exorbitant management fees, especially the very high fees levied against equity investors. CDOs typically charge fees as a percentage of assets (e.g., 1% of

assets). However, the use of leverage magnifies the fees charged against equity investors; for example, if a CDO has a basic fee structure of 1% of assets, and uses 5:1 leverage, it is effectively charging a fee equal to 5% of shareholder's equity. In addition, many Market Value CDOs also assess a carried interest fee of 20% of profits above a specified hurdle rate, typically 9% to 10%. In short, if you have not yet been contacted by an investment banker peddling the wonders of CDOs, you soon will be. In classic Wall Street fashion, most CDOs are structured and presented in such a way as to generate larcenous placement and management fees, while obscuring their inherent dangers in order to appeal to investors' eternal yearning for the holy grail of high returns with low risk.

### **The Nature of High-Yield Bond Returns**

As currently constituted, high-yield bonds are a relatively new asset class, qualitatively different from the small ragbag of fallen angels, which comprised the universe of high-yield debt issues in the 1970s. Due to the relatively short and fragmented history, there are no historical return series long enough to provide a firm basis for broad generalizations about expected returns, standard deviations, and correlations with other asset classes. Nevertheless, the limited available data do point toward some conclusions about the differing characteristics of the various tiers of the high-yield market and suggest the extent to which these might be expected to enhance returns and provide portfolio diversification benefits.

**Risk/Return Ratios.** Over the period 1987-2000, which includes both a bull and a bear market for high-yield, Bb-rated bonds have not only returned more than both Baa-rated and Caa-rated bonds, but have shown less variability of return. This bears more detailed analysis because it contradicts the efficient market hypothesis that investors should only earn higher returns when they incur greater risk (see Exhibit 7). For the period January 1, 1987 through December 31, 2000, the AACR for the Lehman Brothers Government/Credit Bond index is 8.0% and the Sharpe ratio, 0.49, while for the Lehman Brothers High-Yield Bond index the return is 8.4% and the Sharpe ratio, 0.37. This suggests that on a risk-adjusted basis, high-yield investors, *on average* and in *aggregate*, have been slightly under paid. However, when one examines each tier of the high-yield market, the picture changes considerably. B-rated bonds, with a return of 8.1% and a Sharpe ratio of 0.33, look very much like the high-yield market as a whole, but nothing like the higher and lower tiers. Caa-rated bonds, with a return of 6.0% and significantly higher variability, have a Sharpe ratio of only 0.01, but Bb-rated bonds not only returned the most at 9.4%, but did so with far greater consistency, resulting in a very high Sharpe ratio of 0.76.<sup>4</sup>

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<sup>4</sup> The Sharpe ratio is very sensitive to short-term trends and its greatest utility rests in the ability to compare the returns of diverse asset classes on a similar risk-adjusted basis over a common period. For example, the Sharpe ratio of Bb bonds from January 1, 1987 through June 30, 1995 was 0.37, or approximately one-half the level of the ratio only five years later. While this does prove that the variability of returns of Bb-rated bonds has fallen significantly over the last five years (standard deviation of 4.2% from 1996-2000, compared to a standard deviation of 8.9% from 1987-95) it also indicates that the ratio, especially when calculated for relatively short time periods, is extremely sensitive to the period under consideration.

To the extent that one can extrapolate from such limited data, this suggests that investors should only speculate in Caa-rated bonds opportunistically, exploiting periods of panic and disarray (like 1989-90) to buy junk at fire-sale prices. On the other hand, when yield-spread ratios narrow, Caa-rated bonds should be avoided. To date, Bb-rated bonds have proved to be the most consistently profitable and the least variable sector of the high-yield market. Although the higher degree of correlation between Bb and investment-grade issues indicates that they provide less diversification benefits to a total portfolio than do the other tiers, the correlations are below the 0.70 threshold, suggesting that significant diversification benefits do exist. As a result, the top tier continues to represent the best all-weather high-yield investment and it is the only tier that has adequately compensated investors for risk over the long-term. The problem is that investors have no way of determining whether this is primarily the result of generally declining interest rates during the decade, or of a structural anomaly—the artificially abrupt differentiation of Baa-rated from Bb-rated bond yields, resulting from the prohibition against non-investment-grade securities imposed on many bond investors—which may or may not persist.

**Correlations.** As the data in Exhibit 8 indicate, the returns of the lowest quality (Caa) high-yield bonds have shown some correlation with the returns of small-cap value stocks (0.49) and lower correlations with the returns of investment-grade bonds (0.10 versus the Lehman Brothers Government/Credit and 0.11 against Lehman Brothers Aggregate Bond indexes). As one would expect, the correlations with investment-grade fixed income increase as one moves up the credit quality scale, from Caa to B and then to Bb-rated issues; for example, the returns of B-rated bonds have a correlation of 0.39 with those of the Lehman Brothers Aggregate Bond index, while the correlation of Bb-rated high-yield returns with those of the Aggregate index is 0.64. The returns of B- and Bb-rated bonds have correlations of 0.61 and 0.65, respectively, with the returns of small-cap value stocks.

However, correlations in the range of 0.60 to 0.65 are relatively low—only among the various tiers of the high-yield market do we find correlations over 0.85. For example, Caa-rated bond returns have correlations of 0.86 with those of B-rated issues, while B-rated bond returns have correlations of 0.86 with those of Bb-rated issues. In other words, each of the three tiers of the high-yield market is more closely related to the next closest tier than it is to any other class of securities.

The principal conclusion suggested by these data is that high-yield bonds appear to be *sui generis*; that is, they can not be regarded as a proxy for any other asset class because their returns are not highly correlated with those of any other asset class. More specifically, Bb-rated bonds should not be regarded simply as an extension of investment-grade fixed-income securities (the correlations of returns among the various intermediate- and long-term investment-grade fixed income indexes are in the range of 0.94 to 0.98), nor should Caa-rated bonds be seen as a proxy for low-quality, small-cap stocks, despite having certain characteristics in common.

## The Risks of High-Yield Bond Investing

During the heyday of high-yield bond issuance in the latter half of the 1980s, investors crept (or were driven) further out along the risk spectrum, providing capital both for some very questionable credits and for economically implausible LBOs, many of which subsequently sank. A steady diet of aggressive speculation resulted in severe indigestion when a weakening economy, the abrupt collapse of the LBO frenzy, and the unraveling of Drexel Burnham all precipitated a rapid increase in the level of defaults and a bear market across all sectors of the high-yield market. Having surged from 2.7% in 1988 to 10.1% in 1990, default rates peaked at 10.3% in 1991 (see Exhibit 9). Despite the rash of defaults, investors who entered the market at the beginning of 1991 were very well compensated on average—the beginning year spread-to-worst was a record high 1,096 basis points (bps) and 556 bps higher than the default loss rate for the year (see Exhibit 10). Although investors at the beginning of the year were only privy to information contained in the excessive spread levels, the fact that the deluge of lower-tier credits funded in the mid- to late 1980s imploded between 1990 and 1991 confirms the trend that most speculative defaults occur three to four years from issuance (see Exhibit 12 and 13). In addition, the significantly higher 15-year cumulative default levels realized by BB-rated (Bb) bonds (16.4%) relative to BBB-rated (Baa) bonds (4.5%) may in part explain the rich yield premium that investors charge for holding the highest tier of speculative grade bonds over the lowest tier of investment-grade bonds.

Simultaneously, the spread between high-yield bond yields and the yields of Treasury bonds of comparable maturity widened to unprecedented levels: at their previous peak in December of 1990, the ratio of Caa junk-bond yields to those of ten-year Treasuries reached 4.48 (with ten-year Treasuries yielding 8.08% and Caa-rated bonds, 36.17%), compared to the long-term average of 2.37. For B-rated bonds, the yield spread ratio reached 2.31 in late 1990, (compared to the long-term average of 1.76), and for Bb-rated bonds, 1.98 (compared to the long-term average of 1.47). However, as of year-end 2000, spread ratios for all tiers of high-yield bonds had widened beyond previous highs established at the end of 1990. For example, the ratios of Caa, B, and Bb bond yields to those of ten-year Treasuries stood at 5.44, 2.90, and 2.01, respectively (see Exhibit 15). On the other hand, absolute spreads between each class of high-yield bonds and ten-year Treasuries, while well above the long-term mean, are now less than at the end of 1990 (see Exhibit 16) because interest rates are now almost 300 bps lower. Whether today's wide spreads represent as juicy a buying opportunity as in 1990 (high-yield bonds returned 46.2% in 1991), depends principally on whether the current deterioration of the economy proves to be a run-of-the-mill cyclical recession (already discounted by the high-yield market) or something more virulent and prolonged. In addition, the underlying quality of the companies issuing high-yield debt in the midst of loose credit conditions in 1997-98 may prove worse than that of issuers a decade earlier, since today's market is more heavily concentrated in one sector (telecommunications) than was the case in 1990.

Chastened by the shakeout in 1990-91, investors quickly lost their appetite for extreme credit risk. From 1991 to 1993, economic expansion, strong equity markets, and declining interest rates enabled many high-yield debt issuers to improve their cash flow, strengthen their balance sheets, issue new equity, and retire or refinance their debt. Consequently, the average credit in the market improved significantly. During the same period, the mass exodus of banks from the LBO market enabled high-yield bonds to occupy a more senior position in the capital structure of many issuers. This is reflected in the improved financial characteristics of high-yield bond issuers from 1991-97. For example, the average interest coverage for new high-yield issues reached a high of 2.1 times at the end of 1997, compared to only 0.8 times in 1990. However, beginning in 1998, loose credit conditions gave way to a funding spree and the interest coverage ratio fell back to 1.3 times by year-end (see Exhibit 17). The spike in issuance in 1998 also resulted in a rapid rise in the level of lower quality speculative issues—over 47% of new issues in 1998 had a rating of less than B- (see Exhibit 18)—more than any other year in the period 1986-2000 and more than double the 21.7% of new issues rated B- or lower in 1996. In light of the record number of weak credits issued in 1998, the tendency of high-yield bonds to default three to four years after issuance, and today's deteriorating economic conditions, investors should expect rising default rates among these low quality issues. Moody's currently forecasts a default rate of 9.5% for the total high-yield market in 2001, while CSFB projects defaults in the range of 5.0% to 5.5% under a soft-landing scenario (which it regards as the most plausible outcome) and default rates of 8.0% should a hard landing occur.<sup>5</sup>

### **The Role of High-Yield Bonds in a Diversified Portfolio**

The fact that the average long-term high-yield investor has been overworked with risk and underpaid with return calls into question the claim of high-yield bonds to a permanent place in an investor's policy portfolio. Certainly, if the objective of investing in bonds is to provide a form of disability insurance to protect spending during a prolonged economic contraction or recession, investors will find little shelter in high-yield. For example, in 1990, low quality high-yield bonds (Caa) returned -22.6%, average quality (B) high-yield bonds returned -8.6%, and a diversified portfolio of high-yield bonds (represented by the Lehman Brothers High-Yield Bond index) returned -9.6%. In fact, B-rated high-yield bonds significantly underperformed long-term investment grade corporate bonds (7.1%) and large-cap U.S. equities (-3.1%) in 1990, outperforming only small-cap U.S. equities (-19.1%). In addition, investors in the highest quality (Bb) high-yield bonds would have found little solace in a 0.1% return. For investors seeking to increase current yield and generate significant cash flow, however, an allocation to high quality (Bb) high-yield bonds may be appropriate since this tier has outperformed all other classes of

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<sup>5</sup> Sources: "Default and Recovery Rates of Corporate Bond Issuers: 2000," Moody's Investor Services, February 2001. "2001 Leveraged Finance Outlook," Credit Suisse First Boston.

high-yield over the long-term and offers relatively high risk-adjusted returns. Due to their relatively low correlations with stocks and investment-grade bonds, high-yield bonds also provide some incremental portfolio diversification—although it is questionable whether most investors would find this benefit sufficient to justify any policy allocation to high-yield.

An alternative role for high-yield bonds is as an opportunistic substitute for stocks. In this case, lower quality high-yield or even distressed bonds are most appropriate, since the risk and return characteristics of these securities are more like those of equities than of bonds. Following those periodic crises when investors flee from risk, credit spreads balloon, and liquidity dries up everywhere except in the Treasury market, investors prepared to make tactical, contrarian allocations to high-yield bonds have been handsomely rewarded. For example, investors who plunged into Caa-rated bonds in the teeth of recession at the end of 1990, when default rates were soaring to double digits, would have raked in a record 83.2% return in 1991.

### **Benchmarking**

The appropriate benchmark for evaluating a high-yield investment depends on the role it plays in the portfolio. If the bonds are purchased to enhance core fixed income holdings, then their performance should be assessed in terms of the incremental value added to the performance of the benchmark against which those holdings are measured. In other words, has the addition of high-yield bonds to the core fixed income portfolio resulted in higher returns (without incremental risk) than would otherwise have been earned? The manager's performance, on the other hand, should be measured against that of the high-quality sector of the high-yield market, and against the performance of other managers also invested in this sector of the market.

If high-yield bonds are employed as an equity substitute, then the appropriate benchmark is an equity index that reflects the "opportunity cost" of the asset allocation decision. In this instance also, however, the performance of the investment manager should be measured against that of the relevant sectors of the high-yield market, and against that of appropriate competitors in the universe of high-yield managers.

## Implementing an Allocation to High-Yield Bonds

Historically, an allocation to high-yield bonds was only available through active mandates. Recently, as a result of greater investor acceptance of high-yield, providers of fixed income indexed products have shown interest in offering passive alternatives. However, high-yield investing primarily remains the domain of active managers, whose portfolios we tend to classify according to three primary criteria:

- quality;
- security and sector concentration; and
- use of out-of-benchmark securities, including non-dollar, emerging markets debt, and convertibles.

Although, in theory, one might expect active managers' quality exposures, for example, to shift a good deal in response to changing market conditions, in practice this is not the case: the portfolio characteristics of a given manager tend to remain relatively constant, so that more aggressive managers, with more concentrated, lower quality portfolios, habitually underperform in bear markets and outperform in bull markets, while the pattern of performance for those taking a more conservative approach is just the opposite. This highlights the importance of investors' defining clearly the nature and purpose of their allocation to high-yield, so that they can then focus on selecting managers whose approach is most likely to enable them to realize their objectives.

Because most high-yield bond issues and blocks traded on the secondary market are small relative to assets under management, most investors or investment managers cannot readily construct suitably diversified segregated portfolios. For example, issue sizes in the high-yield market typically range between \$300 million and \$700 million, with relatively few issues exceeding \$1 billion. As a result, a manager with \$5 billion of total assets under management, seeking 100 1% positions, would need to control approximately 10% of every targeted issue. Furthermore, this manager would encounter difficulties in the secondary market, in which trading lots are likely to be somewhat smaller. These portfolio consistency problems are further compounded by differences in the timing of portfolio funding and unique investment guidelines. For these reasons, commingled pooled accounts may be a more practical way to invest in this asset class.

A corollary to the preceding is that, as with small-cap equities, there are clear diseconomies of scale in high-yield bond investing. All else being equal, the larger a manager becomes the less likely they are to distinguish themselves through security selection. Consequently, we prefer managers that limit the growth in their assets under management to a size that does not inhibit their ability to implement their investment approach.

## Representative High-Yield Managers

The majority of high-yield managers represented in Exhibit 19 have outperformed the Lehman Brothers High-Yield index over three-, five-, and ten-year periods. However, only a handful of these managers have achieved consistently high returns—only four of the 58 managers have ranked in the 30th percentile or higher over all periods. As of year-end 2000, three out of four had overweight positions in B-rated bonds and underweight positions in Bb- and Caa-rated bonds relative to the index. However, the best-performing quality sector in the Lehman Brothers High-Yield index over the long-term has been Bb-rated bonds, which suggests that these managers have outperformed through strategic quality rotation, security selection, or a combination of both. In contrast, the three managers that ranked 70th or lower consistently over three-, five-, and ten-year periods specialize in Caa-rated or "lower" quality bonds. Exhibits 20 and 21 reveal that while many managers have outperformed the average Bb-rated bonds over the long-term, they have incurred greater risk in doing so. The relatively high Sharpe ratio of 0.78 for Bb-rated bonds has made it difficult for managers to outperform this asset class on a risk-adjusted basis; only three of the 23 managers profiled in Exhibit 21 have higher risk-adjusted returns (Sharpe ratios) than that of the Bb-rated subindex. However, almost all of the managers have high risk-adjusted returns relative to the broad based Lehman Brothers High-Yield index, which has tended to undercompensate investors on average over the long-term. This suggests two things for investors hiring a manager for a long-term allocation to high-yield bonds: (1) investors should not choose a core high-yield manager that hugs the overall index and (2) investors should choose a benchmark that closely represents the objective they are attempting to fill.

Exhibits 22 and 23 present the returns of high-yield managers from one to ten years and over rolling three-year periods. The highest-performing managers in 1991 and 1993 generated returns that were approximately twice those of the median manager. However, it appears that these managers delivered the proverbial one-hit wonder, soaring to the top of the charts with astonishing one-year achievements, only to perform relatively poorly in subsequent years (see Exhibit 19). In addition, the manager with the highest return in 1999 had the lowest return in 2000 and finished laps behind the median manager over the two-year period. The average high-yield mutual fund experienced net asset outflows of 8.3% in 2000 (see Exhibit 24), as investors took their cue from a weakening economy and precipitous declines in corporate profitability. The outflows contributed to declining bond prices and the median high-yield fund returned -6.8%, underperforming both the Lehman Brothers High-Yield Bond index (-5.9%) and the median high-yield bond manager (-3.2%) for the year.

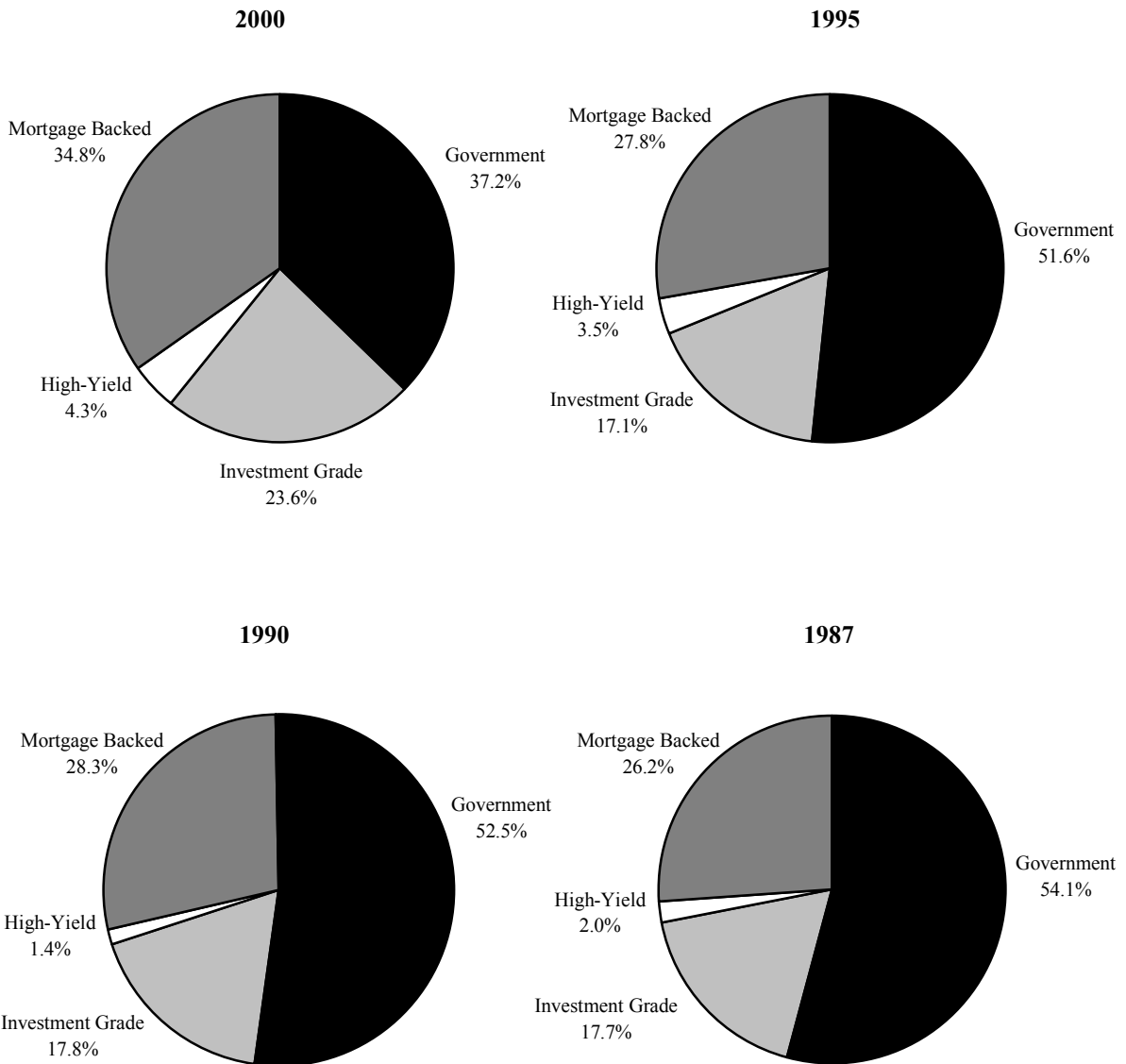


**EXHIBITS**

**Exhibit 1**

**COMPOSITION OF U.S BOND MARKET**

**Years Ended December 31**



Source: Lehman Brothers, Inc.

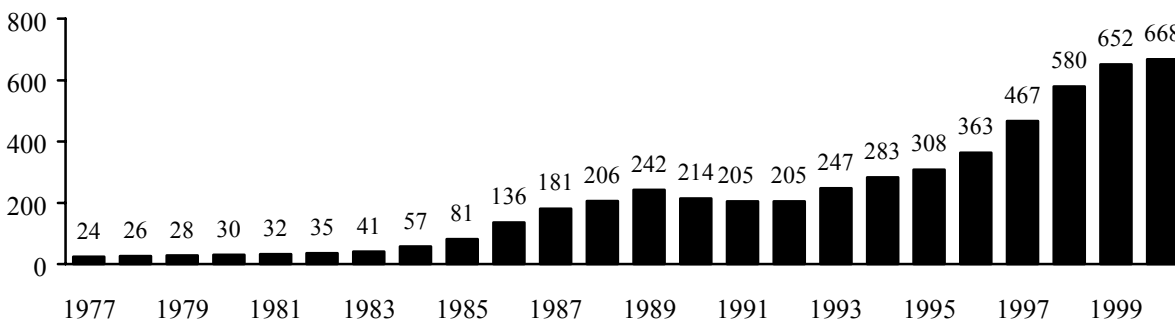
Note: Percentages may not total due to rounding.

**Exhibit 2**

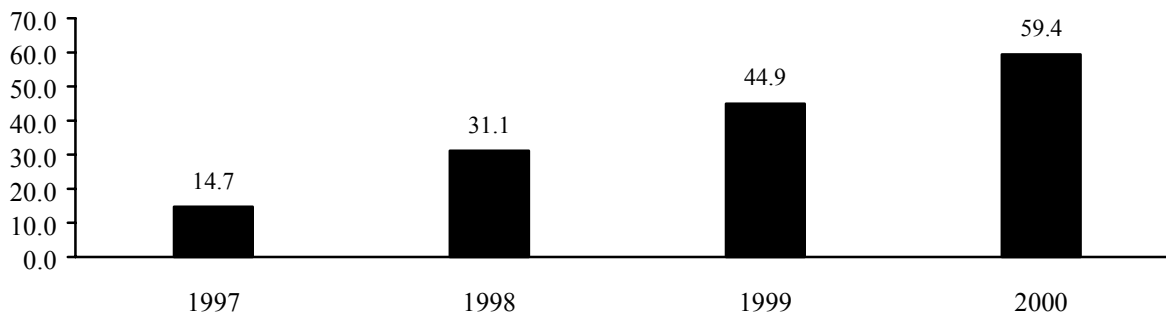
**GROWTH OF THE HIGH-YIELD BOND MARKET**

**(\$ billions)**

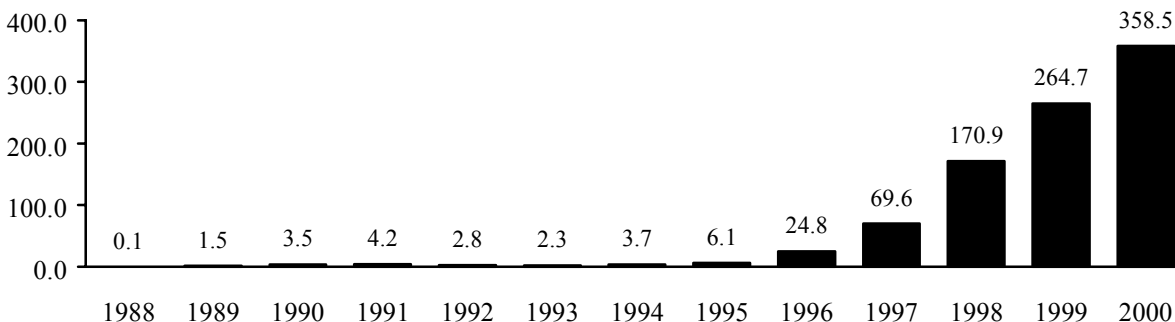
**Global High-Yield Bond Market**



**European High-Yield Bond Market**



**Collateralized Debt Obligation Market**



Sources: Credit Suisse First Boston and New Flag Asset Management.

Notes: Data are through December 31, 2000. The European universe comprises Europe based non-investment-grade non-financial corporate bonds issued in €, US\$, and £. These bonds are based in investment-grade European countries. Also included are certain non-investment-grade companies issuing in €, US\$, and £, who have substantial or a predominant portion of their assets, revenues, or operating profits in, or emanating from, Europe.

## Exhibit 3

## HIGH-YIELD BOND MARKET COMPOSITION BY CREDIT RATING

Lehman Brothers High-Yield Bond Credit Rating	Percentage of Market											
	<u>12/31/89</u>	<u>12/31/90</u>	<u>12/31/91</u>	<u>12/31/92</u>	<u>12/31/93</u>	<u>12/31/94</u>	<u>12/31/95</u>	<u>12/31/96</u>	<u>12/31/97</u>	<u>12/31/98</u>	<u>12/31/99</u>	<u>12/31/00</u>
Bb	18.1	15.9	21.6	29.5	42.8	42.6	48.3	45.7	38.2	35.3	33.8	36.6
B	63.8	67.2	60.7	60.1	49.4	48.0	44.6	47.4	51.1	52.0	55.8	54.0
Caa	18.1	16.8	17.6	10.3	3.3	4.7	5.0	4.5	5.8	8.2	6.4	8.0
Ca-D	---	---	---	---	1.5	0.7	1.0	0.8	0.8	0.7	1.6	0.3
Not Rated	---	---	---	---	3.0	4.0	1.1	1.7	4.1	3.8	2.3	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Lehman Brothers, Inc.

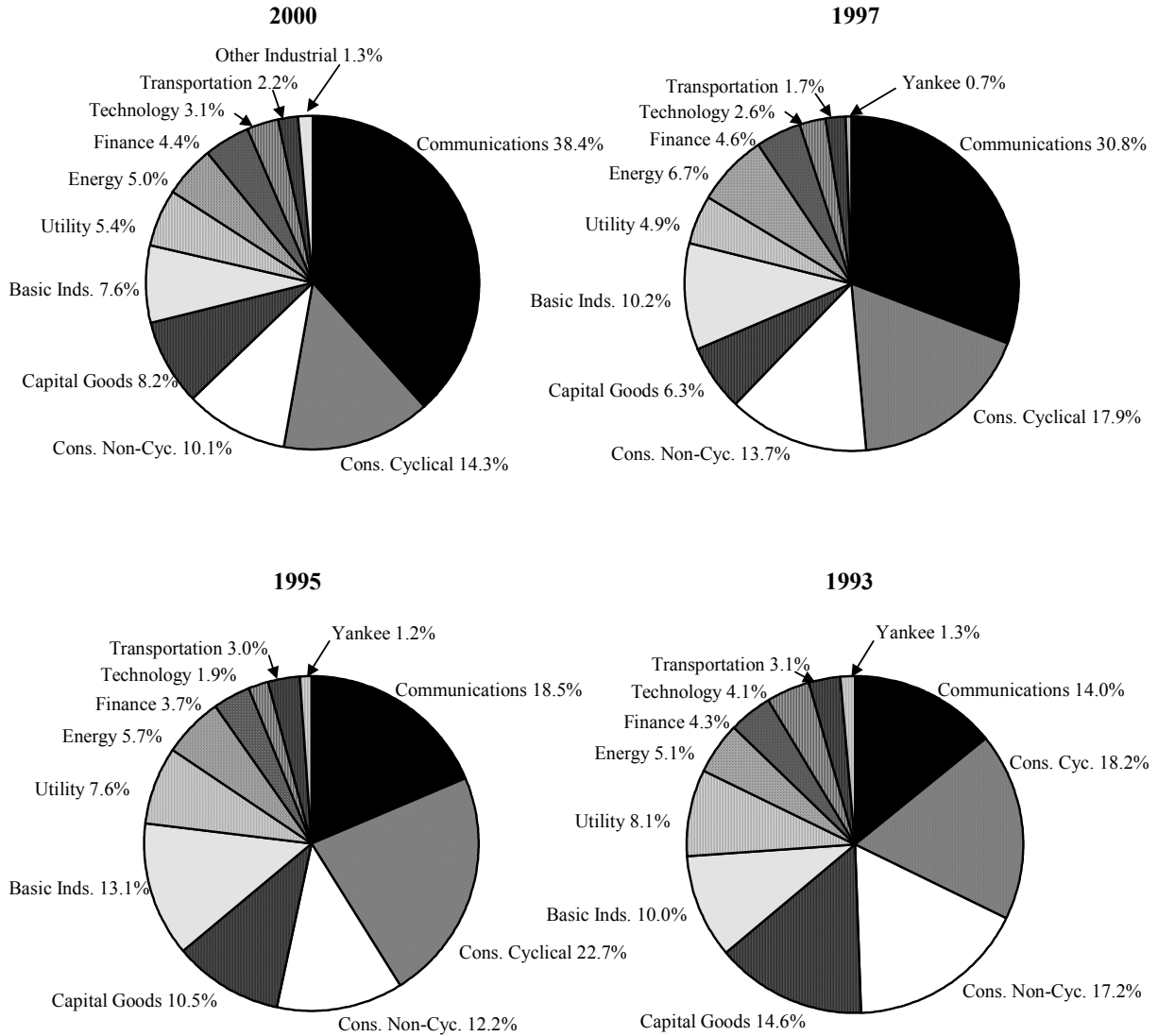
Note: Figures might not total due to rounding.

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**Exhibit 4**

**ECONOMIC SECTOR BREAKDOWN OF HIGH-YIELD BONDS**

**Years Ended December 31**



Source: Lehman Brothers High-Yield Bond Index.

Notes: Percentages may not total due to rounding. Data represent the distribution of the Lehman Brothers High-Yield Index. As of July 1, 2000, Lehman dropped the term "Yankees" from its classification scheme. Bonds in the Yankee sector shifted into their respective categories.

## Exhibit 5

## HISTORICAL TOTAL RETURNS OF HIGH-YIELD AND HIGH-QUALITY BOND INDEXES

January 1, 1981 - December 31, 2000

Years Ended	Annual Return (%)					
	Lehman Bros High-Yield Bond Index	Salomon Smith Barney High-Yield Market Index	Credit Suisse First Boston High-Yield Bond Index	Merrill Lynch High-Yield Master Index (Cash Pay Only)	Salomon Smith Barney High-Grade (Long Term AAA-AA) Corp Index	Lehman Bros Intermediate Govt/Credit Bond Index
Dec 31						
1981	---	---	9.0	---	-1.2	10.5
1982	---	---	36.6	---	42.5	26.1
1983	---	---	13.9	---	6.3	8.6
1984	9.7	---	10.7	---	16.9	14.4
1985	25.6	---	24.9	24.6	30.1	18.1
1986	17.4	---	15.6	16.3	19.8	13.1
1987	5.0	---	6.5	4.7	-0.2	3.7
1988	12.5	---	13.7	13.5	10.7	6.7
1989	0.8	2.8	0.4	4.2	16.2	12.8
1990	-9.6	-7.0	-6.4	-4.3	6.8	9.2
1991	46.2	39.9	43.8	34.6	19.9	14.6
1992	15.8	17.9	16.7	18.2	9.4	7.2
1993	17.1	17.4	18.9	17.9	13.2	8.8
1994	-1.0	-1.3	-1.0	0.6	-5.7	-1.9
1995	19.2	19.7	17.4	19.9	27.2	15.3
1996	11.4	11.3	12.4	11.1	1.4	4.0
1997	12.8	13.2	12.0	12.6	13.0	7.9
1998	1.9	3.6	0.6	3.7	10.7	8.4
1999	2.4	1.7	3.3	1.6	-7.4	0.4
2000	-5.9	-5.7	-5.2	-3.8	12.9	10.1

Periods Ended	Average Annual Compound Return (%)					
	Lehman Bros High-Yield Bond Index	Salomon Smith Barney High-Yield Market Index	Credit Suisse First Boston High-Yield Bond Index	Merrill Lynch High-Yield Master Index (Cash Pay Only)	Salomon Smith Barney High-Grade (Long Term AAA-AA) Corp Index	Lehman Bros Intermediate Govt/Credit Bond Index
Dec 31, 2000						
20 Yrs	---	---	11.5	---	11.5	9.7
19 Yrs	---	---	11.7	---	12.2	9.7
18 Yrs	---	---	10.4	---	10.7	8.8
17 Yrs	10.0	---	10.2	---	11.0	8.9
16 Yrs	10.0	---	10.2	10.5	10.6	8.5
15 Yrs	9.0	---	9.3	9.6	9.4	7.9
14 Yrs	8.4	---	8.8	9.1	8.7	7.5
13 Yrs	8.7	---	9.0	9.5	9.5	7.8
12 Yrs	8.4	8.8	8.6	9.1	9.4	7.9
11 Yrs	9.1	9.3	9.4	9.6	8.8	7.5
10 Yrs	11.2	11.1	11.1	11.1	9.0	7.4
9 Yrs	7.8	8.3	8.0	8.8	7.8	6.6
8 Yrs	6.9	7.2	7.0	7.6	7.6	6.5
7 Yrs	5.5	5.8	5.4	6.3	6.8	6.2
6 Yrs	6.6	7.0	6.4	7.2	9.1	7.6
5 Yrs	4.3	4.6	4.4	4.8	5.8	6.1
4 Yrs	2.6	3.0	2.5	3.3	6.9	6.6
3 Yrs	-0.6	-0.2	-0.5	0.4	5.0	6.2
2 Yrs	-1.8	-2.0	-1.1	-1.1	2.2	5.1
1 Yr	-5.9	-5.7	-5.2	-3.8	12.9	10.1

Sources: The Bloomberg, Credit Suisse First Boston, Datastream International, and Lehman Brothers, Inc.

Note: CSFB High-Yield Bond Index returns are provided by Drexel Burnham Lambert from 1981-85, and by CSFB from 1986 to date.

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**Exhibit 6**

**HISTORICAL RISK AND RETURN CHARACTERISTICS OF  
HIGH-YIELD BONDS AND OTHER ASSET CLASSES**

**January 1, 1986 - December 31, 2000**

**Risk and Return Characteristics**

	Average Annual Compound <u>Return (%)</u>	Annualized Standard Deviation of <u>Returns (%)</u>	Sharpe <u>Ratio</u>
Lehman Brothers High-Yield Bond Index	9.01	6.93	0.46
Merrill Lynch High-Yield Master	9.59	5.33	0.70
91-Day Treasury Bills	5.83	0.43	---
Lehman Brothers Intermed Govt/Credit	7.91	3.36	0.62
Lehman Brothers Govt/Credit	8.50	4.64	0.57
S&P 500	16.00	15.35	0.66
Dow Jones U.S. Small-Cap	12.59	20.20	0.33

**Correlation Coefficient Matrix**

	Lehman Brothers H-Y Bond <u>Index</u>	Merrill Lynch H-Y Master	91-Day Treasury <u>Bills</u>	Lehman Brothers Intermed Govt/Credit	Lehman Brothers Govt/Credit	S&P <u>500</u>	DJ U.S. Small-Cap
Lehman Brothers High-Yield Bond Index	1.00						
Merrill Lynch High-Yield Master	0.96	1.00					
91-Day Treasury Bills	-0.11	-0.12	1.00				
Lehman Brothers Intermed Govt/Credit	0.30	0.34	0.09	1.00			
Lehman Brothers Govt/Credit	0.33	0.37	0.07	0.98	1.00		
S&P 500	0.50	0.50	0.02	0.26	0.29	1.00	
Dow Jones U.S. Small-Cap	0.56	0.55	-0.05	0.09	0.11	0.81	1.00

Sources: The Bloomberg, Datastream International, Lehman Brothers, and Standard & Poor's.

Notes: Dow Jones U.S. Small-Cap data as of 1/1/1987, all other indexes start 1/1/1986. The Sharpe ratio is a measure of an index's average excess return per unit of absolute risk. The ratio is calculated by dividing the difference between the average index return and Treasury bill return by the index's standard deviation. Annual returns, standard deviations, Sharpe ratios, and correlation coefficients are based on monthly return series.

**Exhibit 7**

**HIGH-YIELD MARKET TOTAL RETURNS AND YIELDS BY CREDIT RATING**

**January 1, 1987 - December 31, 2000**

Index/ Subindex	Total Return (%)														Average Annual Compound Return (%)	Sharpe Ratio
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1987-2000	
Lehman Brothers High-Yield Bond Index	5.0	12.5	0.8	-9.6	46.2	15.7	17.1	-1.0	19.2	11.4	12.8	1.9	2.4	-5.9	8.4	0.37
Lehman Brothers Bb	6.1	13.8	7.8	0.1	25.0	12.1	15.9	-0.4	21.8	8.9	12.6	5.9	1.9	4.1	9.4	0.76
Lehman Brothers B	4.9	12.9	0.9	-8.6	43.3	15.9	16.9	0.2	16.6	13.6	12.7	1.3	2.7	-9.2	8.1	0.33
Lehman Brothers Caa	3.9	9.3	-14.3	-22.6	83.2	22.9	20.0	-11.9	21.8	12.4	18.1	-7.0	1.6	-17.8	6.0	0.01
Lehman Brothers Govt/Credit Bond Index	2.3	7.6	14.2	8.3	16.1	7.6	11.0	-3.5	19.2	2.9	9.8	9.5	-2.1	11.9	8.0	0.49

Index/ Subindex	Yield (%)													
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Lehman Brothers High-Yield Bond Index	13.9	14.0	16.1	20.9	13.4	10.9	9.1	11.3	9.8	9.5	8.9	10.5	11.5	14.5
Lehman Brothers Bb	13.0	12.1	12.4	14.7	11.3	9.8	8.2	10.2	8.5	8.4	7.7	8.3	9.6	10.3
Lehman Brothers B	14.0	14.0	15.2	18.6	12.9	11.4	9.8	12.0	10.9	10.2	9.4	10.7	11.4	14.8
Lehman Brothers Caa	14.7	16.2	23.1	36.2	19.1	13.4	12.0	16.3	14.8	14.5	12.4	16.5	19.7	27.9
Lehman Brothers Govt/Credit Bond Index	8.8	9.5	8.3	8.2	6.4	6.3	5.5	8.0	5.7	6.4	6.0	5.3	7.0	6.2

Sources: Datastream International and Lehman Brothers, Inc.

Notes: Yield calculations reflect the period-end weighted-average yield-to-worst (the lower of yield-to-maturity and yield-to-call). The Sharpe ratio is a measure of an index's average excess return per unit of absolute risk. The ratio is calculated by dividing the difference between the average index return and Treasury bill return by the index's standard deviation.

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## Exhibit 8

## CORRELATIONS OF SELECTED INDEXES

January 1, 1984 - December 31, 2000

	<u>S&amp;P 500</u>	<u>Wilshire Target Sm-Cap Value</u>	<u>Wilshire Target Sm-Cap Growth</u>	<u>Wilshire Target Md-Cap Value</u>	<u>Wilshire Target Md-Cap Growth</u>	<u>Wilshire Target Lg-Cap Value</u>	<u>Wilshire Target Lg-Cap Growth</u>
S&P 500	1.00						
Wilshire Target Small-Cap Value	0.70	1.00					
Wilshire Target Small-Cap Growth	0.86	0.76	1.00				
Wilshire Target Mid-Cap Value	0.72	0.97	0.76	1.00			
Wilshire Target Mid-Cap Growth	0.87	0.79	0.98	0.79	1.00		
Wilshire Target Large-Cap Value	0.83	0.88	0.75	0.89	0.78	1.00	
Wilshire Target Large-Cap Growth	0.96	0.57	0.85	0.59	0.85	0.69	1.00
Lehman Brothers High-Yield Bond Index	0.51	0.62	0.55	0.58	0.55	0.54	0.48
Lehman Brothers High-Yield Bb	0.50	0.65	0.49	0.62	0.50	0.59	0.43
Lehman Brothers High-Yield B	0.53	0.61	0.57	0.57	0.57	0.54	0.52
Lehman Brothers High-Yield Caa	0.42	0.49	0.50	0.46	0.51	0.41	0.41
Lehman Brothers Government/Credit	0.15	0.34	0.09	0.38	0.10	0.34	0.09
Lehman Brothers Aggregate	0.16	0.35	0.09	0.39	0.11	0.35	0.10
Salomon Smith Barney High-Grade Index	0.19	0.39	0.14	0.42	0.15	0.38	0.13
Lehman Brothers Intermediate Govt/Credit	0.10	0.31	0.02	0.34	0.05	0.30	0.05
Salomon Smith Barney Med-Term Corporate	0.12	0.33	0.04	0.36	0.06	0.33	0.06
91-Day Treasury Bills	0.03	0.07	-0.06	0.07	-0.03	0.11	0.03

**Exhibit 8 (continued)**

**CORRELATIONS OF SELECTED INDEXES**

**January 1, 1984 - December 31, 2000**

Lehman Brothers H-Y <u>Index</u>	Lehman Brothers H-Y <u>Bb</u>	Lehman Brothers H-Y <u>B</u>	Lehman Brothers H-Y <u>Caa</u>	Lehman Brothers G/C	Lehman Brothers Agg	SSB High Grade	Lehman Brothers Intermed. G/C	SSB Medium	91-Day T-Bills
1.00									
0.89	1.00								
0.99	0.86	1.00							
0.88	0.63	0.86	1.00						
0.40	0.63	0.37	0.10	1.00					
0.41	0.64	0.39	0.11	1.00	1.00				
0.44	0.67	0.42	0.14	0.98	0.98	1.00			
0.37	0.60	0.35	0.08	0.98	0.99	0.94	1.00		
0.41	0.63	0.38	0.11	0.98	0.98	0.95	0.99	1.00	
-0.05	0.06	-0.05	-0.19	0.22	0.24	0.19	0.26	0.24	1.00

Sources: Datastream International, Lehman Brothers, Inc., Standard & Poor's, and Wilshire Associates, Inc.

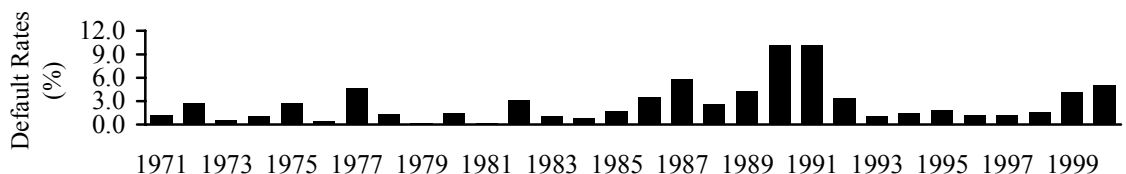
Notes: Correlations are based on quarterly returns. The Wilshire Target indexes are separate indexes maintained by Wilshire Associates to clearly represent specific equity styles. The indexes are based on a pure style methodology, which removes stocks that are not specifically defined as growth or value. As a result, the indexes are useful in illustrating the correlations between high-yield bonds and different equity styles.

## Exhibit 9

**HISTORICAL HIGH-YIELD BOND DEFAULT RATES  
(Excluding Defaulted Issues in Par Value Outstanding)**

1971-2000

<u>Year</u>	<u>Par Value Outstanding (\$ millions)</u>	<u>Par Value Defaults (\$ millions)</u>	<u>Default Rates (%)</u>
1971	6,602	82	1.2
1972	6,928	193	2.8
1973	7,824	49	0.6
1974	10,894	123	1.1
1975	7,471	204	2.7
1976	7,735	30	0.4
1977	8,157	381	4.7
1978	8,946	119	1.3
1979	10,356	20	0.2
1980	14,935	224	1.5
1981	17,115	27	0.2
1982	18,109	577	3.2
1983	27,492	301	1.1
1984	40,939	344	0.8
1985	58,088	992	1.7
1986	90,243	3,156	3.5
1987	129,557	7,486 <sup>1</sup>	5.8 <sup>1</sup>
1988	148,187	3,944	2.7
1989	189,258	8,110	4.3
1990	181,000	18,354	10.1
1991	183,600	18,862	10.3
1992	163,000	5,545	3.4
1993	206,907	2,287	1.1
1994	235,000	3,418 <sup>2</sup>	1.5 <sup>2</sup>
1995	240,000	4,551	1.9
1996	271,000	3,336	1.2
1997	335,400	4,200	1.3
1998	465,500	7,464	1.6
1999	567,400	23,532	4.1
2000	597,200	30,248	5.1



(1971-2000) Simple Average Default Rate: 2.71%      Standard Deviation: 2.48%  
(1971-2000) Weighted Average Default Rate: 3.48%

Source: Edward I. Altman-NYU Salomon Center.

Notes: The weighted average is calculated by the par value of amount outstanding for each year. Par value outstanding totals are as of mid-year.

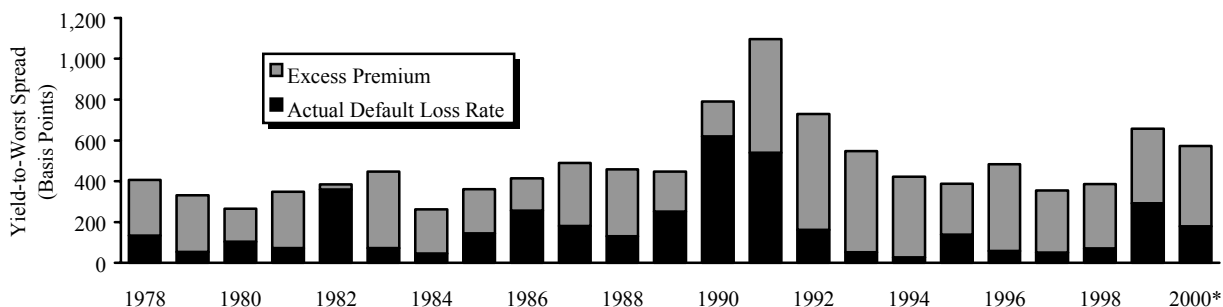
<sup>1</sup> Excluding Texaco, Inc., Texaco Capital, and Texaco N.V., the total par value of defaults would be \$1,842 million with a default rate of 1.3%.

<sup>2</sup> Includes Grand Union debt of \$1,271 million and Trans World Airlines debt of \$231 million in 1994 defaults; if both were not included, the default rate would be 0.64%. Amount of defaults in 1994 adjusted for accreted values of two Grand Union issues and the original discounted trading values of the two TWA issues.

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**Exhibit 10**

**ANALYSIS OF HIGH-YIELD BOND SPREADS NET OF DEFAULT LOSSES**



	Beginning Year Yield-to-Worst Spread (Basis Points)	Ending Year Actual Default Loss Rate (Basis Points)	Excess Premium (Basis Points)
1978	407	134	273
1979	332	54	278
1980	265	103	162
1981	348	73	275
1982	385	359	26
1983	447	72	375
1984	263	46	217
1985	362	145	217
1986	414	256	158
1987	490	181	309
1988	459	130	329
1989	448	252	196
1990	790	621	169
1991	1,096	540	556
1992	729	161	568
1993	548	52	496
1994	422	27**	395
1995	388	139	249
1996	484	58	426
1997	355	51	304
1998	386	70	316
1999	657	292	365
2000*	573	179*	394
Avg (1978-2000)	480	174	307
Avg (1986-2000)	549	201	349
Avg (1992-2000)	505	114	390

Source: CS First Boston High-Yield Market Research Group.

\* Actual Default Loss Rate as of June 30, 2000.

\*\* Data do not include Grand Union debt that was not in default as of December 30, 1994.

Notes: This analysis estimates the excess yield (net of default losses) that has been received by high-yield bond investors since 1978. The yield spread is the simple difference between the market-weighted yield-to-worst (lower of yield-to-maturity and yield-to-call) of the First Boston High-Yield Index portfolio and the yield-to-maturity of comparable Treasury securities. At the beginning of 1994, the yield spread over Treasuries was 422 bps, while the actual default loss rate experienced during 1994 was 27 bps. Thus, an investor holding the index portfolio during 1994 would have been compensated for assuming risk by a yield premium of 395 bps, net of actual default losses.

1243a

**Exhibit 11****NUMBER OF DEFAULTS RELATIVE TO RATED ISSUES OUTSTANDING****1981-2000**

	<u>Rated at Time of Default *</u>	<u>No Longer Rated at Default</u>	<u>Total Defaults (units)*</u>	<u>Default Ratio (%)</u>
1981	0	0	0	0.00
1982	18	1	19	1.32
1983	10	0	10	0.68
1984	13	0	13	0.84
1985	17	1	18	1.05
1986	33	0	33	1.75
1987	18	1	19	0.93
1988	32	0	32	1.46
1989	34	5	39	1.73
1990	55	10	65	2.87
1991	63	25	88	3.96
1992	28	3	31	1.34
1993	12	9	21	0.83
1994	15	3	18	0.63
1995	28	3	31	0.94
1996	15	3	18	0.51
1997	18	2	20	0.52
1998	47	6	53	1.20
1999	98	3	101	2.06
2000	107	10	117	2.27
Average	33	4	37	1.34

Source: Standard & Poor's.

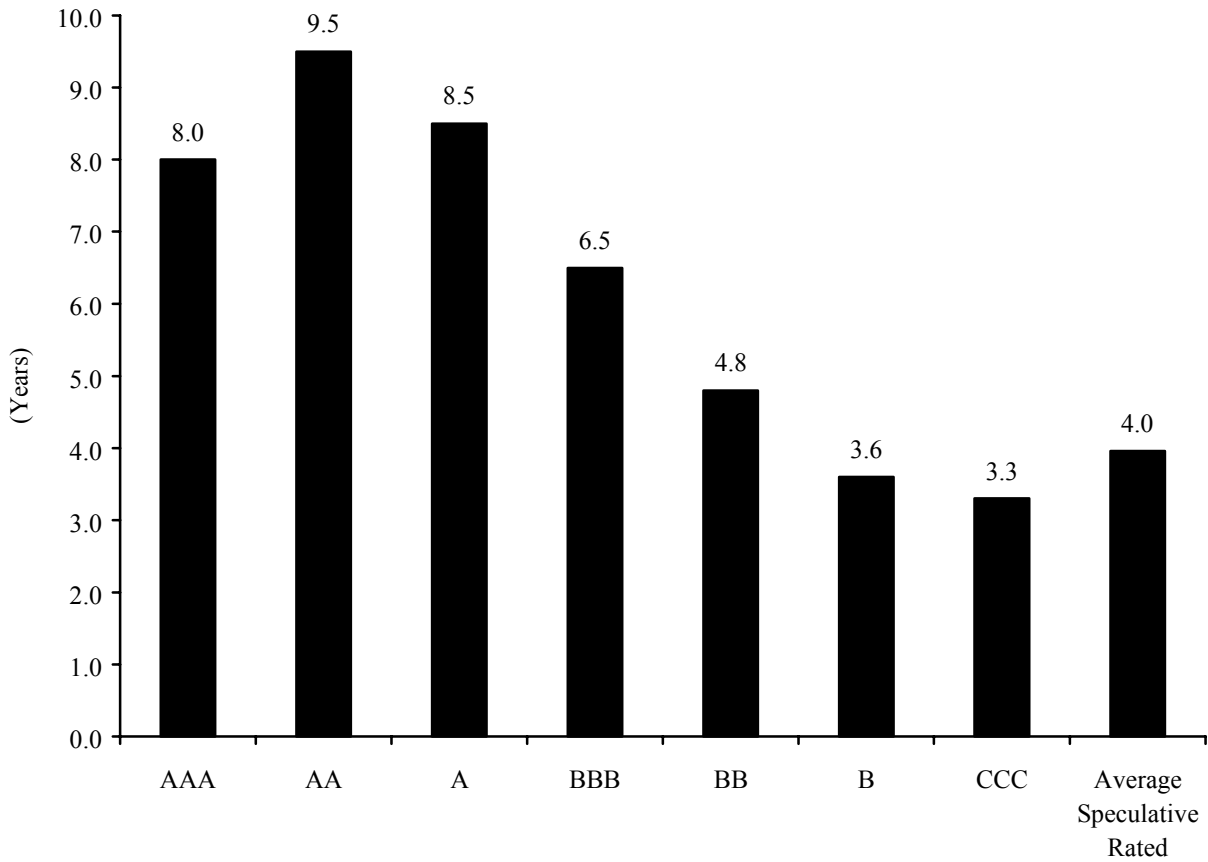
\* Excludes 20 companies that defaulted in year when first rated.

Notes: The default ratio is equal to the number of rated companies and formerly rated companies that defaulted divided by the total number of rated companies in the S&P database. Data based on global default levels.

**Exhibit 12**

**DEFAULT OCCURRENCE: AVERAGE YEARS FROM ORIGINAL RATING**

**As of December 31, 2000**



<u>Rating</u>	<u>Number of Rated Units which Defaulted 1981-2000</u>
AAA	3
AA	10
A	23
BBB	50
BB	207
B	416
CCC	<u>37</u>
Total	746

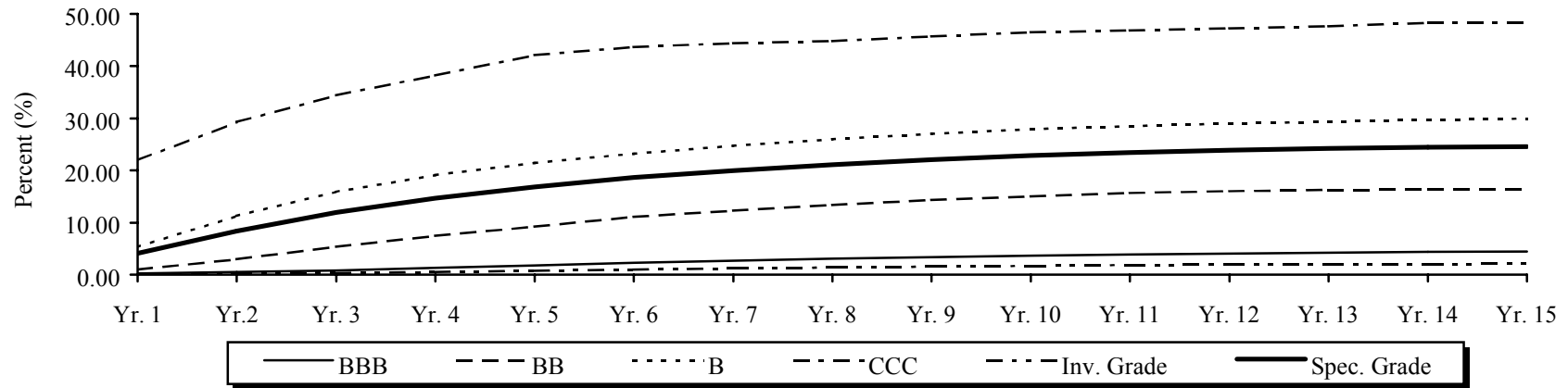
Source: Standard & Poor's.

Note: Data represent an average in each category of the number of years before each defaulting bond defaulted.

**Exhibit 13**

**AVERAGE CUMULATIVE DEFAULT RATES**

**As of December 31, 2000**



**Static Pools Average Cumulative Default Rates (%)**

	Yr. 1	Yr.2	Yr. 3	Yr. 4	Yr. 5	Yr. 6	Yr. 7	Yr. 8	Yr. 9	Yr. 10	Yr. 11	Yr. 12	Yr. 13	Yr. 14	Yr. 15
AAA	0.00	0.00	0.03	0.06	0.10	0.18	0.26	0.40	0.45	0.51	0.51	0.51	0.51	0.51	0.51
AA	0.01	0.04	0.09	0.16	0.25	0.37	0.53	0.63	0.70	0.79	0.85	0.92	0.96	1.01	1.07
A	0.04	0.11	0.19	0.32	0.49	0.65	0.83	1.01	1.21	1.41	1.56	1.65	1.70	1.73	1.83
BBB	0.22	0.50	0.79	1.30	1.80	2.29	2.73	3.10	3.39	3.68	3.91	4.05	4.22	4.37	4.48
BB	0.98	2.97	5.35	7.44	9.22	11.11	12.27	13.35	14.29	15.00	15.65	16.00	16.29	16.36	16.36
B	5.30	11.28	15.88	19.10	21.44	23.20	24.77	26.01	26.99	27.88	28.48	28.96	29.34	29.68	29.96
CCC	21.94	29.25	34.37	38.24	42.13	43.62	44.40	44.82	45.74	46.53	46.84	47.21	47.66	48.29	48.29
Inv. Grade	0.08	0.19	0.31	0.51	0.72	0.95	1.17	1.37	1.54	1.71	1.84	1.93	2.00	2.06	2.14
Spec. Grade	4.14	8.34	11.93	14.67	16.84	18.64	19.98	21.09	22.05	22.85	23.46	23.88	24.22	24.45	24.58

Source: Standard & Poor's.

**Exhibit 14**

**AVERAGE ONE-YEAR TRANSITION RATES**

**As of December 31, 2000**

<u>Initial Rating</u>	<u>Rating at Year End (%)</u>								
	<u>AAA</u>	<u>AA</u>	<u>A</u>	<u>BBB</u>	<u>BB</u>	<u>B</u>	<u>CCC</u>	<u>D</u>	<u>N.R.*</u>
AAA	90.34	5.62	0.39	0.08	0.03	0.00	0.00	0.00	3.54
AA	0.64	88.78	6.72	0.47	0.06	0.09	0.02	0.01	3.21
A	0.07	2.16	87.94	4.97	0.47	0.19	0.01	0.04	4.16
BBB	0.03	0.24	4.56	84.26	4.19	0.76	0.15	0.22	5.59
BB	0.03	0.06	0.40	6.09	76.09	6.82	0.96	0.98	8.58
B	0.00	0.09	0.29	0.41	5.11	74.62	3.43	5.30	10.76
CCC	0.13	0.00	0.26	0.77	1.66	8.93	53.19	21.94	13.14

Source: Standard & Poor's.

\* Rating withdrawn.

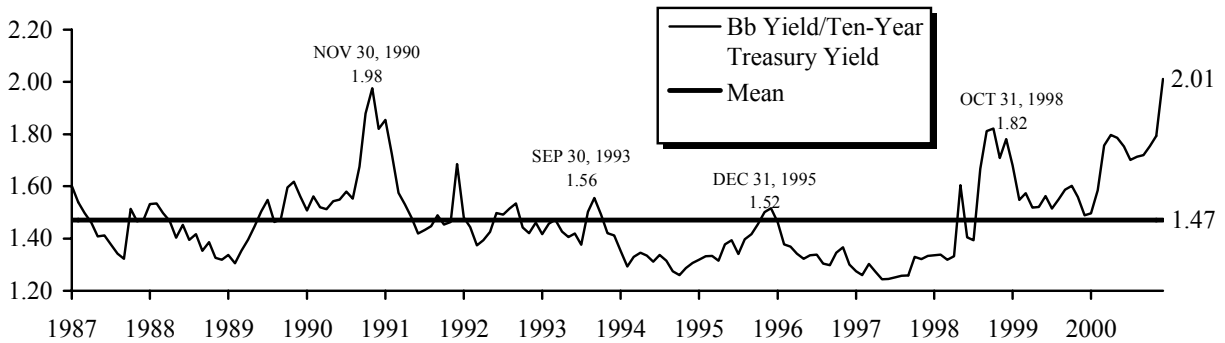
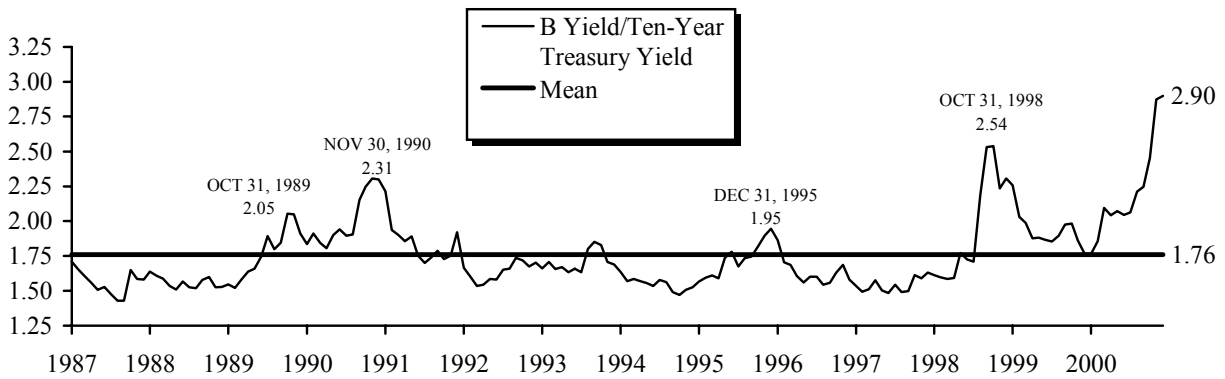
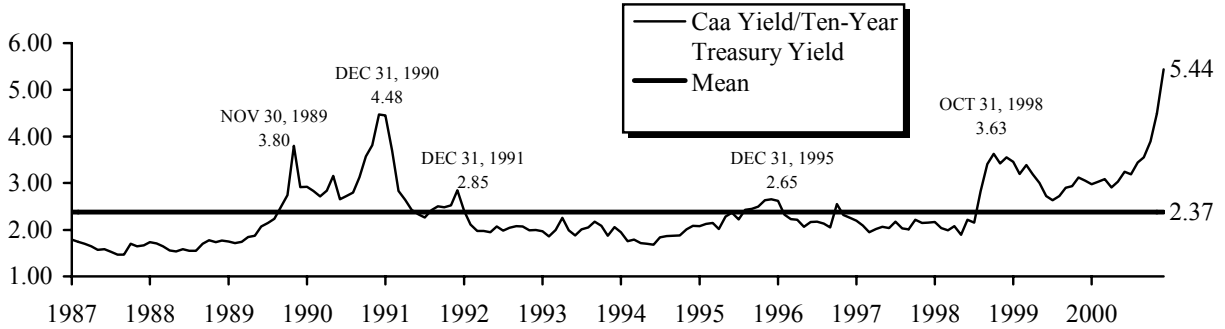
Note: Percentages may not total due to rounding.



Exhibit 15

RATIO OF HIGH-YIELD BOND YIELDS TO YIELDS OF TEN-YEAR TREASURIES

January 31, 1987 - December 31, 2000



Sources: Datastream International and Lehman Brothers High-Yield Bond Department.

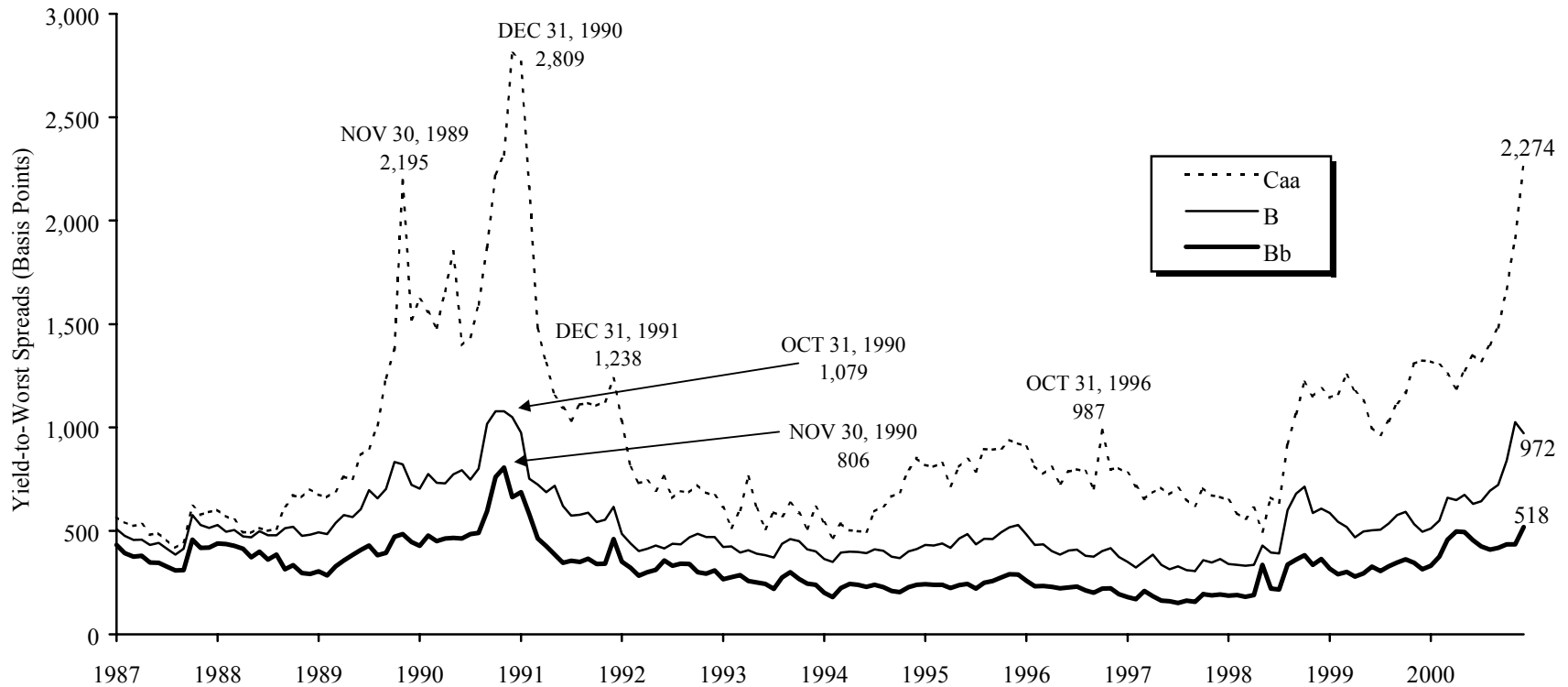
Note: Yield ratios are based on the ratio between the weighted-average yield-to-worst (the lower of yield-to-maturity and yield-to-call) for each high-yield rating category and the yield-to-maturity for ten-year Treasury securities.

233m

Exhibit 16

YIELD SPREADS FOR SELECTED HIGH-YIELD BOND RATING CATEGORIES RELATIVE TO TEN-YEAR TREASURIES

January 31, 1987 - December 31, 2000



Sources: Datastream International and Lehman Brothers High-Yield Bond Department.

Note: Yield spreads are based on the difference between the weighted-average yield-to-worst (the lower of yield-to-maturity and yield-to-call) for each high-yield rating category and the yield-to-maturity for ten-year Treasury securities.

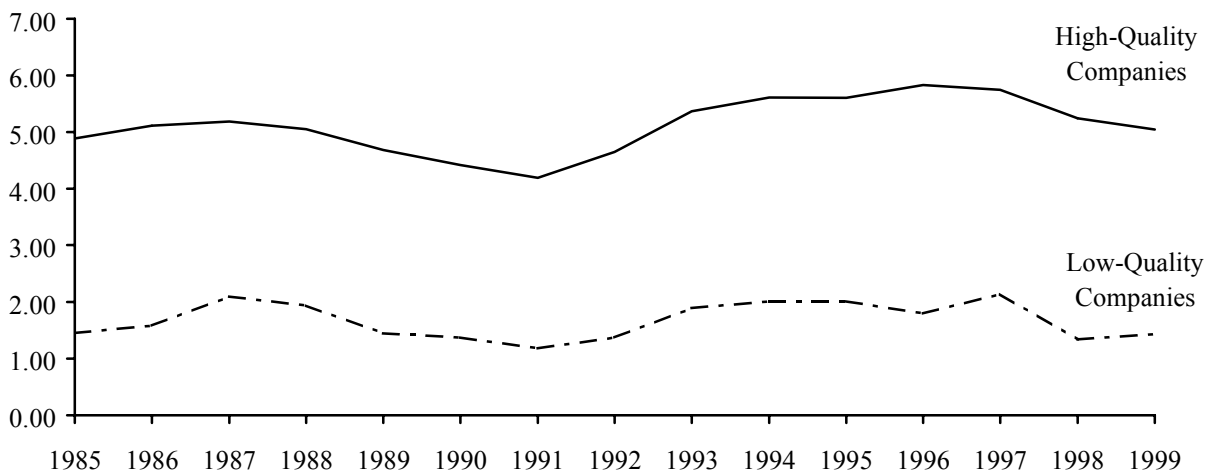
234m

**Exhibit 17**

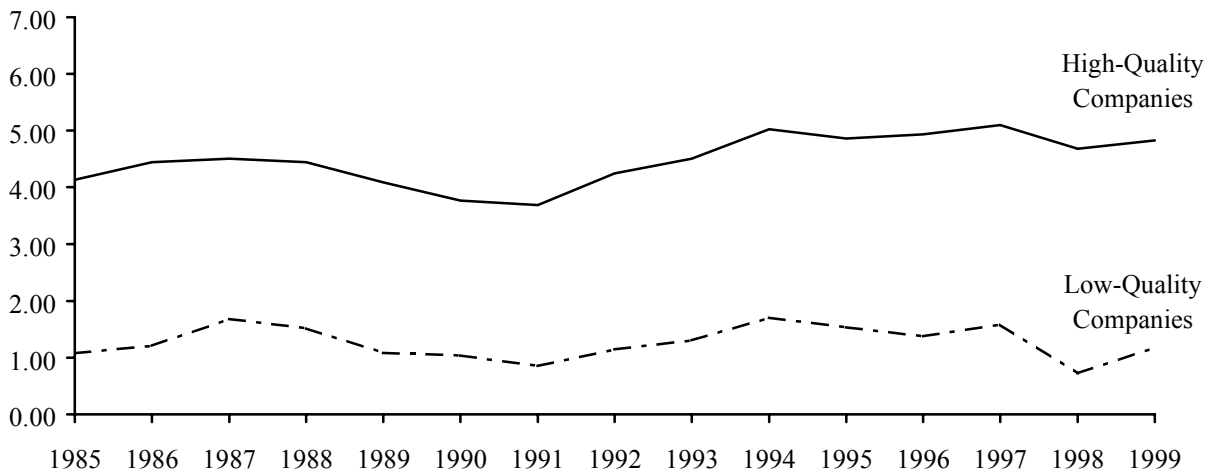
**COVERAGE OF INTEREST PAYMENTS**

**1985-99**

**Ratio of Earnings Before Interest and Taxes to Interest Expense**



**Ratio of Cash Flow to Interest Payable**



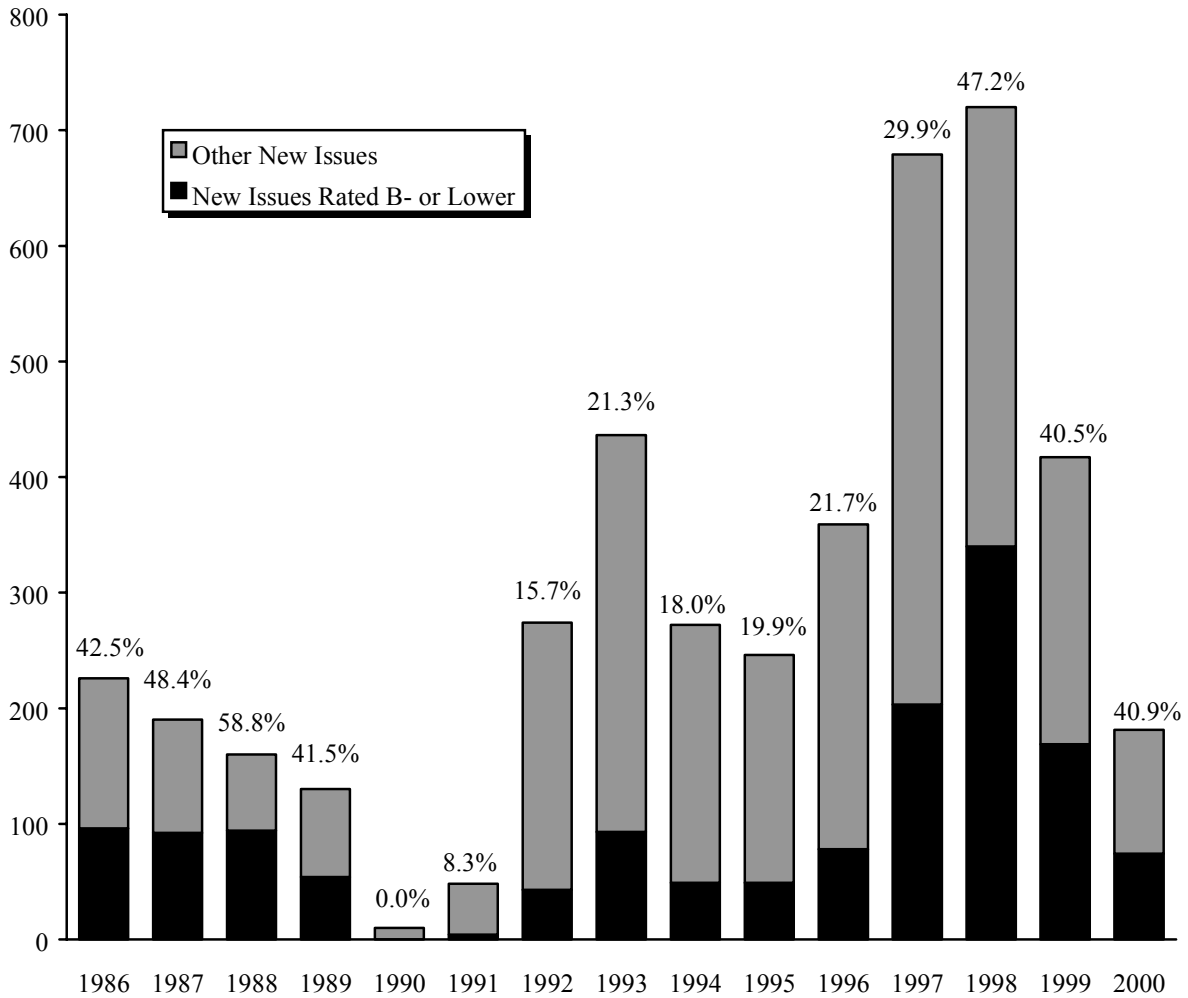
Source: Based on data provided by Standard & Poor's Compustat.

Notes: The ratio of *earnings before interest and taxes to interest expense* (*times interest earned* ratio) measures the extent to which reported interest expense is covered by a firm's pretax profits. The ratio of *cash flow to interest payable* estimates the extent to which total cash flow covers interest incurred (interest expensed plus interest capitalized) for the period. The high-quality universe consists of nonfinancial companies with S&P debt ratings of BBB- and above. The low-quality universe comprises nonfinancial companies with debt ratings of BB+ or below. Composite financial ratios shown above reflect the average of the individual ratios of the companies included in the high-quality and low-quality universes for each year.

**Exhibit 18**

**NUMBER OF HIGH-YIELD NEW ISSUES  
AND PERCENTAGE RATED B- OR LOWER**

**1986-2000**



**Number of Issues**

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
New Issues Rated															
B- or Lower	96	92	94	54	0	4	43	93	49	49	78	203	340	169	74
Other New Issues	130	98	66	76	10	44	231	343	223	197	281	476	380	248	107
Total New Issues	226	190	160	130	10	48	274	436	272	246	359	679	720	417	181

Source: Merrill Lynch High-Yield Research.

Notes: Analysis is based on Standard & Poor's ratings. Since 1992, number of new issue has included 144A high-yield new issues. Other New Issues includes non-rated issues and those rated between BBB- and B-.

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## Exhibit 19

## PERCENTILE RANKINGS BY AVERAGE ANNUAL COMPOUND RETURNS

Periods Ended December 31, 2000

<u>Manager</u>	Percentile Ranking		
	<u>3-Year Return</u>	<u>5-Year Return</u>	<u>10-Year Return</u>
Alliance Capital Management	42	11	26
American Express Asset Mgmt - High Yield FI	96	98	87
American General Invst Mgmt - Public High Yield FI	58	83	---
Banc One Invst Advisors Corp - High-Yield Bond	70	47	55
Bear Stearns Asset Management - High-Yield Debt	87	---	---
BlackRock, Inc. - High-Yield Fixed Income	---	---	---
Bradford and Marzec	4	28	---
Brinson Partners - U.S. High-Yield Portfolio	23	34	---
Capital Guardian Trust Co - U.S. High-Yield	---	---	---
Cardinal Capital Mgmt - Short Duration High-Yield	9	32	---
Cardinal Capital Mgmt - Traditional High-Yield	40	19	---
Caywood-Scholl	30	38	68
Cincinnati Asset Management	85	89	100
Colonial Advisory Services- High-Yield FI	77	79	39
Columbia Mgmt Co - High-Yield Composite	6	21	---
Conseco Capital Management	57	36	81
Credit Suisse Asset Mgmt - U.S. High Yield	79	81	13
Delaware Investment Advisers	32	53	90
Eaton Vance Management	21	15	23
EGM Capital - High-Yield Growth	15	6	6
Evergreen Invst Mgmt Co - High-Yield FI	62	64	32
Fidelity Management Trust Company	75	66	61
Financial Management Advisors	91	77	---
Fountain Capital Management	8	13	42
Franklin Advisers - Franklin High Yield	89	94	65
GEM Capital Management	98	100	71
Goldman Sachs Asset Mgmt - High-Yield FI	45	---	---
Huff (W.R.) Asset Management	13	17	16
Lazard Asset Management - U.S. High-Yield	100	91	---
Loomis, Sayles & Company	53	60	19
MacKay Shields LLC	11	4	10
MFS Institutional Advisors - High-Yield FI	60	68	48
<u>Market Indexes</u>			
Lehman Brothers High Yield	83	98	87
Lehman Brothers BB	14	45	97
Lehman Brothers B	92	100	97
Lehman Brothers CCC	100	100	100

n - Net return

## Exhibit 19 (continued)

## PERCENTILE RANKINGS BY AVERAGE ANNUAL COMPOUND RETURNS

Periods Ended December 31, 2000

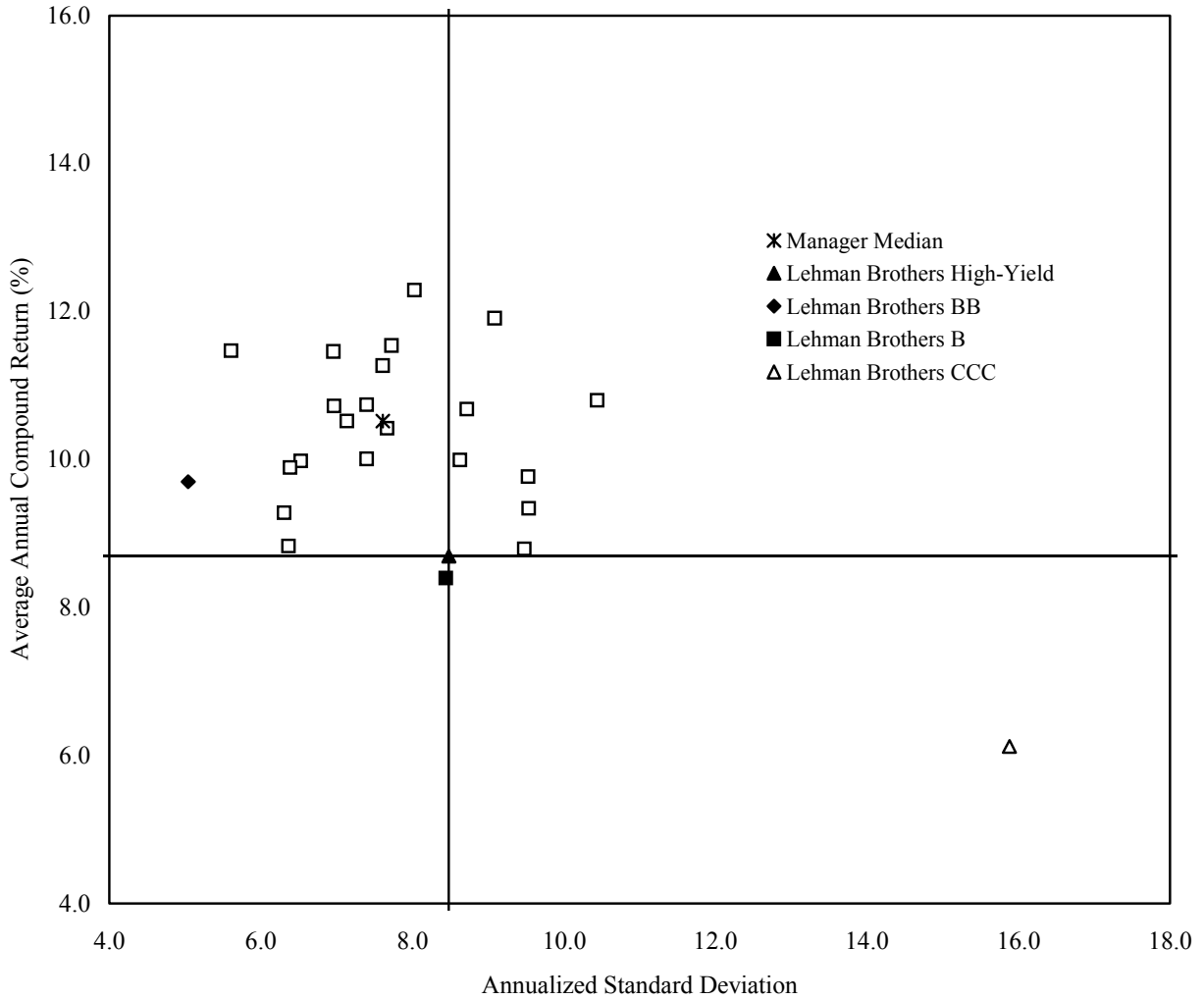
<u>Manager</u>	Percentile Ranking		
	<u>3-Year Return</u>	<u>5-Year Return</u>	<u>10-Year Return</u>
Morgan Stanley Dean Witter - MAS High-Yield	72	49	35
Neuberger Berman, LLC - High-Yield Mgmt	34	---	---
Nicholas-Applegate - High-Yield Bond	28	2	---
Oaktree Capital Mgmt - Domestic High Yield	36	40	---
OFFITBANK	49	62	77
Pacific Investment Mgmt Co - High-Yield Bank Loan	---	---	---
Pacific Investment Mgmt Co - PIMCO High-Yield (n)	26	45	---
Penn Capital Management - Active High-Yield	74	26	3
Penn Capital Management - Defensive High-Yield	55	51	58
Pioneer Investment Mgmt - High-Yield FI	---	---	---
PPM America, Inc. - U.S. High-Yield	66	55	---
Putnam Investments - High Yield FI	94	96	45
Seix Investment Advisors - High-Yield Bond	2	---	---
Seligman (J. & W.) & Company	92	85	74
Shenkman Capital Management	19	23	29
SSB Citi Asset Mgmt - Salomon/U.S. High-Yield	81	57	---
Standish, Ayer & Wood - World High-Yield Fund	47	---	---
Strong Capital Mgmt - High-Yield FI	43	9	---
T. Rowe Price	17	30	52
TCW Group	51	70	84
Waddell & Reed Asset Management	68	74	94
Wellington Mgmt Co - Core High-Yield	83	87	---
Wellington Mgmt Co - Upper Tier High-Yield Bond	38	72	97
WestAM - Criterion High-Yield	---	---	---
Western Asset Management Company	64	43	---
Zurich Scudder Investments - High Yield Bond (n)	25	---	---
 <u>Market Indexes</u>			
Lehman Brothers High Yield	83	98	87
Lehman Brothers BB	14	45	97
Lehman Brothers B	92	100	97
Lehman Brothers CCC	100	100	76

n - Net return

Exhibit 20

**RISK-RETURN RELATIONSHIPS OF  
REPRESENTATIVE HIGH-YIELD BOND MANAGERS**

January 1, 1988 - December 31, 2000



	<u>Average Annual Compound Return (%)</u>	<u>Annualized Standard Deviation</u>
High-Yield Manager Median	10.5	7.6
Lehman Brothers High-Yield	8.7	8.5
Lehman Brothers BB	9.7	5.0
Lehman Brothers B	8.4	8.4
Lehman Brothers CCC	6.1	15.9

## Exhibit 21

## CHARACTERISTICS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS

**Portfolio Characteristics**  
**January 1, 1988 - December 31, 2000**

Manager	Sharpe Ratio	Average Annual Compound Return (%)	Beta	R-Squared	Risk-Adjusted Alpha	Standard Deviation	Standard Error
Alliance Capital Management	0.72	11.27	0.80	0.79	0.74	7.61	3.50
American Express Asset Mgmt - High-Yield FI	0.28	8.36	0.97	0.79	-0.04	9.22	4.25
Caywood-Scholl	0.65	9.89	0.71	0.89	0.46	6.39	2.13
Colonial Advisory Services - High-Yield FI	0.49	9.99	0.96	0.89	0.33	8.63	2.85
Conseco Capital Management	0.67	10.74	0.69	0.63	0.70	7.40	4.57
Delaware Investment Advisers	0.56	9.28	0.70	0.90	0.32	6.31	2.04
Eaton Vance Management	0.56	10.68	0.88	0.73	0.56	8.72	4.55
Evergreen Invst Mgmt Co - High-Yield FI	0.48	10.80	1.00	0.66	0.52	10.44	6.11
Fidelity Management Trust Company	0.61	10.42	0.79	0.76	0.54	7.67	3.76
Fountain Capital Management	0.82	11.46	0.74	0.81	0.82	6.96	3.03
Franklin Advisers - Franklin High Yield	0.32	8.79	1.09	0.96	-0.03	9.48	2.01
Huff (W.R.) Asset Management	0.81	12.29	0.90	0.91	0.90	8.03	2.39
Loomis, Sayles & Company	0.68	11.91	0.95	0.79	0.80	9.09	4.22
MFS Institutional Advisors - High-Yield FI	0.37	9.34	1.08	0.92	0.11	9.54	2.78
OFFITBANK	1.02	11.47	0.57	0.75	0.92	5.61	2.82
Penn Capital Mgmt - Defensive High-Yield	0.75	11.54	0.80	0.77	0.80	7.73	3.71
Putnam Investments - High Yield FI	0.42	9.77	1.06	0.89	0.22	9.53	3.21
Seligman (J. & W.) & Company	0.57	10.01	0.79	0.81	0.45	7.40	3.22
Shenkman Capital Management	0.67	10.52	0.80	0.91	0.55	7.14	2.16
T. Rowe Price	0.71	10.72	0.76	0.85	0.63	6.97	2.76
TCW Group	0.65	9.98	0.75	0.94	0.46	6.53	1.58
Waddell & Reed Asset Management	0.42	8.68	0.74	0.82	0.16	6.94	2.98
Wellington Mgmt Co - Upper Tier High-Yield Bond	0.48	8.83	0.69	0.85	0.23	6.37	2.52
Lehman Brothers High-Yield	0.35	8.70	1.00	1.00	0.00	8.48	0.00
Lehman Brothers Bb	0.78	9.70	0.53	0.79	0.54	5.04	2.35
Lehman Brothers B	0.31	8.40	0.98	0.98	-0.06	8.44	1.33
Lehman Brothers Caa	0.02	6.12	1.72	0.84	-0.96	15.88	6.41

n - Net return

Note: Managers that inceptioned after January 1, 1988 were excluded from this analysis.



**Exhibit 22****RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS****Annual Return (%)**

<u>Manager</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Alliance Capital Management	39.2	17.2	21.1	-2.5	16.9	21.8	19.0	-1.0	10.9	-2.2
American Express Asset Mgmt - High Yield FI	39.7	20.8	21.6	-7.0	22.7	15.3	14.1	-4.1	8.0	-9.5
American General Invst Mgmt - Public High Yield FI	---	---	---	0.4	19.2	10.7	12.5	7.1	2.6	-5.5
Banc One Invst Advisors Corp - High-Yield Bond	36.9	21.7	20.1	3.9	11.7	18.6	14.2	0.6	4.9	-3.8
Bear Stearns Asset Management - High-Yield Debt	---	---	---	---	---	---	---	3.6	1.6	-7.9
BlackRock, Inc. - High-Yield Fixed Income	---	---	---	---	---	---	---	---	9.5	-6.5
Bradford and Marzec	---	---	---	---	19.2	9.6	12.1	10.9	5.0	0.7
Brinson Partners - U.S. High-Yield Portfolio	---	---	---	---	---	13.0	14.1	8.5	4.7	-3.3
Capital Guardian Trust Co - U.S. High-Yield	---	---	---	---	---	---	---	---	---	0.8
Cardinal Capital Mgmt - Short Duration High-Yield	---	---	---	---	11.4	12.4	11.1	3.6	5.9	3.5
Cardinal Capital Mgmt - Traditional High-Yield	---	---	---	---	12.2	16.9	16.8	1.8	3.9	1.7
Caywood-Scholl	33.4	16.6	18.8	1.3	18.1	12.8	14.4	4.5	4.3	0.0
Cincinnati Asset Management	30.5	15.4	19.2	-2.4	11.6	13.1	13.6	3.0	-1.2	-3.9
Colonial Advisory Services- High-Yield FI	44.2	22.2	21.1	0.9	19.0	13.6	15.2	3.4	7.3	-9.2
Columbia Mgmt Co - High-Yield Composite	---	---	---	-0.3	20.2	10.1	12.8	7.7	2.8	5.7
Conseco Capital Management	30.9	16.0	15.1	2.2	16.1	14.4	18.8	3.7	10.4	-9.2
Credit Suisse Asset Mgmt - U.S. High Yield	44.1	23.8	33.4	-2.0	20.1	13.8	15.7	3.2	4.2	-7.3
Delaware Investment Advisers	33.0	15.5	17.7	-1.7	15.5	10.4	13.0	4.8	1.7	1.5
Eaton Vance Management	44.4	19.5	19.2	-0.3	16.5	14.9	17.4	4.0	13.3	-6.6
EGM Capital - High-Yield Growth	58.4	36.2	19.3	-2.0	28.2	20.8	16.5	-2.6	-3.3	19.2
Evergreen Invst Mgmt Co - High-Yield FI	47.0	27.5	42.0	-8.6	6.3	13.8	14.6	-3.0	4.0	1.5
Fidelity Management Trust Company	31.7	21.2	21.3	-2.2	24.1	14.9	15.1	4.0	6.3	-8.8
Financial Management Advisors	---	---	---	---	---	17.8	16.4	5.4	-1.8	-7.0
Fountain Capital Management	32.5	16.6	18.3	1.0	20.2	12.8	15.3	7.9	6.0	1.6
Franklin Advisers - Franklin High Yield	49.1	17.3	18.3	-0.9	21.1	15.0	12.9	2.3	1.2	-6.6
GEM Capital Management	43.7	18.6	24.9	3.6	16.0	14.6	18.0	-6.4	34.8	-29.4
Goldman Sachs Asset Mgmt - High-Yield FI	---	---	---	---	---	---	---	4.2	5.7	-3.3
Huff (W.R.) Asset Management	45.6	17.0	18.4	-0.7	21.8	14.7	14.2	5.3	7.8	-0.4
Lazard Asset Management - U.S. High-Yield	---	---	---	---	---	20.5	20.4	-1.5	2.5	-14.3
Maximum	70.1	36.2	42.0	3.9	29.5	26.9	22.6	10.9	34.8	19.2
Minimum	27.9	14.5	15.1	-8.6	6.3	9.6	11.1	-6.4	-3.3	-29.4
Median	37.0	19.2	20.3	-0.3	19.4	14.2	14.6	3.7	4.6	-3.2
Lehman Brothers High Yield Bond Index	46.2	15.8	17.1	-1.0	19.2	11.4	12.8	1.9	2.4	-5.9

n - Net return

**Exhibit 22 (continued)****RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS****Average Annual Compound Returns (%)  
Periods Ended December 31, 2000**

<u>Manager</u>	<u>10 Yrs</u>	<u>9 Yrs</u>	<u>8 yrs</u>	<u>7 Yrs</u>	<u>6 Yrs</u>	<u>5 Yrs</u>	<u>4 Yrs</u>	<u>3 Yrs</u>	<u>2 Yrs</u>	<u>1 yr</u>
Alliance Capital Management	13.4	10.8	10.0	8.5	10.5	9.2	6.3	2.4	4.1	-2.2
American Express Asset Mgmt - High Yield FI	11.2	8.4	7.0	5.0	7.1	4.3	1.7	-2.1	-1.1	-9.5
American General Invst Mgmt - Public High Yield FI	---	---	---	6.4	7.5	5.3	4.0	1.3	-1.5	-5.5
Banc One Invst Advisors Corp - High-Yield Bond	12.3	9.9	8.5	6.9	7.4	6.6	3.8	0.5	0.5	-3.8
Bear Stearns Asset Management - High-Yield Debt	---	---	---	---	---	---	---	-1.1	-3.3	-7.9
BlackRock, Inc. - High-Yield Fixed Income	---	---	---	---	---	---	---	---	1.2	-6.5
Bradford and Marzec	---	---	---	---	9.4	7.6	7.1	5.5	2.9	0.7
Brinson Partners - U.S. High-Yield Portfolio	---	---	---	---	---	7.2	5.8	3.2	0.6	-3.3
Capital Guardian Trust Co - U.S. High-Yield	---	---	---	---	---	---	---	---	---	0.8
Cardinal Capital Mgmt - Short Duration High-Yield	---	---	---	---	7.9	7.3	6.0	4.4	4.7	3.5
Cardinal Capital Mgmt - Traditional High-Yield	---	---	---	---	8.7	8.0	5.9	2.5	2.8	1.7
Caywood-Scholl	12.0	9.9	9.1	7.7	8.8	7.1	5.7	2.9	2.1	0.0
Cincinnati Asset Management	9.4	7.3	6.3	4.6	5.8	4.7	2.7	-0.7	-2.5	-3.9
Colonial Advisory Services- High-Yield FI	12.9	9.9	8.5	6.8	7.8	5.7	3.8	0.2	-1.3	-9.2
Columbia Mgmt Co - High-Yield Composite	---	---	---	8.2	9.7	7.7	7.2	5.4	4.2	5.7
Conseco Capital Management	11.3	9.4	8.5	7.6	8.6	7.1	5.4	1.3	0.1	-9.2
Credit Suisse Asset Mgmt - U.S. High Yield	13.9	11.0	9.5	6.4	7.9	5.6	3.6	-0.1	-1.7	-7.3
Delaware Investment Advisers	10.7	8.5	7.6	6.3	7.7	6.2	5.1	2.7	1.6	1.5
Eaton Vance Management	13.5	10.5	9.4	8.1	9.6	8.2	6.6	3.2	2.9	-6.6
EGM Capital - High-Yield Growth	17.7	13.9	11.4	10.3	12.5	9.6	7.0	4.0	7.4	19.2
Evergreen Invst Mgmt Co - High-Yield FI	13.2	10.0	8.0	3.8	6.0	6.0	4.1	0.8	2.7	1.5
Fidelity Management Trust Company	12.1	10.1	8.8	7.1	8.7	5.9	3.8	0.2	-1.6	-8.8
Financial Management Advisors	---	---	---	---	---	5.7	2.9	-1.3	-4.4	-7.0
Fountain Capital Management	12.9	10.9	10.2	9.1	10.5	8.6	7.6	5.2	3.8	1.6
Franklin Advisers - Franklin High Yield	12.0	8.5	7.5	6.0	7.2	4.7	2.2	-1.1	-2.8	-6.6
GEM Capital Management	11.9	8.8	7.7	5.4	5.7	3.8	1.2	-3.8	-2.5	-29.4
Goldman Sachs Asset Mgmt - High-Yield FI	---	---	---	---	---	---	---	2.1	1.1	-3.3
Huff (W.R.) Asset Management	13.7	10.6	9.8	8.7	10.3	8.2	6.6	4.2	3.6	-0.4
Lazard Asset Management - U.S. High-Yield	---	---	---	---	---	4.7	1.0	-4.7	-6.3	-14.3
Maximum	17.9	13.9	11.9	10.3	12.5	10.5	7.7	6.1	21.4	19.2
Minimum	9.4	7.3	6.3	3.8	5.7	3.8	1.0	-4.7	-6.3	-29.4
Median	12.6	9.9	8.7	6.9	8.5	6.4	4.8	1.6	0.8	-3.2
Lehman Brothers High Yield Bond Index	11.2	7.8	6.9	5.5	6.6	4.3	2.6	-0.6	-1.8	-5.9

n - Net return

## Exhibit 22 (continued)

## RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS

## Annual Return (%)

<u>Manager</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Loomis, Sayles & Company	37.0	22.0	25.9	-1.5	29.5	11.0	16.1	-3.2	9.5	-1.7
MacKay Shields LLC	34.9	24.0	23.7	3.1	21.8	20.2	16.5	5.5	11.2	-3.4
MFS Institutional Advisors - High-Yield FI	50.9	17.9	20.2	-1.5	18.2	13.6	14.1	1.7	7.9	-6.6
Morgan Stanley Dean Witter - MAS High-Yield	45.2	19.2	25.2	-6.6	24.5	15.8	16.5	3.7	8.3	-10.0
Neuberger Berman, LLC - High-Yield Mgmt	---	---	---	---	---	---	13.7	5.2	2.9	-0.1
Nicholas-Applegate - High-Yield Bond	---	---	---	---	19.9	22.6	22.6	3.3	9.3	-3.0
Oaktree Capital Mgmt - Domestic High Yield	---	---	---	---	18.2	14.2	14.0	7.5	2.3	-1.9
OFFITBANK	27.9	18.2	20.8	1.9	18.6	12.9	12.5	5.8	1.5	-1.9
Pacific Investment Mgmt Co - High-Yield Bank Loan	---	---	---	---	---	---	---	---	6.3	4.3
Pacific Investment Mgmt Co - PIMCO High-Yield (n)	---	---	18.7	2.4	20.7	11.7	13.2	6.5	2.8	0.1
Penn Capital Management - Active High-Yield	70.1	30.0	28.9	0.9	25.0	18.8	20.2	-2.1	16.1	-11.1
Penn Capital Management - Defensive High-Yield	35.6	19.7	18.1	0.9	19.5	15.0	13.8	2.9	1.5	-0.5
Pioneer Investment Mgmt - High-Yield FI	---	---	---	---	---	---	---	---	29.5	13.9
PPM America, Inc. - U.S. High-Yield	---	---	---	---	---	13.9	16.1	4.7	2.1	-4.8
Putnam Investments - High Yield FI	46.1	22.6	22.3	0.6	20.7	15.6	15.3	-4.4	5.5	-6.7
Seix Investment Advisors - High-Yield Bond	---	---	---	---	---	---	---	7.7	3.5	7.0
Seligman (J. & W.) & Company	32.4	21.5	20.6	1.9	22.0	16.2	15.7	2.2	1.1	-8.7
Shenkman Capital Management	39.8	19.1	19.5	2.6	18.6	13.3	14.5	4.7	4.5	1.9
SSB Citi Asset Mgmt - Salomon/U.S. High-Yield	---	---	24.8	-0.6	20.1	19.0	14.0	2.7	-0.5	-3.1
Standish, Ayer & Wood - World High-Yield Fund	---	---	---	---	---	---	---	0.9	2.2	3.2
Strong Capital Mgmt - High-Yield FI	---	---	---	---	---	26.9	16.7	4.2	8.5	-5.7
T. Rowe Price	34.7	22.0	20.4	-3.0	19.3	12.6	13.2	6.5	3.7	1.3
TCW Group	35.0	17.7	17.3	0.6	17.5	12.6	12.4	4.7	5.3	-4.8
Waddell & Reed Asset Management	32.4	16.5	18.3	-3.2	18.4	12.8	15.2	4.3	3.7	-6.0
Wellington Mgmt Co - Core High-Yield	---	---	24.7	0.0	21.4	13.5	12.7	0.9	6.4	-8.5
Wellington Mgmt Co - Upper Tier High-Yield Bond	30.1	14.5	18.5	-1.9	19.6	10.0	12.0	5.6	2.8	-1.0
WestAM - Criterion High-Yield	---	---	---	---	---	---	---	---	---	2.4
Western Asset Management Company	---	---	---	---	19.8	16.0	17.3	1.9	11.0	-10.0
Zurich Scudder Investments - High Yield Bond (n)	---	---	---	---	---	---	14.8	8.4	3.5	-2.1
Maximum	70.1	36.2	42.0	3.9	29.5	26.9	22.6	10.9	34.8	19.2
Minimum	27.9	14.5	15.1	-8.6	6.3	9.6	11.1	-6.4	-3.3	-29.4
Median	37.0	19.2	20.3	-0.3	19.4	14.2	14.6	3.7	4.6	-3.2
Lehman Brothers High Yield Bond Index	46.2	15.8	17.1	-1.0	19.2	11.4	12.8	1.9	2.4	-5.9

n - Net return

**Exhibit 22 (continued)****RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS****Average Annual Compound Returns (%)  
Periods Ended December 31, 2000**

<u>Manager</u>	<u>10 Yrs</u>	<u>9 Yrs</u>	<u>8 yrs</u>	<u>7 Yrs</u>	<u>6 Yrs</u>	<u>5 Yrs</u>	<u>4 Yrs</u>	<u>3 Yrs</u>	<u>2 Yrs</u>	<u>1 yr</u>
Loomis, Sayles & Company	13.7	11.3	10.1	8.0	9.7	6.1	4.9	1.4	3.8	-1.7
MacKay Shields LLC	15.2	13.2	11.9	10.3	11.6	9.7	7.2	4.3	3.7	-3.4
MFS Institutional Advisors - High-Yield FI	12.7	9.1	8.1	6.4	7.8	5.9	4.0	0.9	0.4	-6.6
Morgan Stanley Dean Witter - MAS High-Yield	13.1	10.0	9.0	6.8	9.2	6.4	4.2	0.4	-1.3	-10.0
Neuberger Berman, LLC - High-Yield Mgmt	---	---	---	---	---	---	5.3	2.6	1.4	-0.1
Nicholas-Applegate - High-Yield Bond	---	---	---	---	12.0	10.5	7.7	3.1	3.0	-3.0
Oaktree Capital Mgmt - Domestic High Yield	---	---	---	---	8.8	7.0	5.3	2.5	0.2	-1.9
OFFITBANK	11.4	9.7	8.7	7.1	8.0	6.0	4.3	1.7	-0.2	-1.9
Pacific Investment Mgmt Co - High-Yield Bank Loan	---	---	---	---	---	---	---	---	5.3	4.3
Pacific Investment Mgmt Co - PIMCO High-Yield (n)	---	---	9.3	8.0	8.9	6.7	5.5	3.1	1.4	0.1
Penn Capital Management - Active High-Yield	17.9	13.2	11.2	8.9	10.3	7.6	5.0	0.3	1.6	-11.1
Penn Capital Management - Defensive High-Yield	12.1	9.8	8.6	7.3	8.4	6.4	4.3	1.3	0.5	-0.5
Pioneer Investment Mgmt - High-Yield FI	---	---	---	---	---	---	---	---	21.4	13.9
PPM America, Inc. - U.S. High-Yield	---	---	---	---	---	6.1	4.2	0.6	-1.4	-4.8
Putnam Investments - High Yield FI	12.8	9.6	8.1	6.2	7.1	4.6	2.0	-2.0	-0.8	-6.7
Seix Investment Advisors - High-Yield Bond	---	---	---	---	---	---	---	6.1	5.2	7.0
Seligman (J. & W.) & Company	11.8	9.7	8.3	6.7	7.5	4.8	2.2	-1.9	-3.9	-8.7
Shenkman Capital Management	13.3	10.7	9.7	8.4	9.4	7.7	6.3	3.7	3.2	1.9
SSB Citi Asset Mgmt - Salomon/U.S. High-Yield	---	---	9.1	7.0	8.3	6.1	3.1	-0.3	-1.8	-3.1
Standish, Ayer & Wood - World High-Yield Fund	---	---	---	---	---	---	---	2.1	2.7	3.2
Strong Capital Mgmt - High-Yield FI	---	---	---	---	---	9.6	5.6	2.2	1.2	-5.7
T. Rowe Price	12.6	10.3	9.0	7.4	9.3	7.4	6.1	3.8	2.5	1.3
TCW Group	11.3	9.0	7.9	6.6	7.7	5.8	4.2	1.6	0.1	-4.8
Waddell & Reed Asset Management	10.7	8.5	7.6	6.1	7.8	5.7	4.0	0.6	-1.3	-6.0
Wellington Mgmt Co - Core High-Yield	---	---	8.4	6.2	7.3	4.7	2.6	-0.6	-1.3	-8.5
Wellington Mgmt Co - Upper Tier High-Yield Bond	10.6	8.7	7.9	6.5	8.0	5.8	4.8	2.5	0.9	-1.0
WestAM - Criterion High-Yield	---	---	---	---	---	---	---	---	---	2.4
Western Asset Management Company	---	---	---	---	8.8	6.7	4.5	0.6	0.0	-10.0
Zurich Scudder Investments - High Yield Bond (n)	---	---	---	---	---	---	6.0	3.2	0.7	-2.1
Maximum	17.9	13.9	11.9	10.3	12.5	10.5	7.7	6.1	21.4	19.2
Minimum	9.4	7.3	6.3	3.8	5.7	3.8	1.0	-4.7	-6.3	-29.4
Median	12.6	9.9	8.7	6.9	8.5	6.4	4.8	1.6	0.8	-3.2
Lehman Brothers High Yield Bond Index	11.2	7.8	6.9	5.5	6.6	4.3	2.6	-0.6	-1.8	-5.9

n - Net return

## Exhibit 23

## ROLLING THREE-YEAR RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS

## Average Annual Compound Returns (%)

Manager	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Alliance Capital Management	---	---	6.7	4.6	12.1	16.4	25.5	11.4	11.3	11.6	19.2	12.8	9.3	2.4
American Express Asset Mgmt - High Yield FI	---	---	3.9	-0.6	6.4	14.5	27.1	11.0	11.6	9.6	17.3	8.0	5.7	-2.1
American General Invst Mgmt - Public High Yield	---	---	---	---	---	---	---	---	---	9.9	14.1	10.1	7.3	1.3
Banc One Invst Advisors Corp - High-Yield Bond	---	---	---	---	---	18.7	26.0	14.9	11.7	11.2	14.8	10.9	6.4	0.5
Bear Stearns Asset Management - High-Yield Debt	---	---	---	---	---	---	---	---	---	---	---	---	---	-1.1
BlackRock, Inc. - High-Yield Fixed Income	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bradford and Marzec	---	---	---	---	---	---	---	---	---	---	13.5	10.9	9.3	5.5
Brinson Partners - U.S. High-Yield Portfolio	---	---	---	---	---	---	---	---	---	---	---	11.9	9.0	3.2
Capital Guardian Trust Co - U.S. High-Yield	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cardinal Capital Mgmt-Short Duration High-Yield	---	---	---	---	---	---	---	---	---	---	11.7	9.0	6.9	4.4
Cardinal Capital Mgmt - Traditional High-Yield	---	---	---	---	---	---	---	---	---	---	15.3	11.6	7.3	2.5
Caywood-Scholl	---	---	6.7	3.1	8.5	13.8	22.7	11.9	12.4	10.5	15.1	10.5	7.7	2.9
Cincinnati Asset Management	---	---	---	---	11.9	14.4	21.5	10.3	9.1	7.2	12.8	9.8	5.0	-0.7
Colonial Advisory Services- High-Yield FI	---	11.6	6.9	0.7	8.8	15.6	28.8	14.3	13.3	10.9	15.9	10.6	8.5	0.2
Columbia Mgmt Co - High-Yield Composite	---	---	---	---	---	---	---	---	---	9.7	14.3	10.2	7.7	5.4
Conseco Capital Management	---	---	---	8.8	12.9	15.7	20.5	10.9	10.9	10.7	16.4	12.1	10.8	1.3
Credit Suisse Asset Mgmt - U.S. High Yield	---	---	---	---	---	19.5	33.5	17.4	16.2	10.2	16.5	10.8	7.6	-0.1
Delaware Investment Advisers	16.0	13.0	8.9	4.6	10.0	13.4	21.8	10.1	10.1	7.8	12.9	9.3	6.4	2.7
Eaton Vance Management	14.0	12.4	8.8	1.8	8.9	13.8	27.2	12.4	11.5	10.1	16.3	12.0	11.4	3.2
EGM Capital - High-Yield Growth	---	---	---	---	---	30.7	37.0	16.8	14.5	14.9	21.7	11.1	3.2	4.0
Evergreen Invst Mgmt Co - High-Yield FI	---	9.4	7.9	3.2	10.1	18.4	38.6	18.3	11.3	3.4	11.5	8.2	5.0	0.8
Fidelity Management Trust Company	---	---	5.5	5.0	10.4	18.0	24.6	12.9	13.8	11.7	18.0	11.2	8.4	0.2
Financial Management Advisers	---	---	---	---	---	---	---	---	---	---	---	13.1	6.4	-1.3
Fountain Capital Management	---	---	---	6.9	11.6	14.3	22.2	11.7	12.8	11.0	16.0	12.0	9.7	5.2
Franklin Advisers - Franklin High Yield	11.6	10.0	4.3	-1.4	7.6	14.6	27.4	11.2	12.4	11.3	16.3	9.9	5.3	-1.1
GEM Capital Management	---	---	---	---	---	---	28.6	15.3	14.5	11.3	16.2	8.2	14.2	-3.8
Goldman Sachs Asset Mgmt - High-Yield FI	---	---	---	---	---	---	---	---	---	---	---	---	---	2.1
Huff (W.R.) Asset Management	17.8	15.7	11.8	7.6	15.5	17.9	26.3	11.2	12.7	11.5	16.9	11.3	9.0	4.2
Lazard Asset Management - U.S. High-Yield	---	---	---	---	---	---	---	---	---	---	---	12.6	6.7	-4.7
Loomis, Sayles & Company	---	13.1	9.8	6.2	11.4	16.4	28.1	14.8	17.1	12.3	18.6	7.6	7.2	1.4
MacKay Shields LLC	---	---	---	---	---	---	27.4	16.5	15.8	14.7	19.5	13.9	11.0	4.3
MFS Institutional Advisors - High-Yield FI	---	---	---	-1.2	8.5	15.1	28.8	11.7	11.8	9.8	15.3	9.7	7.8	0.9
Morgan Stanley Dean Witter - MAS High-Yield	---	---	---	---	---	15.8	29.4	11.7	13.3	10.4	18.9	11.9	9.4	0.4
Median	15.0	11.9	6.9	4.2	9.9	15.6	26.0	12.5	12.8	11.0	16.0	10.8	7.6	1.6
Lehman Brothers High Yield Bond Index	15.7	11.5	6.0	0.9	10.0	15.2	25.6	10.3	11.4	9.5	14.4	8.6	5.6	-0.6

n - Net return

## Exhibit 23 (continued)

## ROLLING THREE-YEAR RETURNS OF REPRESENTATIVE HIGH-YIELD BOND MANAGERS

## Average Annual Compound Returns (%)

Manager	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Neuberger Berman, LLC - High-Yield Mgmt	---	---	---	---	---	---	---	---	---	---	---	---	7.1	2.6
Nicholas-Applegate - High-Yield Bond	---	---	---	---	---	---	---	---	---	---	21.7	15.8	11.4	3.1
Oaktree Capital Mgmt - Domestic High Yield	---	---	---	---	---	---	---	---	---	---	15.4	11.8	7.8	2.5
OFFITBANK	---	---	13.4	11.6	13.6	16.1	22.2	13.3	13.4	10.9	14.6	10.3	6.5	1.7
Pacific Investment Mgmt Co - High-Yield Bank Lo	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pacific Investment Mgmt Co - PIMCO High-Yield	---	---	---	---	---	---	---	---	13.6	11.3	15.1	10.4	7.4	3.1
Penn Capital Management - Active High-Yield	---	---	---	---	---	21.7	41.8	19.1	17.6	14.4	21.3	11.8	11.0	0.3
Penn Capital Management - Defensive High-Yield	---	---	---	9.6	10.5	15.6	24.2	12.6	12.5	11.5	16.1	10.5	5.9	1.3
Pioneer Investment Mgmt - High-Yield FI	---	---	---	---	---	---	---	---	---	---	---	---	---	---
PPM America, Inc. - U.S. High-Yield	---	---	---	---	---	---	---	---	---	---	---	11.4	7.4	0.6
Putnam Investments - High Yield FI	13.3	11.5	5.8	0.3	8.6	17.2	29.8	14.7	14.1	12.0	17.2	8.4	5.1	-2.0
Seix Investment Advisors - High-Yield Bond	---	---	---	---	---	---	---	---	---	---	---	---	---	6.1
Seligman (J. & W.) & Company	---	11.2	7.2	4.2	9.9	15.5	24.7	14.3	14.5	13.0	17.9	11.1	6.1	-1.9
Shenkman Capital Management	---	11.9	5.6	1.6	8.9	15.4	25.8	13.4	13.3	11.3	15.5	10.8	7.8	3.7
SSB Citi Asset Mgmt - Salomon/U.S. High-Yield	---	---	---	---	---	---	---	---	14.2	12.4	17.6	11.7	5.2	-0.3
Standish, Ayer & Wood - World High-Yield Fund	---	---	---	---	---	---	---	---	---	---	---	---	---	2.1
Strong Capital Mgmt - High-Yield FI	---	---	---	---	---	---	---	---	---	---	---	15.5	9.7	2.2
T. Rowe Price	---	13.4	8.5	4.8	9.9	15.9	25.5	12.5	11.7	9.2	15.0	10.8	7.7	3.8
TCW Group	---	14.5	9.5	5.6	11.2	15.0	23.1	11.6	11.5	10.0	14.1	9.8	7.4	1.6
Waddell & Reed Asset Management	---	---	4.8	2.1	7.3	13.8	22.2	10.1	10.7	9.0	15.5	10.7	7.6	0.6
Wellington Mgmt Co - Core High-Yield	---	---	---	---	---	---	---	---	14.8	11.3	15.8	8.9	6.6	-0.6
Wellington Mgmt Co-Upper Tier High-Yield Bond	16.6	11.7	6.5	3.1	7.8	11.8	20.9	10.0	11.6	8.9	13.8	9.2	6.8	2.5
WestAM - Criterion High-Yield	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Western Asset Management Company	---	---	---	---	---	---	---	---	---	---	17.7	11.5	9.9	0.6
Zurich Scudder Investments - High Yield Bond (n)	---	---	---	---	---	---	---	---	---	---	---	---	8.8	3.2
Median	15.0	11.9	6.9	4.2	9.9	15.6	26.0	12.5	12.8	11.0	16.0	10.8	7.6	1.6
Lehman Brothers High Yield Bond Index	15.7	11.5	6.0	0.9	10.0	15.2	25.6	10.3	11.4	9.5	14.4	8.6	5.6	-0.6

n - Net return

## Exhibit 24

## REPRESENTATIVE HIGH-YIELD BOND NO-LOAD MUTUAL FUNDS

Periods Ended December 31, 2000

Fund Name	Assets			Returns				
	Net Assets 1999 (\$ mm)	Net Assets 2000 (\$ mm)	12-Month Change (%)	Average Annual Compound Returns (%)				
				1 Yr	3 Yrs	5 Yrs	10 Yrs	Yield (%)
Columbia High-Yield	76.8	97.6	27.1	4.6	4.4	7.0	---	8.9
Consulting Group High Yield Investments	153.8	154.7	0.6	-6.8	---	---	---	14.3
Fidelity Capital & Income	2,779.9	2,771.6	-0.3	-9.3	2.5	6.6	12.3	11.5
Fidelity High-Income	3,257.9	2,141.3	-34.3	-14.2	-1.2	5.0	12.0	12.5
INVESCO High-Yield Fund-Investor Shares	749.0	637.4	-14.9	-12.0	-1.2	5.2	9.0	11.9
Janus High-Yield	275.2	300.8	9.3	2.5	3.0	9.4	---	9.1
Legg Mason High-Yield-Primary Shares	382.4	231.9	-39.4	-16.5	-3.6	3.6	---	10.2
Nicholas Income	211.4	128.1	-39.4	-10.3	-3.4	2.7	7.4	15.0
Northern High Yield Fixed Income	105.9	176.6	66.8	-6.8	---	---	---	11.6
Oppenheimer High-Yield Y	55.7	52.1	-6.5	-3.8	0.2	---	---	12.7
Payden & Rygel High Income R	105.1	143.8	36.8	-1.7	2.5	---	---	10.6
SAFECO High-Yield	73.3	54.5	-25.6	-5.5	0.9	5.0	9.1	9.2
Scudder High-Yield Bond S	162.7	113.7	-30.1	-6.9	0.3	---	---	11.8
Strong High Yield Bond-Investor Class	607.4	623.5	2.7	-7.1	1.1	8.7	---	14.4
Strong S-T High Yield Bond Investor Class	266.6	288.6	8.3	5.0	6.2	---	---	9.7
T. Rowe Price High-Yield	1,660.4	1,483.9	-10.6	-3.3	1.7	6.1	10.1	10.9
Value Line Aggressive Income	168.7	79.4	-52.9	-23.6	-7.6	1.5	7.7	13.3
Vanguard High-Yield Corp	5,753.9	5,169.6	-10.2	-0.9	2.4	5.6	10.4	10.4
Maximum	5,753.9	5,169.6	66.8	5.0	6.2	9.4	12.3	15.0
Median	239.0	204.3	-8.3	-6.8	1.0	5.4	9.6	11.5
Minimum	55.7	52.1	-52.9	-23.6	-7.6	1.5	7.4	8.9

Sources: Morningstar, Inc. and Lipper Analytical Services, Inc.

Notes: Selected mutual funds are no-load funds with minimum accounts of \$25,000 or less. Yield (%) are the fund's SEC yield. This yield is based on SEC guidelines calculated for the past 30 days and are the previous month's figures.

**APPENDIXES**



**Appendix A**

**HIGH-YIELD BOND INTERNAL RATES OF RETURN**

**Five-Year Internal Rates of Return at Various Default Rates and Principal Recovery Rates**

**As of December 31, 2000**

**Lehman Brothers BB-Rated Portfolio**

Weighted-Average Price Relative to Par Value (%): 93.6    Weighted-Average Coupon (%): 8.3

Principal Recovery Rate	Annual Default Rate				
	<u>5%</u>	<u>10%</u>	<u>15%</u>	<u>20%</u>	<u>25%</u>
0% of Par	5.0%	-0.1%	-5.1%	-9.8%	-14.2%
30% of Par	6.7%	3.0%	-0.5%	-3.9%	-7.2%
50% of Par	7.8%	5.2%	2.7%	0.2%	-2.2%

**Lehman Brothers B-Rated Portfolio**

Weighted-Average Price Relative to Par Value (%): 75.2    Weighted-Average Coupon (%): 8.0

Principal Recovery Rate	Annual Default Rate				
	<u>5%</u>	<u>10%</u>	<u>15%</u>	<u>20%</u>	<u>25%</u>
0% of Par	10.5%	5.1%	-0.1%	-5.0%	-9.7%
30% of Par	12.5%	8.9%	5.4%	2.1%	-1.2%
50% of Par	13.8%	11.5%	9.3%	7.1%	5.0%

**Break-Even Par Default Rates (%)**

Principal Recovery Rate	Lehman Brothers BB-Rated Portfolio	Lehman Brothers B-Rated Portfolio
0% of Par	5.0	10.1
30% of Par	7.3	15.6
50% of Par	10.4	25.0

Definitions and Assumptions:

- 1) Portfolio characteristics are based on the weighted-average price and coupon of the BB-rated and B-rated components of the Lehman Brothers High-Yield Bond Index.
- 2) Defaults begin immediately after the portfolio is acquired.
- 3) Defaulted bonds are liquidated at the end of the month following default at a selling price equal to the recovery rate multiplied by par value.
- 4) The break-even default rate is the annual rate of defaults that would make an investor indifferent between holding the high-yield bond portfolio and a portfolio of five-year Treasury notes (YTM of 4.99% as of 12/31/2000).

Source: Lehman Brothers, Inc.

**Appendix B**

**CHARACTERISTICS OF HIGH-YIELD BOND INDEXES**

**As of December 31, 2000**

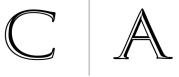
	Inception <sup>1</sup>	Minimum Capitalization	Market Capitalization (billion)	AACR (%) Since Inception	PIKs, Zeroes, and Defaults	Subindexes
Lehman Brothers High-Yield Bond Index	Jun 1983	\$150 million	\$262.99	9.8	PIKs: No Zeroes: Yes Defaults: Yes	By Industry: Yes By Quality: Yes By Maturity: Yes
Salomon Brothers High-Yield Market Index	Jan 1989	\$100 million	\$257.77	8.8	PIKs: Yes Zeroes: Yes Defaults: No	By Industry: Yes By Quality: Yes By Maturity: Yes
Merrill Lynch High-Yield Master Index (Cash Pay Only)	Oct 1984	\$100 million	\$233.88	10.5 <sup>2</sup>	PIKs: No Zeroes: No Defaults: No	By Industry: Yes By Quality: Yes By Maturity: Yes
Credit Suisse First Boston High-Yield Bond Index	Jan 1981	\$75 million <sup>3</sup>	N/A	11.5 <sup>4</sup>	PIKs: Yes Zeroes: Yes Defaults: Yes	By Industry: Yes By Quality: Yes By Maturity: Yes

<sup>1</sup> Inception dates are based on beginning of monthly return series.

<sup>2</sup> Data from January 1, 1985 through December 31, 2000.

<sup>3</sup> Except BBB-rated bonds which require a minimum capitalization of \$125 million.

<sup>4</sup> CSFB High-Yield Bond Index returns are provided by Drexel Burnham Lambert from 1981-85, and by CSFB from 1986 to date.



**REPRESENTATIVE HIGH-YIELD BOND INDEXES**

**CS FIRST BOSTON HIGH-YIELD BOND INDEX**

- Publisher:** Credit Suisse First Boston Corporation publishes the CS First Boston High-Yield Bond Index. Data are available directly from CS First Boston.
- Objective:** To measure the monthly price only and total return performance of the publicly traded high-yield debt market in the United States.
- Inception:** The index was introduced in January 1986 but includes historical data starting January 1981.
- Composition:** The index is composed of publicly traded, U.S. dollar-denominated debt issues with a rating of BBB or Ba1 or below with par values greater than \$75 million.
- Selection Criteria:** The selection of component issues is made on the grounds of the following criteria:
- New issues with par amounts greater than \$75 million are automatically added to the index at the time of issue.
  - Fallen angels with market values greater than \$75 million are added to the index two months after they've been downgraded.
  - Private issues that become public are considered a new issue one month after the effective date and are added to the index so long as the par amount is in excess of \$75 million.
  - Retired, exchanged, or upgraded issues are excluded from the index.
  - Defaulted issues are removed from the index when their market value falls below \$20 million for six consecutive months. Non-defaulted issues are removed from the index when their market value falls below \$50 million for six consecutive months.
  - Non-U.S. bonds (including emerging markets bonds) issued in the United States, in dollars and under SEC regulations, are included.

**Computation:** Capitalization-weighted  
Base Date: January 1, 1986  
Base Value: 100

Interest received during the month is reinvested at an annual rate of 4%.

Should a firm have two or more high-yield issues outstanding, only the two largest issues will be included in the index.

**Subindexes:** By sector: The Index is broken down into a cash paying module, a zerofix module, a pay-in-kind module, and a defaulted module. The Index is also divided by industry, rating, seniority, liquidity, market value, security price range, and yield range.

By market: broken down to exclude non-U.S. bonds from emerging markets.

**LEHMAN BROTHERS HIGH-YIELD INDEX**

**Publisher:** Lehman Brothers, Inc. Information on the High-Yield Index is published monthly in Lehman Brothers' *Global Family of Indices Report*.

**Objective:** To measure the performance of fixed rate, non-investment-grade debt.

**Inception:** January 1986 but includes historical data starting in January 1983.

**Composition:** The Lehman Brothers High-Yield Index includes dollar-denominated, nonconvertible, SEC registered Yankee bonds, global bonds, original zero bonds, 144A securities, and step-up coupon structures.

**Selection Criteria:** The following selection criteria must be met in order to be included in the index:

- Minimum maturity of one year
- Minimum amount outstanding of \$150 million
- Rating of Ba1 or lower by Moody's. If no Moody's rating is available, bonds must be rated BB+ or lower by S&P. If no S&P rating exists, bonds must be rated below investment grade by Fitch Investor's Service.
- In order for an unrated bond to be included, the bond must have held a high-yield rating or been associated with a high-yield issuer.
- Pay-in-kind (PIK) bonds and all forms of emerging markets debt are excluded.
- Yankee bonds and non-U.S. bonds, from non-emerging markets countries, issued in the U.S. (in dollars and under SEC regulations) are included.

**Computation:** Capitalization-weighted

With the exception of defaulted issues, total return is equal to the weighted mean of the total return of the securities in the index. As for the returns for the defaulted issues, starting in 12/31/92, yield and duration are represented with a zero for defaulted issues.

Base date: December 31, 1982

Base value: 100

**Subindexes:** By maturity: Intermediate indices include bonds with remaining maturities of less than ten years, while Long indices include bonds with remaining maturities of ten years or more.

By quality: Subindexes by credit quality are available as are subindexes that exclude securities in default.

**MERRILL LYNCH HIGH-YIELD MASTER INDEX (CASH PAY ONLY)**

- Publisher:** Merrill Lynch, Pierce, Fenner & Smith, Inc. Information regarding this index is published monthly in *Merrill Lynch's Bond Indices*.
- Objective:** To measure the performance of the high-yield, low quality corporate bonds.
- Inception:** October 31, 1984.
- Composition:** Fixed-rate, coupon bearing corporate bonds representing the transportation, industrial, utility, and financial sectors.
- Selection Criteria:** The following criteria must be met in order to be included in the index:
- Maturity greater than one year.
  - Minimum \$100 million outstanding.
  - Limited to securities that are issued in the U.S. or Yankee markets.
  - Must have a fixed coupon schedule. Coupons may change provided the coupon schedule is fixed at issue.
  - Maximum rating of BBB3. Bonds rated in default (DDD1 or less) or that are not rated are excluded.
  - Excludes Deferred Interest Bonds (DIBs), Pay-in-Kinds (PIKs), variable coupons, structured notes, and inflation-linked securities.
- Computation:** Capitalization-weighted  
Total Return
- Subindexes:** The Merrill Lynch High-Yield Master Index can be broken down into subindexes based on industry, quality, and maturity as follows:
- By Industry: Transportation, Industrial, Utility, and Finance.
  - By Quality: BB, B, C.
  - By Maturity: 1-3, 3-5, 1-5, 5-7, 7-10, 10-15, and 15+ year maturities.



**SALOMON SMITH BARNEY HIGH-YIELD MARKET INDEX**

- Production:** Salomon Smith Barney, Inc. publishes the SSB High-Yield Market Index. Index data are available directly from Salomon Smith Barney in their monthly *Total Rate-of-Return* publication and on The Bloomberg.
- Objective:** To measure the monthly performance of below-investment-grade debt issued by corporations domiciled in the United States or Canada.
- Inception:** January 1989.
- Composition:** The index is composed of cash-pay, deferred-interest and Rule 144A bonds with remaining maturities of at least one year and a minimum amount outstanding of \$100 million.
- Selection Criteria:** The selection of component issues is made on the grounds of the following criteria:
- Minimum outstanding amount of \$100 million.
  - Minimum maturity of one year.
  - Minimum quality rating of C by S&P or Moody's.
  - Maximum quality rating of BB+ by S&P or Ba1 by Moody's.
  - Securities must be listed in the United States or Canada.
- Computation:** Capitalization-weighted  
Base Date: December 31, 1988  
Base Value: 100
- Reinvestment of cash flow is continuous at the daily average of the one-month Treasury bill for the calculation period.
- Securities are priced individually at month-end by Salomon Smith Barney traders at 3 p.m. New York time. Supplemental pricing is also provided by outside vendors.
- Calendar month-end settlements are presumed.
- If an issue's rating is split between BB and B or between B and CCC then the S&P rating determines which quality sector the bond will be in.

Should an issuer expect to default on an interest payment or file for Chapter 11 bankruptcy protection, the company's bond returns are adjusted to reflect the loss of coupon payments or accrued interest at the month-end following the company's announcement. The bond is also removed from the High-Yield Market Index and placed in the Bankrupt Index.

**Subindexes:** By maturity: 1-7, 7-10, 7+, 10+ year maturities.

By quality: BB & B, BB, B, and CCC.

By industry sector: Industry sector specific subindexes are available for all industry sectors of the economy.

**Comments:** The Extended High-Yield Market Index and the Distressed Index were both discontinued as of January 1999.