

INDEXING THE MUNICIPAL MARKET -- ADDRESSING COMPLEXITIES OF THE WORLD'S FOURTH LARGEST MARKET

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Kenny S&P

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INTRODUCTION

Kenny S&P has begun to introduce a family of municipal bond indices which will describe and analyze the major segments of the municipal market. This development is our response to the recent Securities and Exchange Commission's (SEC) rule changes as well as to requests from customers.

Effective July 1, 1993, the SEC adopted rule and form amendments to the Securities Act of 1933 and the Investment Act of 1940, to enhance disclosure made by mutual funds, both in their prospectuses and in annual reports to shareholders. Among the new SEC requirements in these documents is the inclusion of a line graph comparing the total return performance of a fund with that of an appropriate broad-based index over the preceding 10 year period. In addition, the SEC encourages the comparison of a fund's performance with that of a narrower based index, whose composition may more closely reflect that of the fund.

Kenny S&P's family of indices, which are based upon the consolidation of its comprehensive data bases used for bond description and portfolio and individual bond pricing will meet the requirements for a broad-based index. The new consolidated database, which will provide ready access to both bond descriptions and pricing information from March 31, 1984 to the present, will be the largest and most comprehensive of its kind, drawing upon on more than a million bonds on any given valuation date for the construction of truly broad-based indices.

Index values, with supporting statistics and analytics, will be published in both tabular and graphical form and will also be available over the McGraw-Hill Municipal Screen and authorized information quote vendors.

THE S&P MUNICIPAL INDEX - OVERVIEW

Since the composition of an Index parallels that of the market itself, the inclusion criteria and the aggregate characteristics for the S&P Municipal Index are significant. The Index represents a fully diversified, passive portfolio of municipal bonds which comprise the J.J. Kenny municipal universe. This insures that the Index meets SEC and industry standards as an unbiased, objective and comprehensive representation of the market.

S&P Municipal Indexes are unique, since they are derived from the consolidation of the databases used for bond descriptions and pricing. First, the Indexes are based upon the entire universe of outstanding tax-exempt municipal bonds, typically consisting of more than 1.5 million outstanding issues during any given month. Second, it eliminates the limitations otherwise inherent in having to define the characteristics of the indexes (distribution of ratings, sectors, types, maturities, etc.) and establishing criteria for selecting suitable issues to replace those which have matured, been called, put, defaulted or otherwise retired. Third, the problem of computing coefficients to compensate for bond replacements with different prices in order to maintain the continuity of the Index is avoided. Fourth, as bonds mature or are retired and new issues are brought to market, the composition of the Index automatically reflects these changes which are representative of the true distribution of issues on any given date.

Foremost among the special problems associated with systems for the municipal market is the vast number of issues outstanding. In addition, the number of bond issuers, each of which requires separate credit analysis, is larger by several orders of magnitude than in the corporate bond market. High levels of issues complexity comprise another feature of the market. Complex call provisions, sinking funds, "super

sinkers", prerefundings, etc., all represent bond characteristics that are very common in the municipal marketplace.

In 1984, 750,000 issues were included in the Index. By 1994, that number increased to 1.3 million. The Broad Based Aggregate Index contains virtually all of the issues in our consolidated database. It is divided into five hierarchical levels of subsectors (see Graph I). The second level of subsectors consists of: Investment Grade, Non-Rated, High Yield Indexes, and AAA-rated to B-rated Generic Scales Indexes. The third level of subsectors is composed of: Investment Grade General Obligations (G.O.), Revenue, Insured, Prerefunded/Escrowed, and State Indexes. The fourth level of subsectors consists of maturity breakdowns. For example, Investment Grade Revenue is broken down to 1-Year, 2, 3, 5, 7, 10, 15, 20, and Long Bond sectors. The fifth level is comprised of composite and customized Indexes.

GEOGRAPHIC DIVERSITY

We take the actual geographic diversity of the municipal market, broken down by each state's bond volume percentages of the whole, that is reflected in the composition of the J.J. Kenny's database at any point in time. We will maintain true geographic diversity in our Broad-Based municipal Index. This requires that bonds from all 50 states be included, as well as bonds from Washington, D.C. and the Commonwealth of Puerto Rico.

While there are five states known as the "chaste states" which issue almost no general obligation debt at the state level, those five do have obligations issued by state revenue authorities as well as lease-backed obligations, which were included in our Index. The Index is sensitive to the proportionality of each state's share of the national municipal bond issuance total, because those state shares do change over time with regard to demographic shifts, economic growth or recessions, and in response to regional credit crises.

MATURITY

The maturity span of the municipal securities market includes very short term notes to bonds with maturities ranging from one day to one hundred years. However, the Index is composed of zero to forty year bonds.

We pay great importance to including in our Broad-Based Index a sample of serial bonds in the one to ten year maturity range and not just long term bonds of twenty or thirty years. This is because the shift in steepness of the slope of the yield curve of those serial maturities from one year to ten years, is vital to the strategies adopted by municipal investors, bond funds, bond issuers, bond traders, and bond underwriters [8,9,10].

When originally issued, approximately fifty percent of new municipal issues are 20 or 30 year term bonds in accordance with industry norms. Unlike most municipals which are quoted in yield, very large, recently-issued term bonds are quoted in dollars, and are known as "dollar bonds". Dollar bonds are the most liquid and most marketable bonds of all maturities because of their large currently outstanding volumes.

When most municipal bonds are originally issued, the dollar volume percentages in each maturity subsector are roughly: 15 percent, one to five year serial bonds; 10 percent, six to ten year serial bonds; 5 percent, eleven year to nineteen year bonds; 25 percent, twenty year term bonds; 5 percent, twenty-one to

twenty-nine year bonds; and 25 percent, thirty year bonds. However, since the vast majority of the 1.3 trillion dollars of municipal bonds have aged, those original 20 and 30 year term bonds may now have only one to five years remaining until their maturity. Thus, the actual remaining maturity distribution of the J.J.Kenny database is more heavily weighted in terms of dollar volume outstanding in each maturity to the one to ten year range. Figure 2 illustrates the term to maturity distribution of bonds according to CUSIP numbers.

All bonds in the original Index will be constantly aging. Bonds added to the Index from the new issue market will, in effect, replace old bonds that have reached maturity or have been called.

The Index will always reflect the current volume changes among the maturity segments. Such dollar volume changes in sales of particular maturity segments among municipals can signal important changes in overall bond purchasers' appetite or preference and, likewise, signal their avoidance of certain maturity segments. For example, for years, great attention was paid by the bond market to the extension outward or contraction inward of what was known as "The Bank Range" of municipal bond buying, stretching from one to ten years in some periods or shrinking to one to five years at other times, depending upon various factors effecting the banking industry. Very similar types of maturity preferences are closely tracked today for municipal bond funds, unit investment trust funds, as well as for property and casualty insurance companies.

These maturity segment preferences by various buyer groups often relate to the accordion-like expansion or contraction of the overall municipal yield curve spectrum and to the resulting currently perceived yield-spread reward opportunities or disincentives. They also can stem from changing tax laws and from the particular buyers' group's changing tax position and current profitability. This occurs when banks, insurance companies and corporations suddenly become heavy buyers in the short term tax-exempt market. For example, property and casualty insurance companies are notorious in the municipal bond market for buying in some months as much as thirty percent or more of the entire new-issue bond volume, when they are highly profitable and need to shelter their profits with tax exempt investments, and then, in later months, for buying no municipal bonds at all. This can occur because such insurance companies sometimes suffer severe insurance claim losses or are waiting for "the underwriting cycle", whereby state insurance authorities forbid, or later, allow insurance companies to periodically raise their insurance rates and, thus, become profitable, again, and in need of tax-exempt income and, thus, interested in buying municipal bonds.

In today's low interest rate environment, many issuers, by issuing 40 and even 100 year bonds, in some cases, are trying to lock in much longer term rates than a decade ago, when the high interest rate environment led many municipal issuers to concentrate on selling a large volume of "low floaters" or variable rate demand notes which became highly popular as a way to "cheat the yield curve" by dramatically lowering the current cost of debt.

At any time, there are outstanding in the market literally billions of dollars of municipal short-term notes, issues of municipal commercial paper, and a wide range of adjustable rate, floating rate, and variable rate demand notes. All of these are bought in large volume by tax-exempt money market firms, institutions and certain individuals. Our Index will have a separate subsector which will include these various short-term municipal securities.

CALLABLE BONDS

Since we attempt to more closely represent the entire municipal market and to provide a more useful benchmark for measuring bond performance we include callable bonds in our Index. If we were to ignore these callable bonds, this would immediately eliminate more than half the municipal bond market from consideration for a Broad Based Index.

CREDIT QUALITY

Our Broad Based Index covers the spectrum bond creditworthiness ranging from investment grade to below investment quality grade bonds. Approximately eighty percent of the dollar volume of municipals have investment grade ratings. These bonds are the most marketable and most liquid portion of the municipal market and their price valuations tend to be significantly more accurate than either speculative grade rated bonds or unrated bonds. While a large portion of the total number of municipal bonds consists of unrated securities (between 10% to 25% of the dollar volume of municipals) these generally are very small sized issues which tend initially to be sold only locally and, thereafter, trade only infrequently. Speculative grade municipals are much smaller in number than the unrated municipal segment and they tend to consist not of original issues "junk bonds", as in the corporate market, but instead, of "fallen angels", in other words, formerly investment-grade municipals which have declined precipitously in credit quality. They also consist of bonds in technical default or actual default, whose prices fluctuate erratically on rumor during lengthy litigation. We also recognize the new issue junk munis, namely: nursing homes, IDB's, etc.

The prospectus and marketing literature of most tax-exempt Municipal bond funds contain a statement that they will invest in A-rated bonds to AAA-rated bonds. Nevertheless, most bond funds usually reserve the right to invest a small percentage of their total monies in either unrated or below investment grade rated bonds or in taxable securities.

Table I shows the dynamic changes which have taken place in the creditworthiness of bonds from 1983 to 1994.

TABLE I. Issue Distribution by Credit Rating

RATING	1983	1994
AAA	13.69%	30.66%
AA	12.37%	10.40%
A	34.21%	20.79%
BBB	13.31%	7.62%
BB	0.47%	0.33%
B	0.06%	0.03%
CCC	0.01%	0.07%
CC	0.01%	0.00%
C	0.00%	0.01%
Defaulted	0.02%	0.03%
Non Rated	25.85%	30.06%

From the table we see for example how the credit quality segments in the '90s has been profoundly influenced by all types of credit enhancement. Fully 34% of the new issues sold come to market insured. Almost 20% of additional new issue bonds sold today come to market pre-refunded by U.S. Treasury securities, or backed by guaranteed contracts or credit-enhanced by various types of letter-of-credit or U.S. federal or state agencies' credit enhancement. That total means that over 50% of the entire new issue bond market in 1993 came to market backed by some form of credit enhancement. This 1993 total percentage of new issue credit-enhanced securities is far greater than the percentage observed in the overall outstanding total municipal bond market of \$1.3 trillion of tax-exempt securities.

For a number of (historical and irrational) reasons different types of credit-enhanced bonds are not priced in the market the same as bonds credit-rated on the basis of their real or true value. Therefore, they do not behave in yield-spread relationships in the same way as the latter. For example, most insured bonds that are rated AAA, in fact, trade in the market only as A+ rated bonds or weak AA- rated bonds. They are not priced in the market as true AAA-rated bonds based on their true value. The municipal insurance firms are very concerned about this problem. Most municipal insurance firms are now lumped together and viewed as identical in the public mind. Consequently, the major financial crisis of Executive Life Insurance and Mutual Benefit Life Insurance and the collapse of various insurers of municipal healthcare bonds, eroded the credit quality of billions of dollars of municipal bonds that these insurance firms backed and tainted the municipal bond buyer's perceptions of the value of municipal insurance. Likewise, the dramatic decrease in the credit rating quality of many bank letters-of-credit accompanying the decline in the underlying financial strength of many Japanese and U.S. banks, has caused letter-of-credit bonds to be viewed by the market professionals with more concern today than in the past and, in addition, causes them to trade in the market at prices far lower than their credit rating would indicate.

SPLIT RATINGS

In most cases the different credit rating agencies assign similar ratings to the same bond issues. However, there are many occasions when the same bond issue is determined to have different ratings, given by two or three of the major credit rating agencies. This results in what is known as "split ratings". While split ratings are not the norm, they are a common enough problem so that some recognition must be given to this occurrence in the composition of our Index.

First, there are many split ratings of only one "notch" or a fraction of a credit category, such as an A rating from one agency and an A+ from another agency. These differences of opinion normally do not matter very much and in constructing the Index we view all the different sub-categories of A rated bonds as one group and all the sub-categories of AA rated bonds as another single group. This procedure would extend to other rating categories as well.

The problem of split ratings is far more serious when the different rating agencies place the same bond issues in entirely different credit categories. This can occur because of a fundamental difference in policy between the different agencies as, for example, when S&P considers a "Moral Obligation" bond as one rating category below a state's own "General Obligations" rating, whereas Moody's will not consider the state's "Moral Obligation" pledge at all in determining its rating. It should be noted that in the case of split ratings, the municipal bond market used to routinely trade on the basis of Moody's ratings. This occurred because it was the older rating agency, it rated more bonds, and because, on average, Moody's tended to be more conservative in its rating than was S&P.

The situation with split ratings is today somewhat more confusing, as some traders tend to go with whichever rating agency has given the more conservative rating, while other traders and bond funds, use whichever rating agency has given the higher credit rating.

Why is this rating problem important for the design of our Index? It is important because there is no clear and obvious policy rule that would lead us to necessarily exclude bonds with split ratings altogether from the Index, or to only select the lower, more conservative rating category for our Index. Certain major municipal issuers carry split ratings and they sometimes are in distinctly different rating categories. For example, the City of New York has a Baa rating from Moody's and an A-rating from both S&P and Fitch. This is an example of a split rating which is important because New York City issues between 4 to 5 billion dollars of new debt each year and has 25 billion dollars of bonds outstanding. This would be a bond issuer we would normally want to have in our Investment Grade Index. However, if New York City were to lose its A- rating, or worse, if it were to fall below BBB into the speculative rating category known as "Junk Bonds", it would be very difficult, or perhaps impossible, for the bond funds to continue to buy the 4 billion dollars of debt that New York City needs to sell each year to say nothing of the high interest the City would have to pay.

COMPOSITION SEGMENTS OF THE BROAD-BASED INDEX MADE UP OF GENERAL OBLIGATIONS AND REVENUE BONDS

Thirty years ago the municipal market was composed of more than 70 percent general obligation bonds, backed by the full faith and taxing power of the state or municipality. Today less than 36 percent of the new issue market is general obligation bonds while over 63 percent of the new issue municipal bonds sold today are revenue bonds backed by user fees, tolls, rents, charges, special assessments, etc., marking a profound change in the market.

Furthermore, this long term change in composition is subject to yearly and monthly variations which stem from shifts in federal tax laws, taxpayer revolts or voter referenda and a variety of subsector market driven pressures occurring in the federal, state and local finance of health care, public power, housing, transportation, water, sewer and waste disposal, education, etc.

Traditionally, revenue bonds pay higher interest rates or higher yields than do general obligation bonds, because user fees are generally considered a less secure credit support than the "full faith and taxing power" of a state or municipality. As a result, bond funds' portfolio managers, who are always searching for higher yield, tend to disproportionately concentrate on buying revenue bonds, in order that they can report higher rates of return for their own bond funds' purchasers so that they themselves rise in the Lipper Analytic Service's rankings of the best bond fund performance.

LEASE-BACKED BONDS OR CERTIFICATES OF PARTICIPATION

One portion of the municipal securities that has experienced significant increases over this last decade has been in what are known as lease-backed bonds. These lease-backed bonds are often sold as Certificates of Participation, or COPs. These bonds are not general obligations backed by the full faith and taxing power pledge of the issue, nor are they backed, like a revenue bond, by a specific stream of user fees, tolls, charges or rents. Instead, under a COP structure, a state or municipality enters into a cancelable lease obligation, nominally for a stated period of 5 to 40 years for a school building, prison, fleet of police cars or new computer system. However, because the state or municipal legislature requires, each

year, a reappropriation of money, they must vote again, each year, whether to renew this specific lease, or they can cancel the lease at the end of any year. Therefore, "legally" these COPs do not count in the debt limits under the official debt ceiling of the state or municipality.

By 1994, states and municipalities had issued many billions of dollars of these COP's, first, as a way to avoid being required to go to the voters to obtain approval for expanding their general obligation tax-backed debt, and, secondly, as a way to avoid exhausting the state's or the municipality's legally authorized debt capacity or exceeding their legal debt ceiling.

VARIABLE RATE BONDS AND PUT BONDS

Variable rate demand notes are sold with nominal maturities that may stretch for 20 or 30 years, but most of them trade as very short term securities. A somewhat similar phenomenon occurs with put option bonds which, again, are sometimes issued for nominal long-term maturities, but are puttable yearly or at shorter terms.

A series of separate short term municipal indexes reflecting this segment of the market will be designed in the future.

HIGH-YIELD SECTORS

High yield municipal bonds offer the investor the opportunity to earn tax-exempt income without foregoing yield. With interest on high yield bonds averaging 100 to 200 basis points above A-rated tax-exempt bonds some investors consider them an attractive source of income.

Bonds are considered as High Yield as a result of one of the following two events: first, a new bond issue is sold in the marketplace having below investment grade ratings, therefore is referred to as high yield, or second, an outstanding issue which was rated as an investment grade, is subject to credit quality erosion and subsequent rating downgrades, which result in a non-investment grade rating. Due to their unique characteristics, high yield bonds are priced timely, according to changes in security and cash flow.

The risks associated with high yield bonds have not deterred demand for these securities. In fact, this sector of the municipal market has grown dramatically in recent years. In 1985, there were 18 tax exempt high yield money market funds with assets of \$8 billion. In 1993, the number of funds had grown to 50 with assets of \$36 billion. This does not include Unit Trusts which had assets of \$2 billion in 1993.

The types of high yield bond issuers vary but generally mirror those found in the investment grade market. We have divided them among the following categories:

- HealthCare bond issuers;
- Corporate industrial revenue bond issuers:
- General obligation and Revenue bond issuers
- Housing

We have developed the first ever four high yield indexes that track these market sectors beginning from March of 1984. As a rule, the ratings of these issues start from BB+ and go down from there.

Additionally, non-rated issues in these categories will be made part of the indexes in the future. Most of the bonds in these indexes are hand quoted.

NON-RATED BONDS

The non-rated sector of the municipal market is widely misunderstood. Many investors mistakenly equate non-rated with high-risk when in fact a significant number of non-rated bonds are of excellent credit quality. Because the majority of non-rated bonds are small issuers, a non-rated bond may represent an inability to pay for a bond rating as opposed to the inability to qualify for one. Furthermore, for a small issues with a well developed local market (e.g. the local bank), a bond rating from a nationally recognized rating agency is arguably an unnecessary expense. Credit quality and risk are more closely correlated with bond type or purpose than with whether or not the bonds are rated.

Non-rated bonds that present risk to potential buyers are therefore more accurately defined as non-rated *conduit* bonds. These bonds, which are sold to finance nursing homes, housing projects and other private purposes, exhibit a much greater propensity of default than bonds in any other municipal market sector. However, the incidence of default is still low to preclude the exclusion of non-rated bonds, conduit or otherwise, from the index.

We have designed and produced the only available Non-Rated Index in the municipal market. In addition the Non-Rated Index is broken-down into several sub-indexes according to maturity range. The beginning date for the Non-Rated Index is March 1984.

MARKET DYNAMICS AND THE S&P J.J. KENNY INDEXES

Utilizing what is essentially Kenny's entire database in constructing the broad-based indexes provides a number of singular advantages. First, since the consolidated database used for the indexes represents virtually the entire universe of municipal bonds, it permits the development of indexes which are truly broad-based. Second, it solves the problem of having to define what the characteristics of a broad-based index should be. Third, as bonds mature or are retired and new issues are brought to market and added to the database, the composition of the index represents the characteristics of the municipal market at any time.

The dynamics of the municipal market over time are thus reflected by the changing characteristics of the Kenny consolidated databases and the index values. Figure 2 which shows the distribution of issue terms to maturity for 1984 and 1993, and the distribution of current ratings for 1984 and 1993 are two examples of some of the fundamental changes which have taken place in the municipal bond market.

Table II shows how some of the uses of municipal bonds have changed dramatically over the past decade. For example, in 1983 the Education sector accounted for 9.5%, and by 1992 for 16.9% of the total annual volume. By contrast the Housing sector in 1983 accounted for 20.9% of the annual volume, but by 1992 had fallen to 6.4%.

Table II. Percent Distribution of Annual New Issue Volume

Sector	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Education	9.5	9.1	11.7	12.9	14.5	15.7	15.4	16.9	16.1	16.9
Electric Power	11.8	10.4	11.2	12.8	9.1	5.2	6.4	4.1	5.2	7.0
Environmental Facs	5.9	14.1	6.9	3.3	4.2	5.3	3.7	4.1	3.9	3.6
Health Care	12.3	10.0	15.5	6.3	12.0	10.9	12.3	11.0	10.6	9.9
Housing	20.9	18.5	18.0	7.2	11.4	13.1	9.5	12.3	8.5	6.4
Industrial Dvlpmnt	4.3	4.3	3.2	3.8	5.7	4.0	4.4	3.5	3.6	3.6
Public Facilities	1.3	2.4	3.0	3.9	2.8	3.1	4.0	5.1	5.2	3.9
Transportation	5.8	8.6	7.1	8.4	5.7	8.3	8.5	10.3	9.1	11.0
Utilities	5.7	5.8	7.7	12.0	9.9	9.9	10.6	8.5	11.1	11.6
Other	22.3	16.6	15.7	29.3	24.7	24.5	25.3	24.2	26.7	26.1

WEIGHTING

The two major alternatives for weighting are either relative market value of the issue outstanding of equal weighting (also referred to as unweighted) [12]. The justification for market weighting is that it reflects the relative economic importance of the issue and is a logical weighting for an investor with no asset allocation preferences.

Most of the S&P Municipal Indexes are designed to be market weighted indexes so that their values reflect the amount of outstanding bonds. The use of market weighted indexes is in keeping with the common practice of most fixed income and equity indexes such as the S&P500 stock and Merrill Lynch and Lehman Brothers indexes. Exceptions are the Dow Jones Index, the Chicago Board of Trade's Municipal Bond Index, and the Ryan Labs Indexes. The Dow Jones Index, which is price weighted, survives for historical reasons. The Municipal Bond Index which is used for settling the Chicago Board of Trade's Futures Contracts does not address the question of volume weighting among its criteria for selection. The Notre Dame Study [12] implies that the Ryan's Lab equally weighted index methodology is valid and produces satisfactory results.

Unfortunately, issue information about the number of outstanding bonds is difficult to obtain particularly for small volume issues and private placements and in general is not adequately available. A less satisfactory, but still adequate, proxy is the original issue volume by state. These have been compiled and normalized to derive weights used as price multipliers for each bond in the J.J. Kenny Municipal Indexes.

MARKET STATISTICAL PROFILES

Statistical profiles are provided as part of the supporting documentation available for each index. They are intended to provide fund managers with the information they need for comparing and interpreting differences in the performance of a specific fund with that of either index. Among the graphical profiles which will be provided are those shown in Table III:

TABLE III. INDEX STATISTICAL PROFILES

- Distribution of Issues by Rating Categories
- Distribution of Issues by Maturity
- Distribution of Issues by Call Date
- Distribution of Issues by Price
- Distribution of Issues by Yield
- Distribution of Issues by Category
- Distribution of Issues by Sector
- Distribution of Issues by State

These profiles are a unique feature of the consolidated 10-year database used to generate the Index values. Thus, a fund manager comparing performance has available not only the current composition of the Index, but its composition at any valuation date in the past.

AGGREGATE STATISTICS and RETURN CHARACTERISTICS

Monthly returns and aggregate statistical data are computed as of the last business day of the month. The holding period rate of return for the Index is computed in accordance with industry standards. Market-weighted total return is comprised of prices and coupon return. All coupons are assumed to be received on the last business day of the month.

Comprehensive analytics and returns are provided for each Index as part of the supporting documentation. These will be available in tabulated format and will include those shown in Table IV:

TABLE IV. Index Returns and Statistics

<u>INDEX RETURNS</u>	<u>INDEX STATISTICS</u>
Price Return	Price
Coupon Return	Yield
Monthly Total Return (TR)	Coupon
TR Last 3 Months	Time-to-Next-Call
TR Year-to-Date	Maturity
TR Last 3 Years	Price
TR Last 5 Years	Duration
TR Last 10 Years	Convexity
TR Since Inception	

VOLATILITY INDEX and BETAS

Index and security volatilities are among the most followed measures by both traders and investors. Volatility is the singularly important indicator in the trader's decision making process. Short-term volatility "drives" the entire term structure of interest rates. It is also the most important factor affecting the value of

all derivative products. The volatility of bond prices varies among issues and in general changes over time. It is well recognized that bond price volatility is influenced by the duration and convexity of the bond. In turn, the duration and convexity of a bond are changing constantly because they are affected by maturity, coupon, market yield and call features. Obviously, maturity is changing constantly and market yields have become more volatile, which impacts the effect of the call option. Therefore, it is difficult to estimate the duration, convexity and the implied volatility for an individual bond issue or an aggregate series.

The beta of a bond or portfolio is a measure of the change in the return of the bond or portfolio relative to the change in the return of the Broad Based Index over a specific holding period [3]. The beta on the market is 1 and bonds are thought of as being more or less risky than the market, according to whether their beta is larger or smaller than 1.

The use of many portfolio management models calls for estimates of the beta of each bond that is a potential candidate for inclusion in a portfolio. Analysts could be asked to provide subjective estimates of beta for a security or a portfolio. On the other hand, estimates of future beta could be arrived at by estimating beta from past data and using this historical beta as an estimate of the future beta. There is evidence that historical betas provide useful information about future betas. Furthermore, some interesting forecasting techniques have been developed to increase the information that can be extracted from historical data. Because of this, even the firm that wishes to use analysts' subjective estimates of future betas should start with the best estimates of beta available from historical data. The analyst can then concentrate on the examination of influences that are expected to change beta in the future.

The Broad Based Index beta is set to 1.

The following Table V provides historical values of betas for a number of sector Indexes:

TABLE V. Beta values for Selected Indexes

Broad Based Index	1.
Investment Grade Index	1.01
G.O. Index	0.93
5 Year G.O. Index	0.81
10 Year G.O.	1.48
Revenue	1.07
10 Year Rev	1.25
Insured Aggregate	0.96
Non-Rated	1.05
Lehman MBI	1.59

Volatility indexes already play an important role in financial markets [13]. It has been shown time and again that an introduction of a successful index or futures contract leads to a dramatic rise in trading volume. The volatility index applications is in providing a timely estimate of the expected future volatility of a particular asset class. If an investor (fund manager) has easy access to accurate estimates of expected return and risk for a variety of asset classes, he or she can be more precise and more timely in making his asset allocation decisions, that is, in deciding the appropriate asset mix for his or her portfolio.

In addition to the above mentioned statistics we intend to provide portfolio's or Index' variance and correlation coefficient.

DESIGN APPROACH

The design approach to S&P Municipal Index capitalizes on both the unique nature of its databases as well as the modularity of the software architecture. The design separates the creation of the consolidated Index database from that of performing the Index calculations and analytics.

Each Index consolidates separate databases containing bond descriptions and pricing data. Kenny S&P is unique in that it is the only independent index provider that maintains its own bond descriptions, has its own pricing evaluation service, and has direct access to secondary market trade prices through its own brokerage affiliate - J.J. Kenny Drake. After each consolidated data file has been created, a separate processor and software modules are used to calculate the Index return, perform the Index analytics, and generate the statistical profiles.

CUSTOM INDEXES

The modular design of the Index software facilitates the construction of customized indexes which can better reflect the need of specific portfolios than broad-based indexes. The parameter selection software module has been specifically configured to design indexes according to specified parameters. For example, based on a user's specification of index size (number of issues), ratings, types of issues, states, maturity, and coupon, the selection software module selects from the starting index date the initial set of bonds which meet the specifications. At each subsequent index valuation date, the file containing the initial set of issues is first updated (issues are deleted or added as required) and the index returns and index analytics calculations are then made.

WHERE DO WE GO FROM HERE?

As we have demonstrated the municipal market is enormous in size and complexity. Our Indexes represents an attempt to describe and quantify the market and the dynamics of its changes.

Portfolio managers of a bond index fund need to re balance their assets relative to the composition, maturity, and duration of the bond market [11,12]. As we have shown, the composition of the municipal bond market changed dramatically during the 1980's. The intertemporal changes in the makeup, maturity, and duration of the bond market influence the risk and return characteristics of this market.

For the portfolio manager, trader, hedger, or speculator to use the Index he or she would have to receive and aggregate market information during the trading day, have access to the database, active market information, analyze and value individual bonds and portfolios, monitor and hedge the risk characteristics of the total firm position at any moment in time, and have a user-friendly software package based on a modified portfolio management model [2].

We would encourage the participants of this Conference to work on developing a new generation portfolio management and trading software better suited for the municipal market than those currently available.

The software would have the following functional capabilities:

- Security and Portfolio Valuation
- Risk Analysis
- Performance Analysis
- Scenario (Stress) Analysis
- Customization Utilities
- Ability to Access J.J. Kenny database

Kenny S&P strongly believes in investors' right to timely and accurate municipal market information. We believe that greater access to the descriptive and pricing information will have a beneficial effect on the whole market. The price discovery process will be more efficient. The trading level and issue liquidity will rise. Portfolio managers will be in a better position to hedge their portfolios, track the market, estimate portfolio risk, and apply scenario/stress analysis to their portfolios.

The future is already here.

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Figure 1.

S&P J.J.KENNY MUNICIPAL INDEX

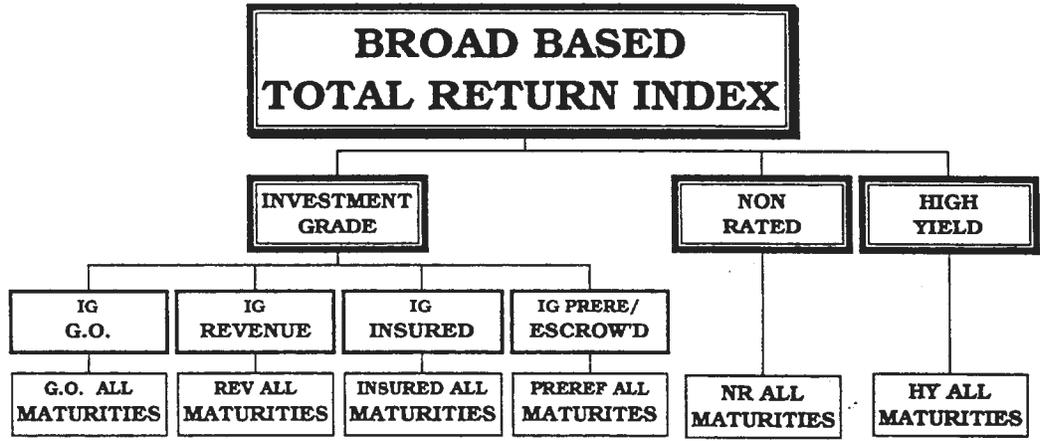


Figure 2.

MUNICIPAL MARKET STATISTICAL PROFILES: DISTRIBUTION OF ISSUES VS. REMAINING LIFE

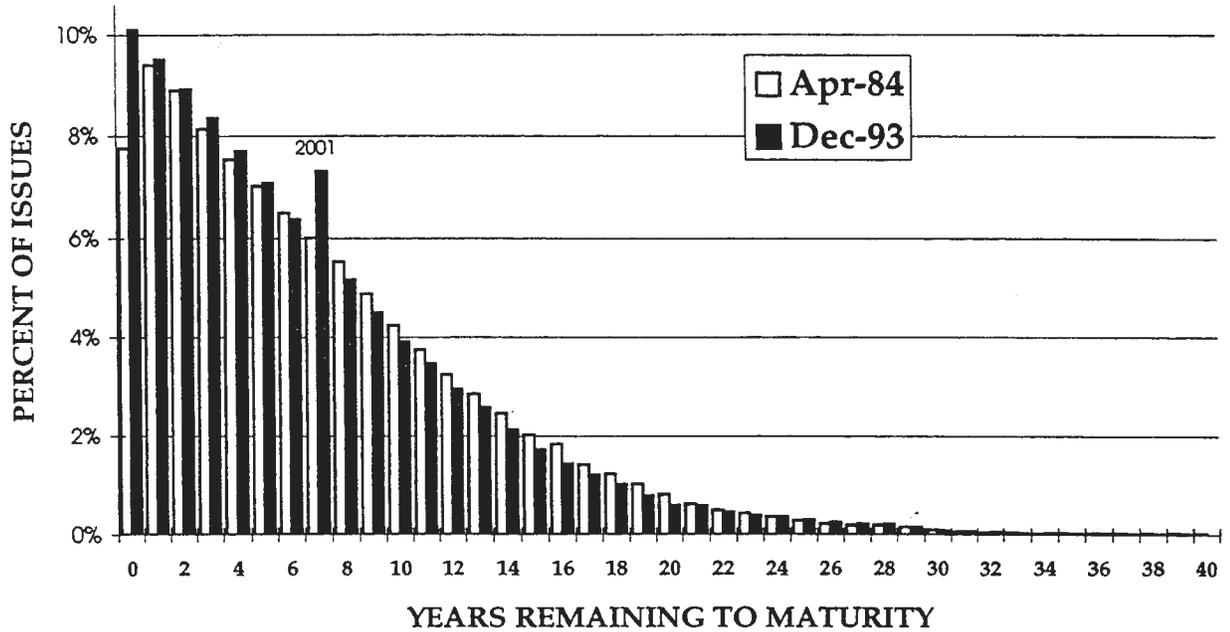


Figure 3.

MUNICIPAL MARKET STATISTICAL PROFILES: DISTRIBUTION OF TAX-EXEMPT BONDS ACCORDING TO CREDIT RATING

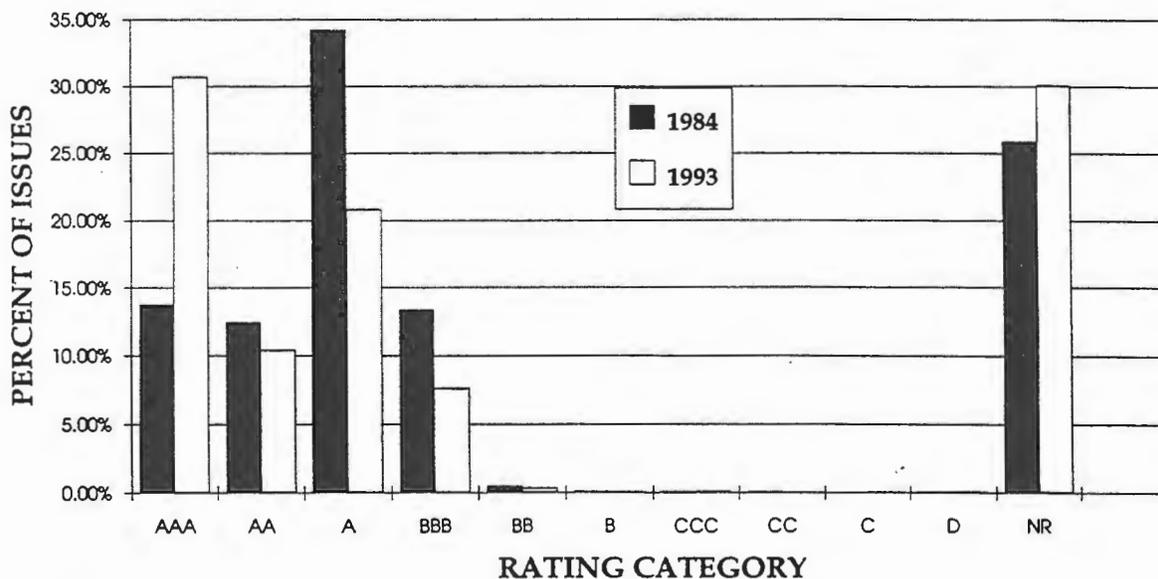


Figure 4.

MUNICIPAL MARKET STATISTICAL PROFILES

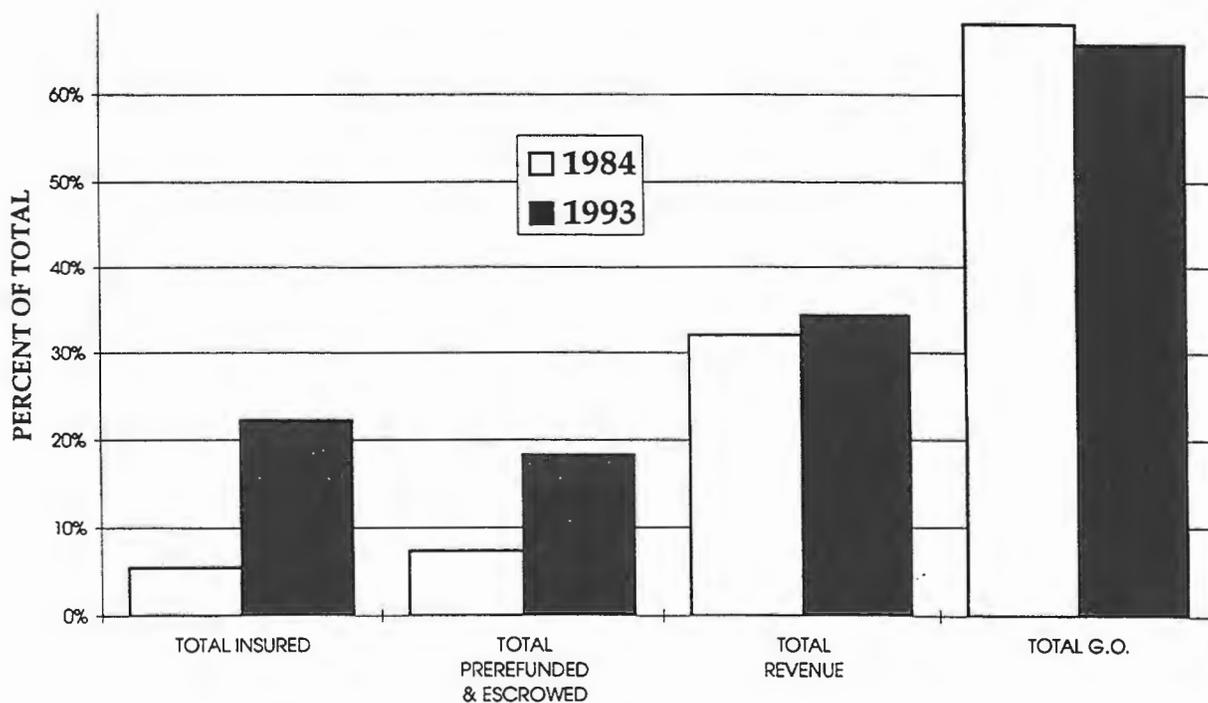


Figure 5.

DISTRIBUTIONS OF MUNICIPAL ISSUES ACCORDING TO THEIR PRICES

