

# ***The Benchmark for Bonds***

## ***Characteristics and Noteworthy Points in Using It***

**Hiroshi Ohzeki**

### Summary

For portfolio managers, benchmark indexes are yardsticks to measure management ability, and the capacity to secure returns in excess of the benchmark is one of the main targets of asset management. On the other hand, for those who entrust funds, selection of a benchmark is essential in realizing their investment objectives, and hence they should carefully consider whether the benchmark is in line with their investment philosophy.

It may not be well known that there are significant differences between bond and equity benchmarks. For example, the nature of the market price of equities traded mostly on stock exchanges and that of bonds traded mostly over-the-counter, is quite different. In addition, peculiar to bond indexes, substantial changes in the issues making up the indices is continuously seen.

This article analyses differences between bond and equity benchmarks, discusses practical problems relating to the current bond benchmark, and offers suggestions for a more efficient and reasonable bond benchmark.

### 1. Introduction

There is no question that a benchmark to measure performance is very important. For a fund management company, achieving returns in excess of the market index is a major element of value added. Japan is already in the world where, according to the president of an independent us investment company (as in an article that appeared in SAAJ's *Securities Analysts Journal*) "First is performance, second is performance, and last is performance".

However, if risk characteristics and the investment universe of a managed fund are not clear, even proper comparison with other funds is impossible. The important role of a benchmark index thus becomes clear. By using a publicly and widely known index, the risk characteristics of various funds can be shown and compared. Furthermore, investors in a fund can measure expected risk and returns against the benchmark index chosen. By sharing a common benchmark with an investment manager, clients entrusting funds can use such an index to judge the ability of investment managers.

From the standpoint of the investment manager, constructing a portfolio and achieving returns in excess of the benchmark will satisfy investor expectations, creating value added for clients. Even so, from the viewpoint of the investor it is vitally important to select an index that has the possibility of meeting his targets and which meshes with his investment philosophy.

Recognizing the importance of the benchmark, this article investigates current issues and the future of the bond benchmark. There are considerable differences between the benchmark for equities and that for bonds: whether or not efficient equity portfolio management vis-i-vis the equity benchmark holds in the case of the bond benchmark: difference in nature of market prices of equities which are mostly traded on stock exchanges and bonds which are traded mostly over-the-counter; and, in the case of the benchmark, the underlying securities comprising the benchmark change dramatically every month.

In this article, the peculiar characteristics of bond benchmarks and how they differ from equity benchmarks, and ensuing practical problems for fund management will be discussed, then desirable benchmarks for both the investor and portfolio manager will be presented, and, finally, the author will proffer some suggestions.

## 2. Characteristics Peculiar to the Bond Market

Japan's bond market contains some peculiar characteristics which illustrate the

difference in the benchmarks for bonds and equities:

- (1) At the beginning of the month, the benchmark's duration becomes longer and hence pension funds sell medium-term bonds and buy super long-term government bonds, so that the portfolio duration can be lengthened.
- (2) Some pension funds buy bonds for instant nominal profit because of the difference between the price of bonds for market deals and standard quoted prices over the counter.
- (3) Because the price of a bond goes up, few can afford to buy, hence it is left undervalued although the yield is attractive.

Although such characteristics may seem strange, bond market participants take them for granted. The phenomena mentioned above originate from essential differences between equities and bonds, such as composition and stability of the benchmarks, soundness of current prices (promising one price for a bond), and the relationship of price vis-à-vis accounting and taxation treatment.

### 3. Definition of the Benchmark Bond

The most commonly used bond benchmark is NOMURA-BPI. Bonds which satisfy the following conditions at the end of every month are included in the following month's benchmark:

- (1) Publicly offered domestic yen-denominated bonds, with fixed interest (excepting convertible bonds and warrants),
- (2) a remaining amount of one billion yen or more and remaining term of one year or longer, and
- (3) as for corporate and Samurai bonds (including all bonds issued by banks), the rating should be 'A' or higher.

Bonds which satisfy these conditions are adopted by the index and those which do not (because the remaining term is less than one year, or their credit rating is lower than 'A') are omitted.

Regarding timing of inclusion, (1) government bonds are included the month following issue, (2) bank debentures after three months, and (3) other bonds after two months. The composition of the index changes at the end of every month and remains the same for the following month.

#### 4. Instability of the Bond Benchmark

The first difference to be noted between the bond benchmark and the equity benchmark is the instability of the bond benchmark, which basically reflects the variety of bonds. In the case of common equities, it is inconceivable for a corporation to issue different kinds of equities. On the other hand, in the case of bonds, a corporation may issue several kinds with various conditions (redemption date, interest rate), which is rather common practice. In addition, as mentioned in Section 3, bonds with less than one-year maturity are excluded from the composition, which results in frequent changes. As a result, many (about 100) bond index components change every month.

##### 4.1. Monthly Change in Composition

The fundamental cause of instability in bond benchmarks is that, in contrast to equity benchmarks, the number of bonds comprising the indexes is very large (as of June 1999, about 3,300), and there are frequent changes. Though there are a few differences from index to index, most select their composition according to (1) type of issue, (2) remaining life, (3) credit rating, (4) remaining amount, etc (see NOMURA-BPI mentioned above).

Table 1 shows how the components of NOMURA-BPI (Overall) changed during May and June 1999. (The Monthly Report of the Nomura Securities Monetary Research Institute does not publish detailed changes in composition, hence estimations were made based on historical bond issues and issuance terms.)

Looking at bonds which were dropped from the May to June index, because of a shorter life, 31 bonds, including the 10-year government bond No 130 with fixed interest, were dropped. Four other bond issues were also dropped because of lower ratings. Thus, a

total of some 35 bond issues were dropped. On the other hand, some 52 issues were newly included: three government bonds issued in May (10-year No 212, two-year No 160, 6-year No 31); 40 bonds including publicly offered April issues of local government bonds, government-guaranteed bonds, and corporate bonds; and nine bank debenture issues in March. Thus, with 35 being dropped, and 52 being newly included, the index saw a change of 82 bonds, which, based on an estimated 3,264 bonds comprising the NOMURA-BPI in May means a 3% change in the composition in one month.

It is inevitable that such a change in the composition every month is at some cost to an investment fund's operations. Generally speaking, it is not known by the public that to just maintain the same portfolio composition as the benchmark is costly, whereas only a 0.1% difference in return is viewed important.

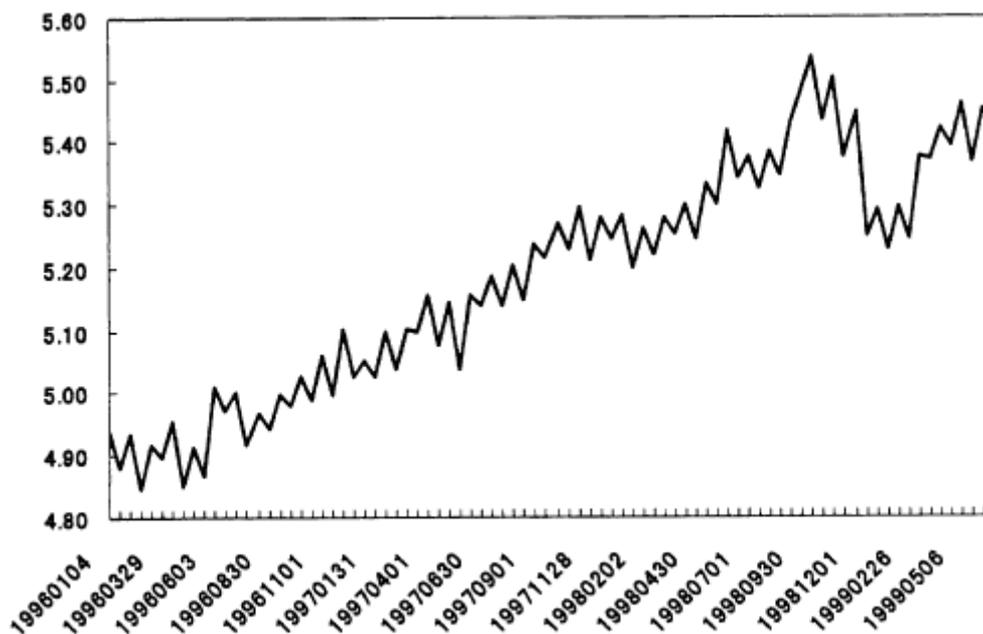
#### 4.2 Change in Duration, the Most Important Characteristic

The most important indicator of the bond portfolio may be duration that sways performance. But, if portfolio composition changes like shown above, there may be large differences in duration between the end of the month and the beginning. From 1996 until recently, the duration of NOMURA-BPI (overall) changed +0.07 (minimum, +0.02; maximum, +0.15) on average from month-end to the beginning of the following month (Table 2.1 and Chart 1).

Table 2 Change in Duration

2.1 Lengthening of Duration at beginning of the month					2.2 Natural Shortening of Duration during the month				
	1996	1997	1998	1999		1996	1997	1998	1999
Jan	N.A.	0.02	0.04	0.04	Jan	-0.06	-0.03	-0.08	-0.06
Feb	0.05	0.07	0.06	0.07	Feb	-0.09	-0.06	-0.04	-0.05
Mar	0.07	0.06	0.06	0.13	Mar	-0.02	-0.01	-0.03	0.00
Apr	0.06	0.06	0.05	0.05	Apr	-0.10	-0.08	-0.06	-0.03
May	0.06	0.07	0.09	0.07	May	-0.05	-0.11	-0.03	-0.09
Jun	0.15	0.12	0.12	0.08	Jun	-0.04	-0.02	-0.07	N.A.
Jul	0.03	0.05	0.04	N.A.	Jul	-0.08	-0.05	-0.05	N.A.
Aug	0.05	0.06	0.06	N.A.	Aug	-0.03	-0.06	-0.03	N.A.
Sep	0.06	0.09	0.08	N.A.	Sep	-0.02	-0.02	-0.05	N.A.
Oct	0.04	0.05	0.05	N.A.	Oct	-0.04	-0.04	-0.10	N.A.
Nov	0.07	0.07	0.07	N.A.	Nov	-0.06	-0.09	-0.13	N.A.
Dec	0.11	0.07	0.07	N.A.	Dec	-0.08	-0.04	-0.20	N.A.

Figure 1 Duration at Month-end and Beginning of the Following Month.



Such lengthening may be necessary for the bond benchmark to maintain interest rate sensitivity and risk-return characteristics as an asset-class, as duration of the index decreases during a month due to no change in composition during the month. However, as shown in Table 2, whereas the natural shortening of duration in April 1999 was  $-0.03$  (from 5.42 to 5.39), the benchmark lengthened  $+0.07$  (from 5.39 to 5.46) between the end of April and the beginning of May i.e. in only one day. This means bond benchmark instability was caused by the artificial rule of omitting bonds of shorter-than-one year maturity from the benchmark.

So large a change in the duration of the benchmark in one day makes it impossible for a manager, who always has to take the benchmark into consideration, to keep his portfolio rate sensitive neutral. This accounts for the practice of pension funds selling medium-term government bonds and buying super long-term government bonds to maintain the benchmark longer, as explained in Section 2 (1).

## 5. Current Price of the Bond

Another big difference between the bond benchmark and equity benchmark is what

they represent i.e. the robustness of market price. Before comparing performance, it is a prerequisite to know the current prices of bonds comprising the portfolio. In the case of bonds, which are mainly traded over the counter, the prerequisites for determining the performance of equity portfolios become rather complicated.

In the case of equities (e.g. Tokyo Electric) the same answers to questions regarding closing prices can be obtained from anybody. (Although there will be the same problem with respect to equities in the future, because of increased trading outside the market, that problem is not dealt with here). In the case of bond trading, you cannot expect the same answer to the same question. This is a problem peculiar to bond trading.

### 5.1 Bond Trading Methods and Prices

The closing price of Tokyo Electric bonds given by bond portfolio managers depends on whether they use the quotes of (1) the stock exchange (for listed bonds), (2) the Japan Securities Dealers Association, (3) respective securities houses, and (4) brokers' brokers, and they may all differ. During 1998, whereas trading on the stock exchange was ¥18,416.2 billion, over-the-counter trading (including repurchase agreements) amounted to ¥2,606,793.7 billion i.e. about 99% of trading. Therefore, the pattern of bond trading is greatly different from the trading of equities, which are mostly traded on the Tokyo Stock Exchange or others.

In the case of bonds, the percentage of those listed on the exchange is far smaller compared with equities. For example, listed bonds on the Tokyo Stock Exchange totaled 153 (excluding convertible bonds, as of end-March 1999), but order prices of 3,249 (end-May 1999) were publicly disclosed by the Japan Securities Dealers Association. Of these bonds, for which the Security Dealers Association encourages publicizing order prices of over-the-counter trading in the interest of smooth market trading, less than 5% are listed on the exchange.

Considering this pattern of trading, participants have customarily taken the prices of

bonds (except for government bonds) traded by securities houses or quoted over-the-counter as reflecting a more realistic value than current prices on the stock exchange. In addition, since December 1998, when market centralizing was abolished, even the turnover of government bonds has markedly fallen, and everyone hesitates to depend on prices quoted by the exchange.

At present, we cannot help but use over-the-counter order prices collected by the Security Dealers Association as standard current prices because they are based on over-the-counter trading prices and cover a wide range of bond prices.

## 5.2 Differences in Current Bond Prices According to Source

Although we value over-the-counter order prices as they better reflect real value than prices quoted on the stock exchange, they cannot be said to be the best as they do not necessarily show the real situation from a time-priority viewpoint.

*Bond Market of Today and its Problems* published by the Life Insurance Company Association of Japan in April 1999 indicates that the current prices of bonds based on over-the-counter order prices do not reflect up-to-the-minute changes in price and are therefore not dependable based on time series analysis of the launch spread and standard over-the-counter prices. It is apparent from Figure 2 and 3 that, despite significant changes in issue conditions at the time, standard over-the-counter prices hardly moved. Although conditions are different in the primary and secondary markets, the assessment made by the Life Insurance Company Association of Japan is undeniable, especially when considering various reports in economic newspapers, etc, as well as the author's feeling from operating in the market every day.

Looking at the problem, we must first gauge the difference by source in the current prices of bonds. Comparing the standard over-the-counter order prices of Tokyo Electric No. 4441<sup>st</sup> bonds with a remaining life of 18 years on May 31<sup>st</sup>, 1999 with those quoted by main securities dealers, the standard over-the-counter price (openly

Figure 2 OTC Order Prices Spread v.s 5-year JGBs and under

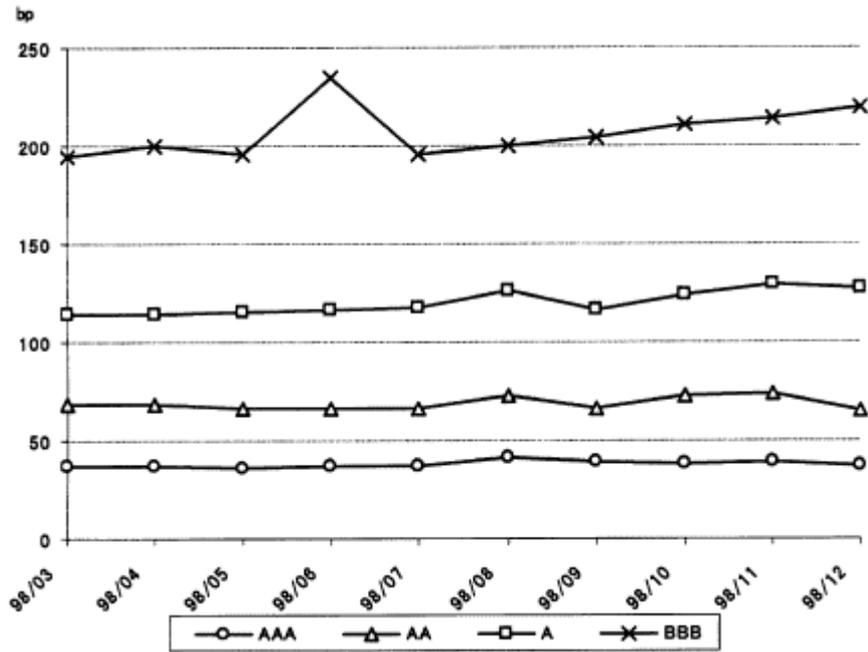
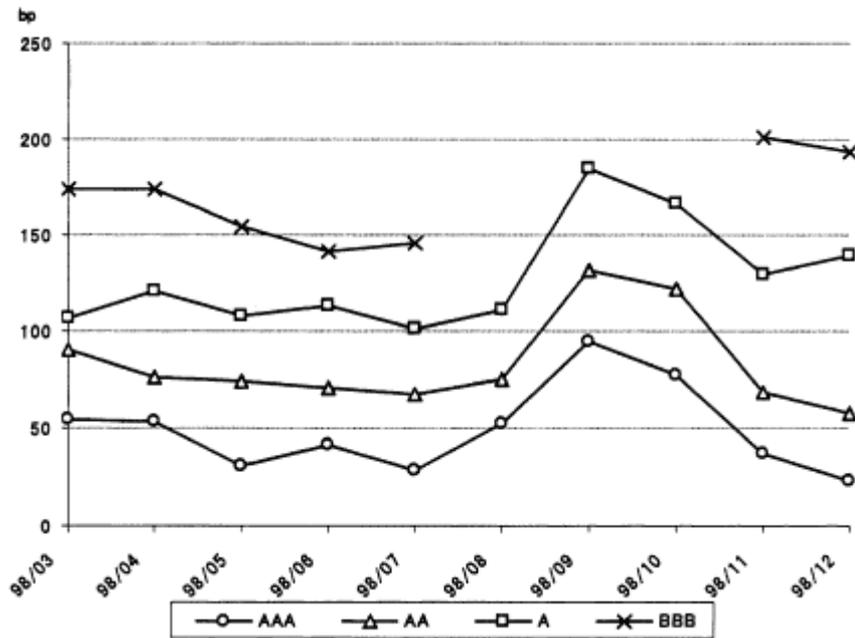


Figure 3 Launch Spread v.s 5-year JGBs and under



published) was ¥106.82 but ¥105.25 at a securities company a difference of ¥1.57, which on a yield basis is about 0.11%. This is not a small difference, but since the liquidity of Tokyo Electric bonds is rather high, the difference for long-term bonds could have been even larger.

At about the same time, the price of a publicly offered bond of a trading company with remaining life of five years was ¥91.76 on the standard over-the-counter order basis while ¥96.10 at a securities house, making for a difference of ¥4.34, or 0.92% in yield terms. The biggest difference I found concerned a yen-denominated bond of an Asian corporation: while the standard over-the-counter order price was ¥133.56, a securities company was quoting ¥68.60, a surprisingly huge difference of ¥65.

## 6. Skewness of Current Bond Prices in terms of Performance Evaluation

### 6.1 Skewness in Current Bond Prices

The last section indicated noticeable differences in the current prices of bonds. In practice, when the performance of a bond portfolio is compared with the benchmark, these price differences blur the reality, which I term the 'skewness' of current bond prices.

Needless to say, the performance of a bond benchmark is measured by current prices adopted by the index. For example, in the case of NOMURA-BPI, performance should be evaluated using current prices adopted by NOMURA-BPI. If the benchmark given to the bond manager was NOMURA-BPI, the performance of the bond portfolio managed is measured by the current prices adopted by NOMURA-BPI. Then, naturally, one may think a fair comparison can be made between the benchmark and performance.

However, I do not believe there are many cases where such a fair and correct comparison is made. As regards domestic pension fund investment, the Federation of Welfare Pension Funds requires over-the-counter order prices for bonds be used, yet adopts the NOMURA-BPI as the bond benchmark.

Of course, if an investment house uses different current prices for performance disclosure and for appraising performance, there would not be any problem. But, it is usually the case that they are mixed and the same prices based on over-the-counter

orders are used. Hence, since different current prices are used in the benchmark and the actual portfolio, results will be distorted for appraising performance against the benchmark, even though the fund was invested in the same bonds. This is what I call 'skewness'.

The situation is rather like comparing a hit of 250 yards by Mr. A with a hit of 240 meters by Mr. B, disregarding the different units of measurement used and concluding that Mr. A hit farther than Mr. B. In practice, the relationship between current prices is not fixed, like meters and yards, so the comparison is more complex.

(Solution 1: OTC standard order prices based)

Excess return over the benchmark

$$=Rotc(actual)-R_{bpi}(benchmark)$$

$$=Rotc(actual)-Rotc(benchmark) :fair\ excess\ return$$

$$+Rotc(benchmark)-R_{bpi}(benchmark): skewness$$

(Solution 2: NOMUR-BPI basis)

Excess return over the benchmark

$$=Rotc(actual)-R_{bpi}(benchmark)$$

$$=Rotc(actual)-R_{bpi}(actual) :skewness$$

$$+R_{bpi}(actual)-R_{bpi}(benchmark) :fair\ excess\ return$$

Where:

Rotc: return calculated based on OTC standard order prices

Rotc: return calculated based on NOMURA-BPI current prices

There are two solutions to the skewness problem: either appraisal of current prices is determined based on over-the-counter order prices, or based on NOMURA-BPI.

In the solutions shown above, both solution (1) or (2) use current prices based on the

same basis; thus, showing skew-free fair excess returns. If the skew error is negligible, it won't be much of a problem, but with local government bonds, on which return changes markedly compared to government bonds, the size of error is significant.

Table 3 illustrates performance for each type of bonds and the total for a two-month period from end-March 1999 to end-May 1999 based on NOMURA-BPI and also over-the-counter standard order prices. The performance of NOMURA-BPI based on over-the-counter standard order prices was published as BPI-S until November 1998, but is no longer published; therefore, NOMURA-BPI based on over-the-counter standard order prices in Table 3 is estimated.

Table 3 Performance Difference (OTC standard-BPI)

	Apr 1999	May 1999	Total
Total	-0.09%	0.04%	-0.05%
Government bonds	0.01%	-0.01%	0.00%
Local government bonds	0.00%	0.00%	0.00%
Government-guaranteed bonds	0.00%	0.00%	0.00%
Bank debentures	-0.08%	0.01%	-0.07%
Corporate bonds	-0.02%	0.04%	0.02%
Samurai bonds	0.00%	0.00%	0.00%

During just these two months, there is a skewness of 0.05% for performance of the total. The largest skewness of -0.08% was seen in April for fixed interest bank debentures. If over-the-counter standard order prices are used for appraising current prices of the portfolio and the NOMURA-BPI benchmark is used for comparison, the same portfolio comprising the same bonds is deemed 0.05% inferior, April and May cumulative to the benchmark, a very peculiar result.

The comparison of performance previously published between BPI-S (based on over-the-counter standard order prices) and NOMURA-BPI (overall) showed skewness of an average 0.08% monthly, or 0.15% yearly (Table 4). In 1995, there was an accumulated skewness of 0.30%; probably both investment managers and investors had difficulty in explaining performance vis-à-vis the benchmark.

Table 4 Performance Differense ( BPI-S-BPI )

(%)

FY	1995	1996	1997	1998
Apr	0.20	0.01	0.09	-0.05
May	-0.16	-0.20	-0.05	0.01
Jun	0.20	0.04	-0.05	0.06
Jul	0.07	0.05	-0.02	-0.04
Aug	0.03	-0.17	0.00	0.11
Sep	-0.17	0.08	0.06	0.12
Oct	0.10	-0.10	-0.04	-0.09
Nov	-0.08	-0.06	0.07	0.02
Dec	0.27	0.15	-0.01	N.A.
Jan	0.03	-0.15	0.00	N.A.
Feb	0.02	0.13	-0.04	N.A.
Mar	-0.24	0.00	0.03	N.A.
Total	0.30	-0.22	0.05	0.13
Avg.	0.02	-0.02	0.00	0.02
Avg of absolute values	0.12	0.10	0.04	0.06

## 6.2 Portfolio Managers Gainfully Using the Difference in Current Prices Due to Different Sources

Some pension investment managers prefer to purchase a certain bond because a profit can be immediately gained due to the difference in current market price and the over-the-counter standard price. This is the case when the investment manager takes advantage of the difference in the current prices of bonds according to source in a reverse way. Specifically, they purchase bonds of which the current market price is much cheaper than the over-the-counter standard order price. If the portfolio is appraised by the over-the-counter standard order price, unrealized capital gains immediately arise regardless of market movements. If one buys a bond whose market price is ¥5 cheaper than the over-the-counter standard order price, one gets ¥5 hidden profit, even though there was no movement in the price of the bond. As a result, the performance of the day will be higher vis-à-vis the benchmark. In reality, the investment manager did not buy the bond when it was cheaper, nevertheless, his performance is appraised as if he got a good buy.

The effect of such a measure will be temporary, and is not essential from the viewpoint of improving the performance of the fund because if the over-the-counter standard order price converges to the market price, the profit registered on the day the bond was

bought will gradually be erased. Of course, most bond portfolio managers would not manage funds in the way just described. Here, I simply want to assert that such trading could be induced because of the difference or deviation in current prices according to source.

## 7. Suggestions for Better Bond Benchmarks

### 7.1 Solutions for Skewness

As explained, there are differences in current bond prices according to the source of information. This causes unfair performance appraisal both for investors and investment managers.

The solution is basically very simple (see solutions in Section 5), either the actual portfolio or the benchmark should be calculated according to the current price based on over-the-counter standard order prices (Solution 1 <Equation?>) or NOMURA-BPI based current prices should be used throughout (Solution 2). The remaining problem is to decide which standard to select, bearing in mind which current prices reflect market prices more precisely, and which are better with respect to the availability of precise information for market participants.

There are two problems when the over-the-counter standard order price is used as a measure for performance appraisal. First, it is necessary to give more precise current bond prices as stated in *Present State and Problems of the Bond Market* (1989) by the Life Insurance Association of Japan. Second, corporations that produce indexes should be asked to produce accumulated investment return indexes based on over-the-counter standard order prices. Nomura Securities published accumulated investment yield indexes (NOMURA-BPI-S based on over-the-counter standard order prices for bonds comprising NOMURA-BPI) until end-1998. The author does not know why publication was terminated, but it is regrettable, given that the Federation of Welfare Pension Funds used the over-the-counter standard order price as the standard for current price appraisal, because a fairer comparison of performance using BPI-S can be made than

with the total NOMURA-BPI index.

On the one hand, if current prices based on NOMURA-BPI are used as a standard measure, there is only one problem – more detailed information is required. To develop indexes acknowledged by the market will be a very important strategic target for securities house management. On the other hand, indexes are market infrastructure, so to speak, for investors and investment managers as well as those who appraise performance. Being private enterprises, there may also be a problem of who bears the cost.

Yet, like over-the-counter standard order prices, if the composition of bonds and their characteristics, and current prices are available via the Internet or information vendors, it will enhance the benefits for all participating in the market.

With the introduction of mark-to-market accounting in sight, the selection of fair current bond prices is of grave concern, not only for investment managers relying on benchmarks, but also others involved in bond market operations. Regarding fair price, extensively used in financial standards based on current prices, it is preferable to use over-the-counter standard order prices compiled by the Securities Dealers Association of Japan rather than a corporation's prices, while seeking the improved precision of the former with respect to performance appraisal.

## 7.2 Toward elimination of instability in benchmarks

There are several solutions to the question. Bearing in mind that the cause of the instability is basically the changes in many issues comprising a benchmark, the key is to reduce such change while avoiding practical problems resulting from such a reduction. For example, the scope of bonds to be included in a benchmark could be made narrower, or bonds with less than one year to maturity could be kept in a benchmark.

Reasons for excluding bonds with less than one year to maturity are: such bonds are

considered to be short-term instruments rather than bonds; the liquidity of such bonds is relatively low, and redemption charges for some of the issues are reflected in their pricing, making proper evaluation of current prices difficult.

However, selling a bond only because its maturity has fallen below one year while buying another bond with a longer term to maturity, a custom seen among some pension funds, would simply mean a loss equivalent to transaction costs for pension plan sponsors. Alternatively, even under the current benchmark, bonds with less than one year to maturity can be kept in the portfolio if plan sponsors treat such bonds as cash equivalent for the purpose of internal management. This would be preferable both in terms of transaction costs and the effective investment of short-term funds. The author thus recommends plan sponsors, whose portfolios often see switches as mentioned above, to consider such an alternative.

### 7.3 Toward increasing the accuracy of the current prices of bonds

As was touched upon in the discussion of “Skewness of current bond prices”, it is indeed welcome and positive for all bond market participants that the Japan Securities Dealers Association is trying to enhance the accuracy of current bond prices. Based on its *On improvement in the disclosure system of over-the-counter standard order prices (Outline)* released on May 24, 1999 and effective from the following day, the Securities Dealers Association began disclosing highs, lows, and the number of reporting dealers (Table 5).

Table 5 OTC Order Prices ( Sample from data on May 28, 1999 released )

Bland	Redemption date	Interest rate	Standard OTC order prices			simple interest	Highs		Lows		Reporting houses
			Unit cost	daily change	Compound interest		Unit cost	Yield	Unit cost	Yield	
Long-term government bonds 199	2007/12/20	2.2	107.52	-0.59	1.270	1.229	107.68	1.210	107.17	1.271	37
Super long-term government bonds 41	2019/ 3/20	1.5	87.53	-1.16	2.286	2.432	89.66	2.255	87.09	2.470	37
Tokyo Metropolitan bonds 549	2009/ 5/25	1.7	99.57	-0.63	1.747	1.750	100.81	1.605	98.98	1.820	27

Needless to say, without continuous efforts by securities dealers, improvement in the

accuracy of over-the-counter standard order prices cannot be achieved by the Association alone. As pointed out in the report of the Japan Insurance Association, more accurate current market prices of bonds will increase market participants' credibility and confidence in the bond market, which will then enhance market activity. It is thus hoped that the Securities Dealers Association will take strong measures against dealers who lack proper understanding of the importance of the current market prices of bonds e.g. eliminating them from the list of dealers reporting prices to the Association.

#### 7.4 Appropriateness of adopting an overall index

Many of the problems (difference in current market prices by source and impossibility of building a portfolio with exactly the same characteristics as benchmarks from new cash inflows) associated with bond benchmarks and discussed in this article are due to the fact that such benchmarks are overall indices. Another possible solution could therefore be adopting a simpler index as the benchmark.

Historical data indicate that the performance of the simplest index consisting of only government bonds is not necessarily inferior, in terms of performance, to overall bond indices (Table 6). A possible application would work as follows:

Table 6 Comparison of Performance between NOMURA-BPI Overall Bond Index and Government Bond Index (%)

FY performance (%)				Cumulative performance			
FY	Overall bonds	Government bonds	Overall bonds -Government bonds	FY	Overall bonds	Government bonds	Overall bonds -Government bonds
1984	7.60	7.75	0.15	1984	7.60	7.75	0.15
1985	13.70	14.93	1.23	1985	10.61	11.28	0.68
1986	9.97	9.86	-0.12	1986	10.40	10.81	0.41
1987	3.86	3.62	-0.24	1987	8.73	8.96	0.24
1988	2.85	2.17	-0.68	1988	7.52	7.57	0.05
1989	-4.19	-6.01	-1.82	1989	5.48	5.18	-0.30
1990	8.56	9.00	0.44	1990	5.91	5.71	-0.20
1991	12.02	12.76	0.74	1991	6.66	6.57	-0.09
1992	9.88	11.09	1.21	1992	7.01	7.06	0.05
1993	7.50	7.83	0.33	1993	7.06	7.14	0.08
1994	6.74	6.99	0.25	1994	7.03	7.13	0.10
1995	6.46	7.27	0.81	1995	6.98	7.14	0.16
1996	6.74	7.18	0.44	1996	6.96	7.14	0.18
1997	4.69	5.34	0.65	1997	6.80	7.01	0.21
1998	2.88	2.94	0.06	1998	6.53	6.74	0.20

Having a government bond index as the benchmark, other bonds such as corporate bonds are included in the investment universe. In this case, portfolio managers will not invest in corporate bonds, etc. unless they foresee a good chance of achieving excess returns from such bonds. At present, there are investment managers who include corporate bonds, etc. in their portfolios because the benchmark includes corporate bonds, etc. even if the spreads of such bonds over government bonds are not attractive enough. It could thus be an idea to adopt a government bond index as the benchmark and to evaluate performance from investment in other bonds by seeing whether the investment manager earned some alpha from such investment.

Of course, selection of a benchmark is of the essence to meet the investment objectives of those entrusting funds, and a benchmark does represent their investment objectives and investment philosophy. Therefore, adopting any new approach requires a serious and thorough review.

A new trend in this regard is the proliferation of customized indices. Semi-customized indices of NOMURA-BPI, together with investment return indices and characteristics of the indices, are being disclosed. This is an encouraging move because it is evidence that an increasing number of pension plan sponsors have begun seriously seeking the most appropriate benchmarks for themselves.

## 8. Conclusion

In addition to problems and solutions regarding bond benchmarks, there are other important topics which should be discussed e.g. whether the concept of the efficient investment put forward by modern portfolio theory would hold for bond indices i.e. it may be the case that there is some tendency toward adverse selection in the bond market, such as increasing long-term fund raising when rates are low and short-term financing when rates are high (Chart 1).

This article discussed the author's view about, among many potential topics, truly

desirable benchmarks for both clients and investment managers from the viewpoint of a practitioner (and market analysis) engaged in bond portfolio management. It will be easy to solve some of the problems discussed in this article as long as those concerned decide to make a change. Others will be more difficult. Some argument in this article may appear a little too extreme. However, the fundamental aims of this article are to seek better investment practices and benchmarks that will contribute to improved investment understanding. It is the hope of the author that this article, together with various comments on it, will prove of use for the development of the evolution of the bond market.