Analysis Related to Corporate Composite Rate

At our February 6 meeting with Treasury department officials, a number of questions and issues were raised with respect to high quality long term corporate bonds, and the indexes appropriate for determining a composite rate. The following is a summary of the issues raised at the meeting, along with data that may facilitate resolving them.

Non-US Bonds

The issue relates to the extent that these are included in the bond indexes, and the effect of their inclusion on index results. Any index labeled "credit" tends to have some percentage of non-U.S. and non-corporate bonds included. These are bonds at the appropriate quality level, but issued by non-U.S. corporations, or foreign government agencies. Only indexes labeled "corporate" are restricted only to corporate issues, and even these typically include issues of non-U.S. corporate entities.

First, it may be helpful to define some terms: a foreign bond is a bond issued in a country's national bond market by an issuer not domiciled in that country and where those bonds are subsequently traded. In the United States a foreign bond is a bond issued by a non-US entity and then subsequently traded in the U.S. bond market. Foreign bonds issued and then traded in the United States are nicknamed Yankee bonds. Yankee bonds are bonds issued by foreign-domiciled issuers who register with the SEC and borrow in US dollars via issues underwritten by a US syndicate for delivery in the United States. Yankees include both corporate and non-corporate issues. Issuers of foreign bonds in the U.S. market include national governments and their subdivisions (e.g., Canada and its provinces), corporations, and supranational agencies (e.g., the World Bank).

In order to quantify the effect of including non-corporate bonds, we looked to two Citigroup indexes that have essentially parallel mandates. For our purposes, there are two relevant sub-indexes of their BIG index -- High Grade Credit and High Grade Corporate. A comparison of the yields to maturity (at six-month intervals over the past 2 1/2 years) indicates that the corporate version provides consistently higher results than the credit version. In other words, the addition of the foreign (non-U.S.) government bonds at this quality level reduces the average yield.

	Citigroup High Grade Credit	*Citigroup High Grade Corporate*	*Difference*
6/30/01	7.02	7.10	.08
12/31/01	6.86	6.98	.12
6/30/02	6.59	6.80	.21
12/31/02	5.79	5.99	.20
6/30/03	5.16	5.40	.24
12/31/03	5.68	5.79	.11
average			.16

The Citigroup High Grade Credit index as of 12/31/03 consists of 67% U.S. issues and 33% non-U.S. issues (market value weightings). About 3/4 of these non-U.S. issues are government-related, the remainder are bonds of non-U.S. corporations. The Citigroup High Grade Corporate, a subset of the Credit index, excludes the government-related issues, but includes the non-U.S. corporate issues, which then make up roughly 7% of that index.

We were also able to gather some information with respect to the composition of the Lehman Long Credit index as of 12/31/03. (This is the broader index, of which the Aa Long Credit index used in the ERIC composite is a subset.) The bond portfolio consists of 15% non-corporate issues (again, market value weighted). The non-corporate issues had an average yield that was

24 basis points lower than the average yield for the overall index. At least directionally, this supports the result from the Citigroup indexes, and allows us to state with confidence that credit indexes generally show lower yields than similarly constructed corporate indexes.

Call/Put Option Effects

In order to roughly quantify the possible impact of option provisions, we gathered yield to worst information from three of the index providers, and compared these to their yield to maturity rates as of the same measurement dates. (We understand that the fourth index -- Moody's -- does not calculate a YTW.) The results indicate that even measuring the option effects by yield to worst, which typically overstates the effects, the differences are only about 10 basis points on average.

	Lehman Aa Long Credit			*Citigroup High Grade Corporate*			*ML 10+ High Quality*		
	YTM	*YTW*	*Gap*	*YTM*	*YTW*	*Gap*	*YTM*	*YTW*	*Gap*
EOY 1999				7.84	7.84	.00	7.76	7.71	.05
EOY 2000	7.37	7.35	.02	7.25	7.21	.04	7.30	7.25	.05
EOY 2001	6.86	6.75	.11	6.98	6.87	.11	6.88	6.81	.07
EOY 2002	5.80	5.63	.17	5.99	5.66	.33	6.00	5.76	.24
EOY 2003	5.53	5.46	.07	5.79	5.66	.13	5.84	5.75	.09
			.09			.12			.10

The approximation of option effects by the gap between YTM and YTW has the following flaws, which make it something of a worst case measure of option effects: (1) it ignores the offsetting effects of put options, and (2) it ignores the expected trend and volatility with respect to the level of future interest rates. This last factor implies that the YTW-based measure of call option effects will tend to be particularly overstated when interest rates are at historically low levels and presumed to be headed upwards in future years.

We also analyzed the 20 bonds that comprise the Moody's portfolio at 12/31/03, and found the following:

-- one bond (SW Bell) with a meaningful call option, and an above market YTM (6.69)
-- one bond (Wisc. Bell) with a meaningful put option, and a below market YTM (5.37)
-- six other bonds callable with make whole provisions (all had below average YTMs)
-- five other nominally putable bonds with expired put options.

Note that the yield to maturity for the full index as of 12/31/03 was 6.01%.

Average Maturities

The issue relates to the stability of index characteristics over time. The concern relates both to the past history needed to create the four-year average yields and also to changes that might occur in the future.

We were able to obtain average maturity statistics for three of the four indices as of each year-end since 1999. For the remaining index, Moody's Aa, we have obtained average maturities at two year-end dates.

	Lehman Brothers Aa Long Credit	*Citigroup High Grade Corporate*	*Merrill Lynch 10+ High Quality*	*Moody's Aa*
EOY 1999	24.9	26.3	28.0	
EOY 2000	24.5	24.8	25.5	
EOY 2001	25.0	21.8	25.1	29.7
EOY 2002	23.6	24.2	24.6	
EOY 2003	22.8	23.2	22.2	32.0

The average of modified duration measures (a proxy for interest rate sensitivity) for these four bond portfolios currently fall within the range of 11-13. This compares quite well to the typical range of modified durations for pension plan liabilities, which we would measure at roughly 11-15. (This range relates to plans with a majority of inactive participants on the downside and plans with a majority of active participants on the upside; and is measured based on current interest rates.)

Broader Array of Indexes
The issue is whether additional indexes would meet the stated criteria, beyond the four that ERIC selected for its composite rate proposal.

We surveyed investment consultants and bond market experts at two different firms with regard to which fixed income indexes meet our criteria. They identified the same set of investment firms and indexes that ERIC has already proposed. It should be noted that some of the firms publish a few variations on the selected indexes, e.g., Citigroup Long Credit and Merrill Lynch 15+.

Alternative Approach Employing Option Adjusted Spreads
The issue is whether an approach based on the sum of the calculated OAS factors added to long Treasury yields would serve as an appropriate alternative to (actual) corporate bond indexes.

There seems to be some variety in terms of how these rates are calculated, and which Treasury yields they are added to. For one of the investment firms, the OAS rate is added to the yield on "off the run" Treasury bonds, with a bottom-line result that averages only a few basis points lower than the published yield to maturity for their high quality long corporate bond index.

However, it should noted that even if this approach provides comparable results, there are significant disadvantages compared to the more straightforward approach of utilizing yields on published corporate bond indexes. OAS calculations are based on undisclosed formulas that include numerous subjective elements, which implies reduced transparency with respect to the determination of the composite rate.

Weighting of Individual Bond Yields
We have determined that only Moody's based their rate on a simple arithmetic average of the various incorporated bonds, and even their index is weighted seperately by two industry categories. The other three indexes employ a market value-weighting approach.

Past History of YTM Rates for Lehman Aa Long Credit
We understand that Lehman only began calculating yield to maturity rates for this bond index in August 2000.

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