

40 Broad Street  
New York, NY 10004-2373  
Telephone 212.440.9400  
Fax 212.440.5260  
www.bondmarkets.com

Washington Office:  
1445 New York Avenue, NW  
Washington, DC 20005-2158  
Telephone 202.434.8400  
Fax 202.434.8456

European Office:  
25 Old Broad Street  
London EC2N 1HN England  
Telephone 44 20 78 77 20 80  
Fax 44 20 78 77 20 88



***TREASURY DEBT MANAGEMENT POLICY PAPER: 2001-02***

**THE TREASURY STRIPS MARKET: THE ORIGINS AND NATURE OF  
CURRENT STRIPS LIQUIDITY PROBLEM**

**By  
THE PRIMARY DEALERS COMMITTEE  
Of  
THE BOND MARKET ASSOCIATION**

*“Any effort to improve zero coupon liquidity would enhance market participants’ efforts to reconstitute longer-dated issues and increase the potential pool of debt that could be offered in the buyback program.”*

Source: Report of the Treasury Borrowing Advisory Committee (August 2000).

**I. Introduction**

The Bond Market Association’s (“TBMA”) Primary Dealers Committee (“Committee”)<sup>1</sup> is pleased to present the U.S. Treasury Department (“Treasury”) with this paper identifying the nature and origins of some of the problems with the current Treasury STRIPS<sup>2</sup> market. This paper describes the current conditions in the Treasury STRIPS market, how the present liquidity crisis developed, and why the problem persists. The paper goes on to discuss some of the long-term implications of an illiquid STRIPS market before concluding that Treasury and U.S. taxpayers would benefit substantially if the Treasury Department were able to help alleviate the STRIPS liquidity problem.<sup>3</sup>

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<sup>1</sup> The Committee is made up of senior representatives from the primary dealers in United States government securities whose name appears on the “List of the Government Securities Dealers Reporting to the Market Reports Division of the Federal Reserve Bank of New York” and inter-dealer brokers who serve as conduits between Primary Dealers in the Treasury and federal agency securities markets.

<sup>2</sup> STRIPS is the acronym for Separate Trading of Registered Interest and Principal of Securities. The Treasury STRIPS program was first introduced in February 1985, and it allows investors to hold and trade individual interest and principal components of eligible Treasury notes and bonds as separate securities.

<sup>3</sup> The Committee plans to follow up this paper later this year with an additional paper containing a set of specific policy recommendations that the Committee believes will facilitate an overall improvement in STRIPS liquidity and the ability of market participants to reconstitute Treasury bonds.

## **II. The Problem**

The Committee believes that a reduction in the available supply of TINTs<sup>4</sup> has greatly reduced overall liquidity in the STRIPS market. Indeed, under current market conditions, most TINTs at the short (or front-end) of the yield curve rarely, if ever, trade. One of the simplest demonstrations of the recent growth of demand for and reduced availability of TINTs is an examination of the historical yield spread between TPRNs and TINTs of the same maturity (see Figure 1). As Figure 1 indicates, over the last seven years, TPRNs have rarely yielded more than a few basis points (“bps”) above TINTs. However, in 2000, the relative spread widened considerably, to 20 to 50 bps.<sup>5</sup>

## **III. Origins of the STRIPS Liquidity Problem**

STRIPS have historically been used by investors who need to invest cash today in a manner that provides for a predictable cash flow at some specific point in the future, i.e., to match an asset to a particular future liability. Strong demand for short-maturity zeros including TINTs has generally come from municipal defeasance escrows and individual investors who are saving for specific expenses (e.g., a child’s future college expenses.) As explained below, these investors have historically tended to hold these TINTs and other STRIPS until maturity.

Pension funds, insurance companies and state lotteries are also attracted to STRIPS for specific asset/liability matching. In addition, money managers often use STRIPS in targeted duration portfolios that are managed against a STRIPS-based index. The portfolios of many of these investors contain STRIPS that are likewise unlikely to be sold because there are few zero-type products available to serve as a comparable investment. Indeed, as with certain other investment assets, tax and accounting constraints often serve to make these assets unavailable over time.

In short, the manner in which investors have used TINTS and other STRIPS has led to many STRIPS becoming “locked up” in investment portfolios. As a result, many of these instruments remain permanently unavailable to market participants for use in the reconstitution of bonds for buybacks or other purposes.

### **A. Municipal Defeasance Programs**

Municipal defeasance programs have purchased substantial amounts of STRIPS over the years. In particular, in the early 1990s, the sharp decline in interest

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<sup>4</sup> The interest component from any Treasury bond or note is commonly referred to as a TINT while the principal component from a non-callable Treasury bond or note is referred to as a TPRN. The principal component of a callable Treasury bond or note is called a TCAL.

<sup>5</sup> While it is true that that this spread has narrowed in recent months, TINTs still remain quite rich to TPRNs overall.

rates made it very attractive for state and local governments to pre-refund their outstanding high-coupon debt obligations. As a result, short TINTs and TPRNs were frequently purchased by state and local governments during this period for use in so-called escrow (or defeasance) portfolios.<sup>6</sup> Existing market data shows that there was an enormous amount of this pre-refunding activity in the early 1990s.<sup>7</sup> While short TINTs were initially purchased by municipalities for these escrow accounts (because they were cheaper than TPRNs<sup>8</sup>), demand for short TINTs became so great that TINTs richened considerably in price and short notes began to be stripped instead (i.e. TPRNs began to be used instead) to provide any needed cashflows.

## **B. Demand from Investors**

During the same period, individual investors bought zero coupon investments as a means of saving for specific expenses like future education costs. As noted above, these STRIPS tend to be held by retail investors until they mature regardless of any later richening in their price. These investments can include both long and short maturities.

The STRIPS liquidity problem is particularly acute with respect to November TINTs because many individual investors have had a preference for November maturities. In the early 1990s, TINTs were cheaper than TPRNs. Therefore, where both TINTs and TPRNs existed of the same maturity, TINTs were the zero of choice. Today, many TPRNs are cheaper than the TINTs because of the TINT reconstitution demand. Furthermore, for some maturity years, the November TINTs may still be in demand (e.g., there may be no November TPRNs).<sup>9</sup>

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<sup>6</sup> In an advance refunding transaction, a new municipal bond is issued and the proceeds are simultaneously used to purchase Treasury securities that “defease” or provide for the payments (coupons and call price) on the higher-coupon bond until the first call date (typically 10 years from original issue date). Often, the Treasury securities used in these defeasance portfolios have been non-marketable Treasury issues known as the State and Local Government Series (“SLGS”). However, in the early 1990s, the steepness of the Treasury yield curve contributed to making marketable Treasury securities, including STRIPS, more economic investments for municipalities than SLGS. As a result, the collateral that was used was predominantly Treasuries, especially STRIPS.

<sup>7</sup> For instance, municipal issues classified as advance refunding transactions totaled \$41.4 billion, \$92.4 billion and \$150.2 billion in 1991, 1992 and 1993, respectively.

<sup>8</sup> In the early days of the STRIPS market, flows were dominated by demand for long zeros. The shorter TINT cash flows that were necessarily produced did not find ready demand and cheapened as a result. Short notes were not stripped until the municipal defeasance demand surfaced.

<sup>9</sup> Conventional market wisdom holds that individuals have a preference for November maturities because they typically have the lowest dollar price of issues maturing in the same calendar year. Existing market data seems to support this conclusion. Figure 2 compares the yield of November TINTs to the average of the neighboring August and February TINTs. As indicated by the attached chart, November TINTs generally trade richer in price than other TINTs, but this richness has recently increased to extreme levels (10 bp in shorter maturities and 5 bp in longer maturities). In fact, the relative richness of November maturities exists out the curve to 15 years.

#### **IV. Recent Developments in the TINTs Shortage**

The scarcity of short TINTs recently became more acute for a number of reasons. On a very fundamental basis, the current shortage of short TINTs is directly related to the decline of TPRNs outstanding. The stripping of long bonds creates TINTs all along the curve, and likewise the long bond reconstitution process requires the use of TINTs all along the curve. Any new reconstitution activity in the long-bond sector can materially decrease the supply of short TINTs and, therefore, richen the cost of particular TINTs. Therefore, one must consider the supply and demand characteristics of long zeros and the changes in such supply and demand created by the reconstitution process in order to fully grasp the reasons for current TINT scarcity problem.<sup>10</sup>

As an example, one can look at the impact last year of reconstitutions arising from the buyback process. Obviously, \$20 billion of net reconstitution in 30-year Treasury bonds in 2000 required a sizable supply of TINTs. Why did we see such strong net reconstitution in the bond sector for the first time? The Committee believes that there were three contributing factors:

##### **A. Reconstitutions Driven by Treasury's Buyback Program**

First, Treasury initiated its buyback program during the year, and a sizable portion of the \$30 billion in long bonds Treasury repurchased were likely to have been bonds reconstituted from STRIPS. This conclusion is supported by the data in Figure 4 which shows the correlation between reconstitution/stripping activity in a particular issue and how much of the issue the Treasury has actually repurchased. As demonstrated by Figure 4, dealers have on average reconstituted at a 50 percent ratio the amount of bonds that have been repurchased. More importantly, the bonds that were repurchased the most were reconstituted on a one for one basis last year.<sup>11</sup>

##### **B. The Inverted Yield Curve**

Second, the normal pattern in the STRIPS market is that aged and shorter original-issue-30-year bonds tend to experience an overall net reconstitution while more recently issued and longer 30-year bonds tend to be net stripped (see Figure 5).<sup>12</sup> However, this pattern was broken in 2000 because of the inverted yield curve lowered demand for long-duration zeros.

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<sup>10</sup> Figure 3 graphs the amount of original issue 30-year non-callable Principal STRIPS outstanding since 1989. Because 2000 was the first year in the existence of the STRIPS program in which a sizable amount of reconstitutions occurred (\$20 billion), it is not surprising that the market experienced dramatic richening of shorter TINTs during that period.

<sup>11</sup> These heavily repurchased bonds were the August 2020s, the February 2019s, the November 2022s and the May 2020s.

### **C. Brady Bond Exchanges**

Third, several major Brady Bond exchange programs were undertaken in 2000. This led to an overall addition of TPRNs to the market.<sup>13</sup> It is estimated that over \$40 billion in Brady Bonds originally utilized marketable STRIPS as collateral, most of which were purchased in the market in 1993 and 1994. However, in the late 1990s, Brady Bond issuers began to buy back or exchange their outstanding Brady Bonds for uncollateralized borrowings. It has been estimated that more than half of the collateral originally used in these issuances has now been returned to the market with approximately \$8 billion returned in 2000. Return of the zero collateral is likely to add to overall reconstitution demand and/or reduce new stripping activities.

### **V. The Problem Will Persist**

Those who are inclined to view the current STRIPS problem as temporary might take comfort in the fact that today short maturity TINTs are not nearly as expensive as they were in mid-2000. However, while they are not as expensive as they have been, they are still quite difficult to obtain. This phenomenon raises a legitimate question as to whether the current scarcity of short TINTs is merely a temporary problem.

- The Committee believes that the current illiquidity will persist and probably get much worse - assuming that the size of new Treasury issuances keeps on declining and the buyback program continues. The Committee has concluded that the current situation is likely to remain difficult for the following reasons:
- Under the assumption that the Federal budget surpluses continue, Treasury is likely to continue its 30-year buyback program, creating ongoing demand for reconstituted bonds. At the same time, the new supply of 30-year bonds

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<sup>12</sup> The fact that many short TINTs were included in municipal defeasance portfolios and other non-trading portfolios has long been an issue for the STRIPS market; however, not to the degree that has arisen in the last year. From 1994 to 1999, the total amount of 30-year TPRNs outstanding was relatively constant (See Figure 3). Thus, it might seem that during that period new stripping of 30-year bonds could have provided the TINTs needed for reconstitution of other 30-year bonds. But, since interest rates have declined over the last 15 years, the shorter 30-year bonds being reconstituted have higher coupons than the longer 30-year bonds being stripped. Thus even a stable amount of 30-year TPRNs outstandings implies a net reduction in the supply of TINTs (which has occurred in longer maturities). Since the mid 1990s, dealers have often needed to strip short maturity 10-year notes and old 20-year bonds to obtain the TINTs needed for bond reconstitution.

<sup>13</sup> In the early 1990s, restructuring of bank loans to developing countries resulted in certain bonds being issued (so-called Brady Bonds) that were collateralized by Treasury zeros.

is not likely to keep pace, therefore reducing the overall supply of new long securities available for stripping. As a result, it is likely that the reconstitution of shorter bonds will no longer be offset by stripping of longer bonds, a phenomenon that has previously helped maintain equilibrium in the STRIPS market.

- There still remains an estimated \$10-15 billion of TPRNs collateral backing Brady Bonds. Some of this collateral is likely to be returned to the market in the near future. For example, Brazil recently completed a new exchange offer for some of its outstanding Brady Bonds. This trend will undoubtedly create even more demand for TINTS to be used in the reconstitution process.
- Creating the needed TINTs by stripping short notes or even bonds is not always an efficient or easy solution. First, a large par amount of front-end TPRNs (which are of no use in a bond reconstitution) are created to get a small par amount of the needed TINTs. Second, the stripping of one long bond to reconstitute another long bond ultimately only postpones the day of reckoning for the Treasury.
- The scarcity of November TINTs is likely to remain a problem. The difficulty of obtaining November TINTs currently exists out to at least the 2014 maturity, and this may ultimately be one of the biggest problems for the STRIPS market.
- Nearly all collateral used in the early 1990s municipal defeasance portfolios had maturities of 2003 and earlier. As a result, the richness of the shortest TINTs may ease somewhat after these securities mature. However, some defeasance portfolios were constructed with maturities beyond 2003 and some STRIPS collateral is currently leaving the market in what appears to be a new defeasance wave. If the Treasury eliminates its SLUGS program, as some have suggested, there will be even more demand for this sort of collateral.
- Finally, the more time passes since a security's original issuance (or creation in the case of STRIPS), the greater the percentage of such issue that is likely to end up in the non-traded portions of portfolios. Thus, issues not yet in escrows or retail hands will eventually become locked up.

## **VI. The Long -Term Implications of an Illiquid STRIPS Market**

The reduction in the available supply of TINTs has fostered a number of fundamental problems that should be of concern to the Treasury and market participants alike. For instance:

It is now increasingly difficult for market participants to reconstitute Treasury bonds which is harmful to bond market liquidity. The ability of dealers to be able to go seamlessly between the underlying Treasury bonds and STRIPS promotes

liquidity in not only the STRIPS market, but more importantly, the secondary market in Treasury bonds.

- Any inability to reconstitute bonds from STRIPS will eventually increase the price to Treasury of buying back bonds and ultimately will limit the amount of bonds that Treasury will be able to repurchase in its buyback program
- The shortage of certain TINTS - especially shorter dated maturities – is also widely viewed as causing wider bid/offer spreads for these securities, many of which never trade.
- There is a general shortage of TINTs collateral in the U.S. repo market.

## **VII. Benefits to U.S. Taxpayers of Improved STRIPS Liquidity**

Treasury has targeted the off-the-run bond sector for the majority (90 percent) of its buybacks. Yet, an extraordinary 36 percent of the Treasury bonds maturing between 2015 and 2027 are held in stripped form. As we have previously noted, reconstitutions have been an integral part of the overall buyback process to date. Therefore having an adequate TINT supply for reconstitution purposes is essential to the buyback process. The Committee would urge Treasury to immediately begin considering the feasibility of various approaches to remedying the current TINTs liquidity problem. If any such approaches were even moderately successful, Treasury (and indirectly U.S. taxpayers) would be likely to save substantial funds.

In fact, the savings to the Treasury and U.S. taxpayers can easily be estimated. According to recent market data, there remains a scarcity premium on front-end TINTs, some of which are trading 20-40 bps richer than similar maturity TPRNs.<sup>14</sup> This persistent mispricing of TINTs relative to TPRNs has increased the cost of reconstituting a 20-year Treasury bond by about 1 bp. Thus, for example, for each \$1 billion of Treasury bonds that are reconstituted so they might be bought back, the scarcity premium raises the price of the bond (or “cost” to the Treasury) by about \$1.3 million. As the buybacks continue, we would expect this TINT richening to deepen even more and the Treasury’s “cost” to accelerate over time.

Of course, the limited floatable supply of front end TINTs may ultimately place real limits on the amount of Treasury bond reconstitution (and therefore bonds available to be tendered in a buyback program) in just a few years. The simple fact is that for many front end TINTs, there is really no supply in the market - the only way to acquire these TINTs for reconstitution purposes is to STRIP another

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<sup>14</sup> The fact that most front end TINTs carry a scarcity premium (or cost) can be demonstrated by comparing the actual closing yields for TINTs against theoretical zero coupon yields as derived from a spline model. A spline model is a fair market value curve, as based on the all Treasury coupon securities (except for current) where the profits from stripping all the “cheap” issues approximate the profits from reconstituting all the “rich” issues. If necessary, the Committee would be happy to provide Treasury with a more detailed explanation of the assumptions it used in reaching this conclusion.

security. While this option is sometimes viable, the dealer is then faced with the problem of selling the newly created TPRN, often at a market discount. This cost to the dealer is passed on to the Treasury when submitting higher offers to the Treasury in a buyback.

### **VIII. The Committee's Recommendation**

The Committee recognizes that the U.S. Treasury Department would have to allocate substantial resources to address the various legal, accounting, tax, regulatory and operational issues involved in addressing this problem. The Committee nevertheless believes it is worthwhile for the Department to explore potential solutions to this problem, since having less expensive and more successful buybacks would generate a substantial savings to Treasury and taxpayers.

The Committee looks forward to working with Treasury as it considers whether and how to address this important issue. The Committee, therefore, anticipates following up this paper in the near future with an additional paper containing specific recommendations on how to address this fundamental and persistent problem in the U.S. Treasury bond market.

### Attachments

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