
Treasury Debt Management
under the Rubric of
Regular and Predictable Issuance:
1983–2012



KENNETH D. GARBADE

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This volume is dedicated to Paul A. Volcker.

As Under Secretary of the Treasury for Monetary Affairs from 1969 to 1974, Paul Volcker oversaw the successful introduction of auction offerings of notes and bonds. His speech “A New Look at Treasury Debt Management,” delivered to the Money Marketeers on March 7, 1972,¹ put the Treasury on the path to regular and predictable issuance of those securities. The first step—the establishment of regular quarterly offerings of 2-year notes—followed in October 1972.

¹ See “Proposals on Debt Reform Offered by Volcker,” *New York Times*, March 8, 1972, p. 57, and “Treasury Seeking to Put More Borrowing on a Regular Basis, as With Bill Auctions,” *Wall Street Journal*, March 8, 1972, p. 2.

The views expressed in this study are those of the author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

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Preface

The modern Treasury market has three key components: the book-entry system, the auction process, and regular and predictable issuance. This monograph is a program management history of the third component from 1983 to 2012.

The study originated with a request, in the summer of 2003, from Christine Cumming, then the Director of Research at the Federal Reserve Bank of New York and more recently the Bank's First Vice President, for a set of papers on innovations in the market for U.S. Treasury securities. Her request led to research on the Treasury's decision to auction bills in 1929 (Garbade 2008), the extension of the auction process to notes and bonds in the early 1970s (Garbade 2004a), the emergence in the mid-1970s of regular and predictable as a Treasury debt management strategy (Garbade 2007), and the origins of the book-entry system (Garbade 2004b).

The present study takes a different tack from these earlier papers. Rather than looking at the wellsprings of institutional innovation, it examines how Treasury officials managed an existing, albeit relatively new, financing mechanism, regular and predictable issuance, over time and in light of changing funding requirements. It is, then, a study in "normal" program management, examining incremental adaptations to changing circumstances.

The focus of the research is narrow, centering on decisions related to the issuance (and, for a brief period in 2000 and 2001, repurchase) of nominal coupon-bearing Treasury debt. Several related and collateral topics, each of which merits its own history, are given short shrift or ignored altogether, including Treasury Inflation-Protected Securities, Treasury cash management, and the management of the debt of federal agencies and government-sponsored enterprises.

Acknowledgments

This monograph is founded on conversations with market participants, academics, and government officials that stretch back for decades.

With respect to market participants, I am indebted to Ken Abbott, Ken Baron, Lou Crandall, Jeffrey Ingber, Arlen Klinger, Clinton Lively, Marcy Recktenwald, Allan Rogers, and Doug and Rita Skolnick.

Members of the academic community who contributed to my understanding of the Treasury market include Yakov Amihud, Menachem Brenner, Ned Elton, Robin Greenwood, William Silber, and Marti Subrahmanyam.

Over the past decade, I have benefited from working with a long list of people at the Federal Reserve Bank of New York, including Tobias Adrian, Chris Burke, Richard Dzina, Bob Elsasser, Michael Fleming, Steve Friedman, Joshua Frost, Oliver Giannotti, Warren Hrung, Frank Keane, Lorie Logan, Jim Mahoney, Antoine Martin, Susan McLaughlin, John Partlan, Deborah Perelmuter, Tony Rodrigues, Paul Santoro, Charles Steindel, Jennifer Wolgemuth, and Nate Wuerffel.

At the Department of the Treasury, Chuck Andreatta, Steve Berardi, James Clark, Kurt Eidemiller, Lee Grandy, Jeff Huther, Jennifer Imler, Colin Kim, Paul Malvey, Mary Miller, Dave Monroe, Fred Pietrangeli, Karthik Ramanathan, Amar Reganti, Lori Santamarena, and Allen Zhang gave generously of their time.

I am especially grateful for the help of the outstanding research librarians at the Federal Reserve Bank of New York: Kathleen McKiernan, Megan Cohen, Kara Masciangelo, and Mary Tao, who can produce a copy of any document, paper, or book ever written, however obscure and however sketchy the citation.

Lou Crandall, Jeff Huther, and Frank Keane read and made comments on earlier drafts of the monograph. They saved me from many errors, several omissions, and much vague writing.

This monograph would never have been written without the support and encouragement of a succession of research directors at the Federal Reserve Bank of New York, including Christine Cumming, Joe Tracy, Jamie McAndrews, and Simon Potter. For more than a decade, they made it possible for me to focus on the issues of the day and their historical antecedents.

I owe a special debt of gratitude to Matt Rutherford, who was so frequently willing to engage on the matters discussed in the succeeding pages.

Bill Silber bore the burden, four decades ago, of tutoring a newly arrived junior faculty member in the conduct and exposition of economic research. The ledger book continues to reflect my indebtedness to his patience.

My wife Bernice and our children Larissa, Edward, and Rachel were extraordinarily supportive of a husband and father who regularly included books, papers, and typescripts with his shirts and socks when packing for vacation.

I am grateful to Valerie LaPorte for her extraordinarily careful editing of the manuscript; David Rosenberg and Laura Gharrity deftly handled the design and production of the volume.

Although many deserve thanks, the errors of fact and interpretation in this study are mine alone.

Sources for the Study

Treasury debt management occupies an unusual place in government decision making because there is a relatively sparse public record of Treasury officials' thinking regarding the pros and cons of actions taken and not taken, but a relatively thick record of the advice tendered to Treasury officials by market participants. Much of the advice comes in the course of quarterly meetings of an advisory committee that has had a variety of names, including the U.S. Government and Federal Agencies Securities Committee of the Public Securities Association, the Treasury Borrowing Advisory Committee of the Public Securities Association, the Treasury Borrowing Advisory Committee of the Bond Market Association, and the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association—all here denoted “TBAC.” This study draws extensively on the minutes of those meetings,¹ cited in footnotes as “TBAC minutes,” as well as committee reports to the Secretary of the Treasury,² cited as “TBAC reports.” It also takes advantage of the policy statements made by Treasury officials in the course of the quarterly refunding announcements that followed the meetings,³ cited in footnotes as “Treasury policy statements.”

Chart and Table Sources

Data on outstanding Treasury debt and average maturity are taken from the Treasury Bulletin and the Monthly Statement of the Public Debt. Details on Treasury offerings are from announcements of the Bureau of the Public Debt (recently renamed the Bureau of the Fiscal Service). Interest rate data are drawn from the H.15 statistical release of the Board of Governors of the Federal Reserve System.

¹ Available at <http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Pages/minutes-index.aspx>.

² Available at <http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Pages/reports-index.aspx>.

³ Available at <http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Pages/Official-Remarks.aspx>.

Chapter 1

Introduction

The Department of the Treasury expanded *all* of its marketable debt management operations to a “regular and predictable” basis in the second half of the 1970s.¹ Officials offered (and continue to offer to this day) securities of a given tenor, or term to maturity, at regular intervals—weekly, monthly, or quarterly—in reasonably predictable amounts. Their intention was to avoid surprising market participants with offerings at unexpected times, of unexpected tenors, or in materially unanticipated amounts; they did not try to “time” the market by issuing at longer maturities when they expected interest rates to rise and shorter maturities when they expected rates to fall.

Regular and predictable issuance is important for an institution that seeks to sell large quantities of debt with the frequency of the U.S. Treasury. It facilitates investor planning, allowing investors to have funds available when Treasury offers debt of a maturity that suits their needs, incentivizes dealers to invest in the human and tangible capital requirements of an efficient underwriting and distribution system, and limits unnecessary speculation about the timing, character, and volume of Treasury offerings.

Of bottom-line significance, regular and predictable issuance facilitates Treasury efforts at financing at least cost to taxpayers. Jerome Powell, Assistant Secretary of the Treasury for Domestic Finance, observed in 1991, “Treasury believes that the best way to achieve the goal of minimizing borrowing costs to the U.S. taxpayer is to minimize surprises to the market.”² Brian Roseboro, Assistant Secretary for Financial Markets, observed similarly in 2002 that “issuing debt in a regular pattern and in predictable quantities fulfills [the Treasury’s] mission of . . . financing government borrowing needs at the lowest cost over time.”³

However, Treasury issuance has not wanted for flexibility. To the contrary, the Treasury has varied—sometimes quite rapidly—its menu of tenors, frequencies, and amounts. That variation raises an intriguing question: How did the Treasury maintain a reputation as a regular and predictable issuer if it varied what it offered?

This study examines how, between 1983 and 2012, Treasury officials managed offerings of nominal marketable debt—primarily notes and bonds—under the rubric of regular and predictable issuance. The discussion focuses on marketable debt as the residual, albeit largest, sector of Treasury finance. Whatever was not funded through, for example, special issues to government trust funds and sales of savings bonds to individuals had to be funded with auction sales of bills, notes, and bonds. We exclude Treasury Inflation-

¹ Garbade (2007).

² House Committee on Energy and Commerce (1991, p. 114).

³ Third-quarter 2002 Treasury policy statement.

Protected Securities (TIPS) for simplicity and because the tenor, frequency, and amount of TIPS offerings were commonly set apart from, and determined prior to, decisions on nominal offerings.⁴ Relative to nominal offerings, TIPS enjoyed a priority similar to special issues and savings bonds. We focus on notes and bonds because bills were used for cash management as well as debt management.

This study does not examine matters related to federal tax policy or the magnitude or composition of government expenditures. It takes financing requirements as given and asks how debt managers acted to satisfy those requirements.

The balance of this chapter sketches the emergence of regular and predictable as a Treasury debt management strategy, discusses the goals and instruments of Treasury debt management, and outlines the topics discussed in subsequent chapters.

Modes of Government Finance and the Emergence of Regular and Predictable Issuance

Treasury officials funded budget deficits and refinanced maturing debt in four principal ways in the twentieth century:

- by issuing debt when and as needed, as they did prior to World War I,⁵
- by issuing debt in large, and sometimes emotionally charged, war loan drives, as they did during World War I and World War II,⁶
- by issuing debt at fixed prices or yields on a more or less continuous “tap” basis, as they did with certificates of indebtedness (interest-bearing securities with a tenor of not more than one year) during World War I,⁷ and
- by issuing debt through periodic subscription or auction offerings, at tenors and in amounts decided on either a case-by-case basis or a regular and predictable basis.

Each of these methods emerged in response to government financing requirements in a particular historical context.

⁴ At the beginning of the TIPS program, the Treasury Borrowing Advisory Committee noted that it was more important “to gradually build up a range of maturities on the current quarterly [TIPS] cycle before approaching a decision regarding the integration of [TIPS] with conventional securities” (second-quarter 1997 TBAC minutes).

⁵ Garbade (2012, Chap. 3).

⁶ Garbade (2012, Chaps. 5 and 6 and pp. 341-4).

⁷ Garbade (2012, Chap. 7).

In the mid-1950s, Treasury officials auctioned 13-week bills on a regular weekly basis.⁸ Certificates of indebtedness, notes, and bonds were offered at irregular intervals, at maturities and in amounts tailored to the circumstances of the moment. Milton Friedman pointed out the drawbacks of the approach:

In the attempt to keep down the interest cost, and to achieve such other objectives as a wide distribution of securities and lengthened maturities, the Treasury has sought to “tailor” securities to the supposed demands of special groups of potential purchasers, and to time the issue of securities to fit into slack periods in the money market. The result has been a bewildering maze of securities of different maturities and terms, and lumpiness and discontinuity in debt operations, with refundings of major magnitude occurring on a few dates in the year. Instead of proceeding at a regular pace and in a standard way to which the market could adjust, debt management operations have been jerky, full of expedients and surprises, and unpredictable in their impact and outcome.⁹

Treasury officials were aware of the problem and, in late 1958 and early 1959, replaced sporadic fixed-price certificate offerings with regular weekly auctions of 26-week bills and quarterly auctions of year bills.¹⁰ Friedman and Tilford Gaines, an economist at the Federal Reserve Bank of New York, suggested that the Treasury adopt similar procedures for notes and bonds, but their suggestions were not adopted.¹¹

Following a series of unexpected note offerings between mid-1971 and early 1972, Under Secretary of the Treasury Paul Volcker revealed, in March 1972, that he was considering whether “to routinize or regularize the handling of more of our debt, as we have done for many years in the bill area,” including “more frequent but also more routine rolling over of relatively short-term notes.”¹² Such a scheme might “reduce

⁸ The Treasury began issuing bills in 1929 (Garbade 2008). Regular and predictable issuance of 13-week bills emerged during the 1930s (Garbade 2012, Chaps. 14, 18, and 19).

⁹ Friedman (1960, p. 60).

¹⁰ Federal Reserve Bank of New York Circular no. 4663, “Treasury Financing—New Program for Offerings of 26-Week Treasury Bills,” November 18, 1958 (announcing a new program of regular weekly offerings of 26-week Treasury bills), and Federal Reserve Bank of New York Circular no. 4715, “Treasury Financing,” March 19, 1959 (announcing a new program of regular quarterly offerings of 1-year Treasury bills).

¹¹ Friedman (1960, pp. 60-5); Joint Economic Committee (1959, pp. 3023-6, testimony of Milton Friedman); and Gaines (1962).

¹² Volcker (1972). See also “Treasury Seeking to Put More Borrowing on Regular Basis, as with Bill Auctions,” *Wall Street Journal*, March 8, 1972, p. 2, and “Proposals on Reform of Debt Management Offered by Volcker,” *New York Times*, March 8, 1972, p. 57.

market uncertainties . . . caused by large intermittent financing operations.” Treasury officials took the first step toward putting note offerings on a regular schedule when they announced in October 1972 that they would henceforth auction 2-year notes on a regular quarterly basis.¹³ Following a spate of unexpected intermediate-term offerings in the spring of 1975,¹⁴ Treasury officials extended regular and predictable issuance to 4-year notes (in mid-1975) and 5-year notes (in 1976).¹⁵ By the end of the decade, the Treasury was regularly and predictably issuing securities across the yield curve.

Relationship to Auction Sales of Treasury Debt

In addition to its direct contribution to debt management, regular and predictable issuance plays an important indirect role in facilitating auction sales of Treasury debt.

Between World War I and 1970, the Treasury relied, almost without exception, on fixed-price subscription offerings to sell certificates, notes, and bonds. (Bills were always sold by auction.) Officials would announce the coupon rate and price of a new security, investors would tender their subscriptions, and officials would allocate what they had to sell. The offerings were costly (for taxpayers) because officials commonly chose to offer securities at attractive prices to limit the risk of a failed offering.¹⁶

Secretary of the Treasury Henry Morgenthau had tried to auction long-term debt in 1935 but the effort failed because Morgenthau sought to borrow on an “as needed” basis using a technique that necessarily relied on the willingness of large New York banks and securities dealers to underwrite and distribute what the Treasury was offering.¹⁷ When the Treasury surprised the market with an unexpected offering in August 1935, the banks and dealers submitted relatively weak bids and Morgenthau canceled the program. A similar effort in 1963 to auction bonds to competing syndicates of securities dealers also failed.¹⁸

It was not until the early 1970s, when Under Secretary Volcker tried for a third time, that Treasury officials were able to establish a successful auction program for notes

¹³ Federal Reserve Bank of New York Circular no. 7013, “Treasury Announces Note Auctions,” October 5, 1972. See also “Treasury Treads Lightly at Outset of Big Funding,” *New York Times*, October 6, 1972, p. 59 (reporting the reaction of one dealer that a 2-year note series would be “safe, simple, and not at all damaging to the market”).

¹⁴ “Borrowing Dilemma,” *New York Times*, March 20, 1975, p. 57; “Treasury Bond Auction Creates Chaos,” *New York Times*, March 21, 1975, p. 53; “Federal Credit Needs Push Many Companies Out of Bond Market,” *Wall Street Journal*, April 3, 1975, p. 1; and “Financier for the U.S. Debt,” *New York Times*, April 20, 1975, p. F7.

¹⁵ “2 New Notes, More Bills Set but No Long-Term Issue,” *New York Times*, June 19, 1975, p. 63; “Treasury Boosts Earlier Estimate of Its Cash Needs,” *Wall Street Journal*, August 7, 1975, p. 3; “Treasury Plans Heavy Borrowing,” *New York Times*, January 28, 1976, p. 58; and “Treasury to Sell \$13.8 Billion Bills, Notes and Bonds,” *Wall Street Journal*, January 28, 1976, p. 25.

¹⁶ Garbade (2012, pp. 201, 205-7, and 303-6).

¹⁷ Garbade (2012, pp. 286-93).

¹⁸ Garbade (2004a, p. 34).

and bonds.¹⁹ Volcker succeeded where others had failed for three reasons: he patterned his auctions on the bill auction format familiar to market participants, he started by auctioning short-term notes and only gradually worked out the curve (thereby giving dealers an opportunity to build up their sales and risk management programs), and he kept the market well-informed about Treasury borrowing requirements. Regular and predictable issuance supported the auction process because it gave dealers an incentive to invest in underwriting and distribution capabilities targeted at investors with recurring investment needs and particular maturity preferences.²⁰

The Goal of Treasury Debt Management

The goal of Treasury debt management was a work in progress until about 2002. To shed light on the evolution of debt management practices, it will be useful to summarize here how things finally coalesced.

In 2002, Under Secretary of the Treasury Peter Fisher expressed the goal of Treasury debt management as “meeting the financing needs of the federal government at the lowest cost over time.”²¹ Fisher thus parsed the goal into a statement of what the Treasury *must do*: meet the financing needs of the federal government, and a statement of what the Treasury *seeks to minimize*: long-run financing costs.²²

The practical problem with seeking to minimize long-run financing costs is that those costs are difficult to quantify and are subject to a variety of exogenous influences, such as fluctuations in aggregate economic activity and changes in Federal Reserve monetary policy. Treasury officials have consequently tended to focus instead on intermediates that affect long-run costs but are more closely related to the instruments of debt management.

The two principal intermediates are the maturity structure of the debt and liquidity. Maturity structure is most commonly quantified as average maturity, although it is sometimes also reflected in the percentage, or amount, of debt coming due within the next year

¹⁹ Garbade (2012, pp. 357-63).

²⁰ Lou Crandall, chief economist at Wrightson ICAP, in an e-mail message to the author.

²¹ Treasury press release, “Remarks of Under Secretary of the Treasury Peter R. Fisher to the Futures Industry Association, Boca Raton, Florida,” March 14, 2002. Fisher was hardly the first senior Treasury official to articulate the importance of financing costs for Treasury debt management. For example, Andrew Mellon, Secretary of the Treasury from March 1921 to February 1932, was said to manage the public debt “by providing various types of securities suited to the needs of various classes of lenders, thereby obtaining funds for needed periods at minimum cost” (Simmons 1947, p. 334). Robert Roosa, Under Secretary for Monetary Affairs from January 1961 to December 1964, observed that Treasury debt “must be placed at an interest cost that will stand up to the critical test of both the Congress and the public who do not want to have any more money devoted to the debt service . . . than is necessary” (Roosa 1963).

²² Significantly, Fisher viewed financing the government as a constraint on Treasury debt management actions, rather than as an objective. In his remarks to the Futures Industry Association, cited in footnote 21, he observed that “cash management is better thought of as a constraint on our actions, not an independent objective. We need to pay the government’s bills as they come due.”

or two. Liquidity, the ability to execute large purchases and sales quickly without materially affecting the market price of a security, can be quantified as the difference between bid and offer prices for transactions of a nominal size and the volume of sales and purchases that can be executed at or near those prices.²³ Each intermediate is important for two reasons: cost and risk.

Maturity

As explained in “Risk Premiums on Treasury Debt,” the appendix to Chapter 5, financing with shorter-term debt is, *ex ante*, expected to be less costly over a given interval of time than financing with longer-term debt over the same interval. For example, financing \$1 billion for ten years with 52-week bills rolled over annually is expected to be less costly than issuing 10-year notes. The Treasury can, therefore, expect to incur lower financing costs if it manages the national debt to a lower average maturity.

However, financing with short-term debt runs two risks. First, interest rates might increase unexpectedly—perhaps because of an unanticipated strengthening of economic activity—leaving the Treasury paying more than anticipated. Second, financing with short-term debt requires more numerous and larger refinancing operations per annum, increasing the Treasury’s exposure to market disruptions such as those that followed the invasion of Cambodia in 1970,²⁴ the collapse of Drysdale Securities in 1982,²⁵ the attack on the World Trade Center on September 11, 2001,²⁶ and the announcement by BNP Paribas in August 2007 that it was suspending redemption privileges on three bank-sponsored funds that invested in U.S. mortgage-related securities.²⁷

Liquidity

Liquidity is important to debt managers because, other things being equal, investors are willing to pay a higher price for (or accept a lower yield on) more liquid securities.²⁸

²³ See Fleming (2003) and Engle, Fleming, Ghysels, and Nguyen (2012).

²⁴ Garbade (2012, pp. 357-8).

²⁵ Garbade (2006, pp. 32-3).

²⁶ Treasury officials canceled an auction of 4-week bills in the wake of the attack. *Treasury News*, “Treasury Confirms Cancellation of Auction of 4-Week Bills,” September 12, 2001.

²⁷ “Impact of Mortgage Crisis Spreads,” *Wall Street Journal*, August 10, 2007, p. A1. The flight to quality that followed in the wake of the Paribas announcement led, among other things, to the near-failure of an auction offering of 4-week bills on August 21, 2007 (“Is Rise in Bill Yields a Relief Sign?—A Confused Auction Indicates Fears Remain that Turmoil Isn’t Over,” *Wall Street Journal*, August 22, 2007, p. C1). The August 22 article quotes Thomas Roth, head of Treasury trading at Dresdner Kleinwort in New York, as saying that “the auction was quite shocking. I’ve never seen that happen in the bill market before” and adding that “dealers have gotten so beat up by the wild swings in the bill market that some guys just stepped away.”

²⁸ Amihud and Mendelson (1991); Boudoukh and Whitelaw (1991); Silber (1991); Warga (1992); Kamara (1994); Elton and Green (1998); and Longstaff (2004).

Among other things, liquidity depends on amount outstanding, so that larger issues are more liquid.²⁹ However, increasing issue size can lead to market congestion when a large issue needs to be refinanced.³⁰ Thus, the liquidity advantage of a large issue has to be weighed against the lower refinancing risks associated with a diversified array of smaller issues with dispersed redemption dates.

Instruments of Treasury Debt Management

Under the rubric of regular and predictable issuance, the principal instruments of Treasury debt management are

- the maturity points at which Treasury issues,
- the frequency of issuance at each maturity point, and
- the amount of an offering.

Treasury officials do not choose the time or tenor of individual offerings and exercise only limited discretion with respect to offering amounts. Instead, they set (and reset from time to time) the frequency of issuance for each generic series, such as monthly auctions of 2-year notes or quarterly auctions of 3-year notes, and exercise restraint in varying offering amounts over time. In addition, officials can choose to offer a new issue (a so-called *de novo* offering) or to reopen an existing issue. Securities issued in a reopening are fungible with, and hence add to, the securities issued earlier.

Maturity Points

At various times from 1983 to 2012, the Treasury issued nominal debt at twelve different maturity points, including 4, 13, 26, and 52 weeks (all in the form of bills), 2, 3, 4, 5, 7, and 10 years (in the form of notes), and 20 and 30 years (in the form of bonds). Chart 1.1 shows when the Treasury was issuing at each maturity point. The absence of any gaps in the offerings of 13- and 26-week bills and 2-, 5-, and 10-year notes suggests that those maturities were especially attractive, either to the Treasury or to market participants. Other tenors came and went with the ebb and flow of financing requirements.

Auction Frequencies

The Treasury auctioned 4-, 13-, and 26-week bills on a regular weekly basis and, except for the period from February 2000 to February 2001, auctioned 52-week bills once every four weeks. (Year bills were offered once every thirteen weeks between spring 2000 and February 2001.)

²⁹ Liquidity also depends on tenor, age, and whether an issue is “on-the-run”—that is, the most recent issue in a given series. See Fleming (2003) and Krishnamurthy (2002).

³⁰ Treasury officials devoted substantial efforts to minimizing congestion when they paid down and refinanced the Liberty Loans of World War I (Garbade 2012, Chap. 12 and pp. 283-6).

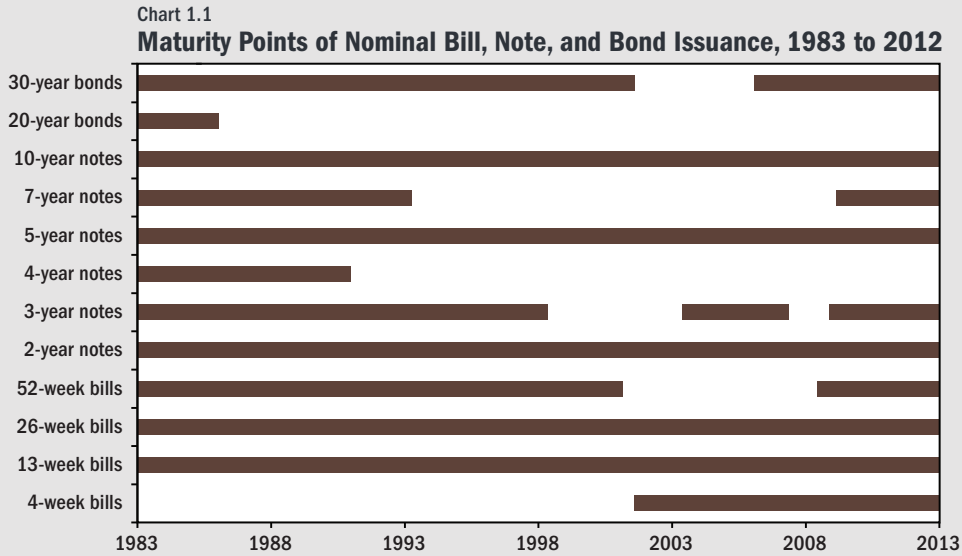


Table 1.1
Auction Frequencies of Nominal Notes and Bonds, 1983 to 2012

De Novo	Auctions per Annum	Series								
		Scheduled Reopenings	2-Yr Note	3-Yr Note	4-Yr Note	5-Yr Note	7-Yr Note	10-Yr Note	20-Yr Bond	30-Yr Bond
1	1	-	-	-	-	-	-	-	-	X
2	0	-	-	-	-	-	-	-	-	X
3	0	-	-	-	-	-	-	-	-	X
2	2	-	-	-	X	-	X	-	-	X
4	0	-	X	X	X	X	X	X	X	X
6	0	-	-	-	-	-	X	-	-	-
4	4	-	-	-	X	-	X	-	-	X
4	8	-	-	-	-	-	X	-	-	X
12	0	X	X	-	X	X	-	-	-	-

Auction frequencies were also fairly fixed for some notes and bonds (Table 1.1). Two-year notes were auctioned monthly, 4-year notes and 20-year bonds were auctioned quarterly, and 3- and 7-year notes were, at different times, auctioned either monthly or quarterly.

Auction frequencies for 5- and 10-year notes and 30-year bonds were more varied. Five-year notes, for example, were auctioned quarterly in two different modes: as quarterly *de novo* offerings and as semiannual *de novo* offerings, each of which was followed three months later by a scheduled reopening. (An offering is said to be a scheduled reopening if Treasury officials commit, well in advance of the offering announcement, to auctioning more of an outstanding issue.) Treasury officials employed the second mode when they wanted to offer 5-year notes at a quarterly frequency but in amounts smaller, on average, than what would have been required to sustain a liquid secondary market if they auctioned four new issues per year.

Offering Amounts

Chart 1.2 shows offering amounts for 2-year notes, the only coupon-bearing security issued at the same frequency from 1983 to 2012. Treasury officials did not make large, transient adjustments in offering sizes from auction to auction, but they did vary offering sizes significantly over time, and sometimes (for example, from mid-2001 to mid-2002 and from late 2007 to late 2009) quite rapidly.

The broad ebb and flow of issuance for 13-week bills (which were also offered at a single frequency throughout the interval) was roughly similar to that of 2-year

Chart 1.2
Monthly Offerings of 2-Year Notes, 1983 to 2012

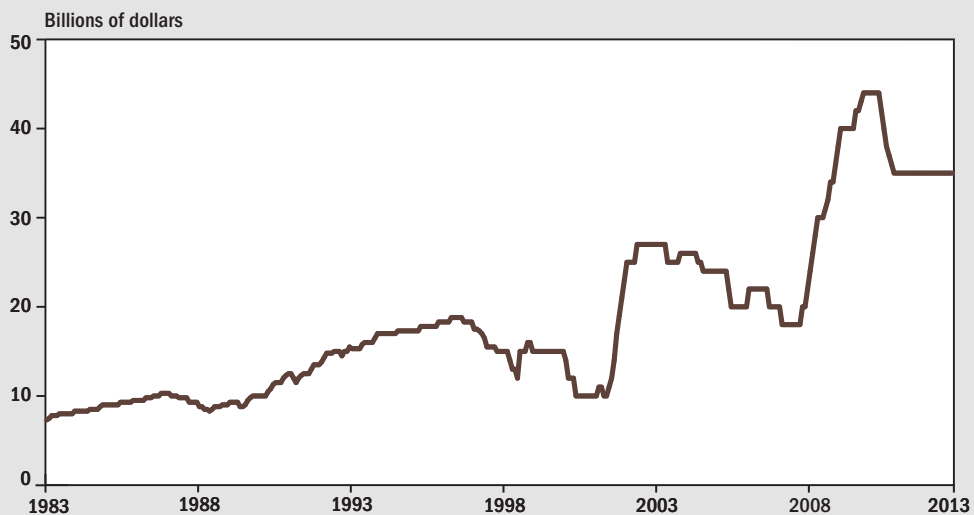
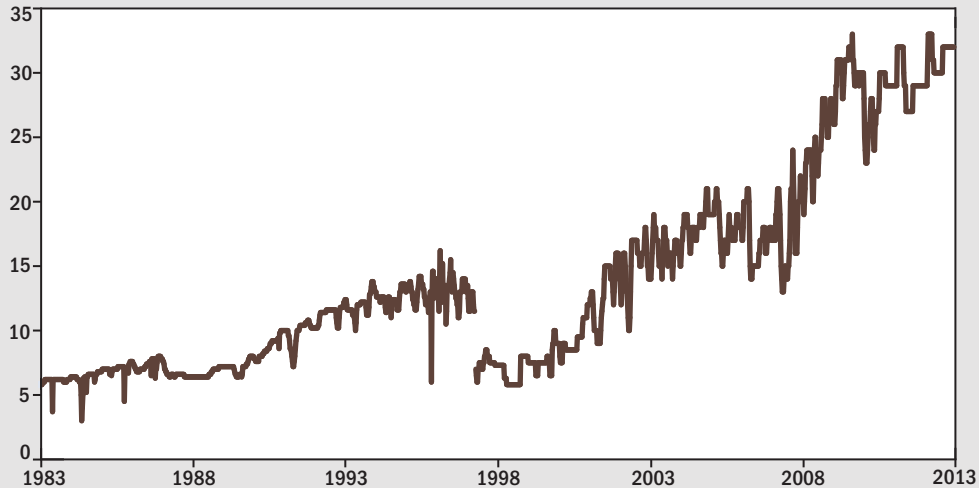


Chart 1.3
Weekly Offerings of 13-Week Bills, 1983 to 2012
 Billions of dollars



Note: As explained in Appendix A, bill offerings prior to March 26, 1997, included amounts purchased for the Federal Reserve's System Open Market Account. Bill offerings after that date excluded such purchases, which were thereafter filled from "add-ons" to the announced offering size. The chart is discontinuous at the time of the change.

note issuance (Chart 1.3). However, there was, additionally, substantial *transient* variation in bill offerings—a consequence of the fact that bills were used as instruments of cash management as well as debt management and, for example, varied seasonally as a function of anticipated tax receipts.³¹

Outline of the Study

The present study begins with a description, in Chapter 2, of the Treasury auction calendar in 1983 and proceeds to examine how and why Treasury officials revised the calendar over the next three decades.

The principal driver of changes in the auction calendar was, of course, variation in issuance of marketable debt. Whether measured in absolute terms or relative to GDP, marketable debt rose from 1980 to the mid-1990s, declined to the turn of the millennium, and began to rise again after 2001 (Charts 1.4 and 1.5).

Given the steady increase in indebtedness from 1980 to the mid-1990s, one might expect the interval to be characterized by increases in maturity points, auction frequencies,

³¹ As explained in Chapter 10 below, Treasury officials added 4-week bills to the Treasury auction calendar in 2001 to provide a regular bill series that could be used even more actively than 13-week bills as a tool of cash management.

Chart 1.4
**Nominal Gross Domestic Product and Nominal Marketable Treasury Debt,
 1965 to 2012**

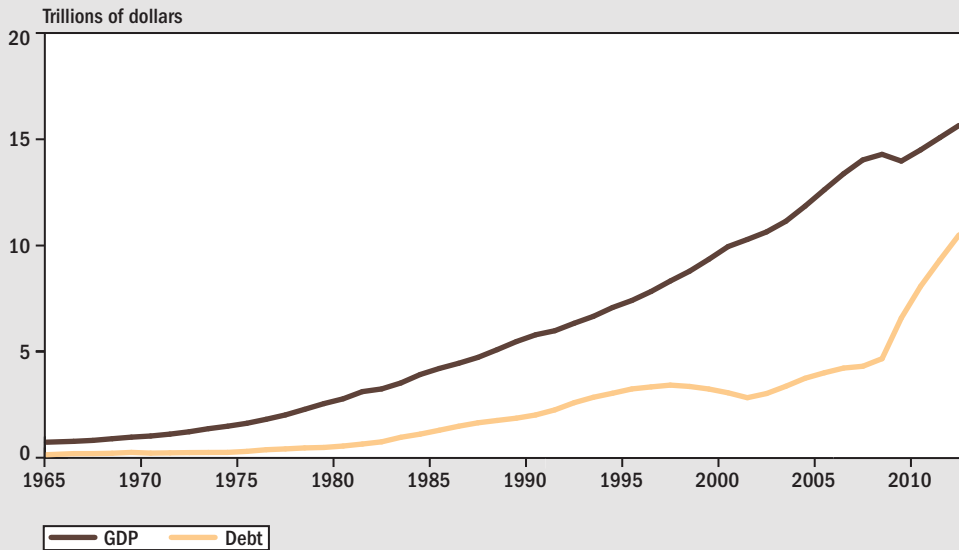
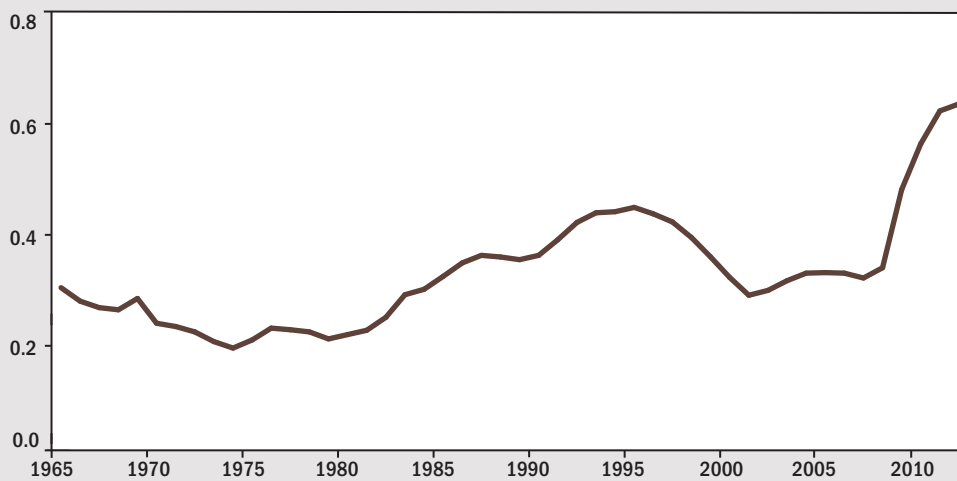


Chart 1.5
**Ratio of Nominal Marketable Treasury Debt to Nominal Gross Domestic Product,
 1965 to 2012**



and offering amounts. However, while that period did see increases in auction frequencies at some maturity points and in offering amounts at all maturity points, it also saw a reduction in the *number* of maturity points. The reductions, discussed in Chapters 4 and 5, occurred because Treasury officials identified cheaper ways to raise money without taking more risk (by replacing 20-year bonds with additional offerings of 10-year notes and 30-year bonds in 1986) or decided to take more risk to reduce expected financing costs (by replacing 7-year notes and some 30-year bonds with shorter-term debt in 1993). More broadly, the contraction in the number of maturity points reflected efforts at “fine-tuning” the auction calendar. Regular and predictable issuance was a novel framework for debt management and it had not arrived with detailed operating instructions. The interval to the mid-1990s was a period of “learning by doing.”

After 1996, Treasury debt management actions were driven primarily by financing requirements—first by surpluses, then by renewed deficits—but considerations of maturity and liquidity played critical roles in shaping the details of the actions. The contraction of the auction calendar in the second half of the 1990s, discussed in Chapters 7, 8, and 9, reveals that 13- and 26-week bills and 2-, 5-, and 10-year notes were particularly attractive maturity points. Treasury officials sought to preserve liquidity at those benchmark maturities by jettisoning year bills, 3-year notes, and 30-year bonds.

Officials reintroduced previously extinguished maturity points when budget deficits returned in the new millennium. The re-expansion of the auction calendar is discussed in Chapters 11, 12, and 13. The most remarkable aspect of that period is how smoothly the re-expansion proceeded. Treasury debt managers had learned a great deal since the early 1980s about how to maintain a reputation for regular and predictable issuance even while meeting sometimes rapid fluctuations in financing requirements.

Chapter 14 addresses the Special Financing Program (SFP) bills that were sold between mid-September 2008 and mid-2011. The evolution of the SFP program underscores the almost gravitational attraction of regular and predictable issuance.

Chapter 15 presents concluding remarks.

Chapter 2

The Treasury Auction Calendar in 1983

Treasury officials gradually regularized the auction calendar after 1972. By the beginning of 1983, they had established a regular and predictable calendar of bill, note, and bond auctions, including

- weekly Monday auctions of 13- and 26-week bills,
- quad-weekly Thursday auctions of 52-week bills,
- monthly auctions of 2-year notes (in the second half of the month),
- quarterly auctions of 5-year notes (late in the second month of a quarter),
- quarterly “mid-quarter refunding” auctions of 3- and 10-year notes and 30-year bonds (during a single week early in the second month of a quarter), and
- quarterly “mini-refunding” auctions of 4- and 7-year notes and 20-year bonds (during a single week late in the third month of a quarter).

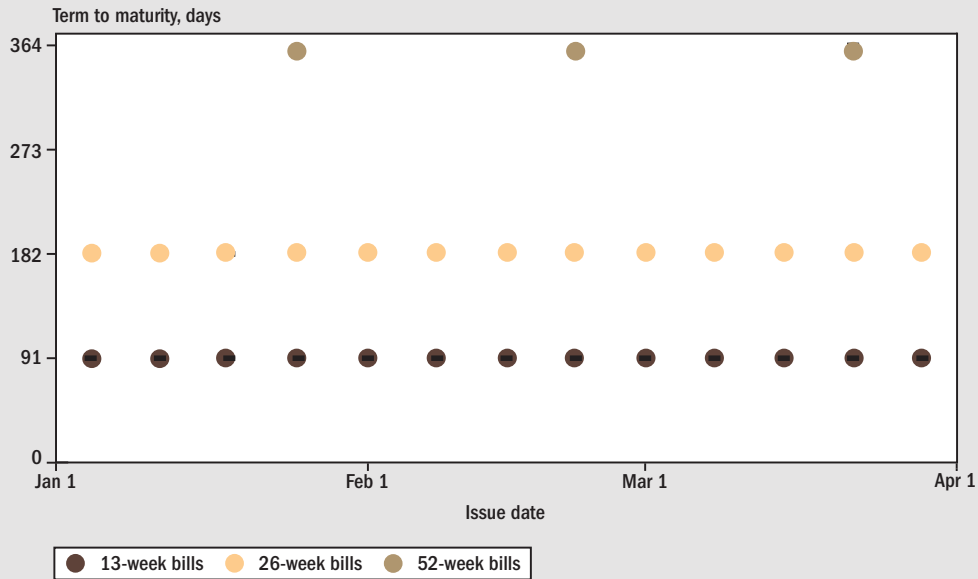
Mid-quarter refundings had been introduced in the 1950s, in part to ease constraints on the conduct of monetary policy.¹ End-of-quarter mini-refundings were newer, the first having been announced in September 1982.² They mimicked the mid-quarter refundings and were introduced to accommodate escalating financing requirements.³ Concentrating offerings in a single week served to focus the attention of both dealers and investors on

¹ Garbade (2007, p. 58, Box 1). By 1958, 80 percent of coupon-bearing Treasury debt was scheduled to mature on the fifteenth of February, May, August, or November (Federal Reserve Bank of New York Circular no. 4663, “Treasury Financing,” November 18, 1958). The circular notes that “for some time, the Treasury has been working towards scheduling its maturities on these quarterly dates to reduce the number of times each year its financing will interfere with other borrowers . . . and facilitate the effective execution by the Federal Reserve of its monetary policy.”

² Federal Reserve Bank of New York Circular no. 9363, “Treasury Announces Auctions of \$11,750 Million of Notes and Bonds,” September 15, 1982. An early use of the term “mini-refunding” occurs in the first-quarter 1983 TBAC report (noting the “beneficial effects of the two week breathing spell created by the quarter-end bunching of new issues into a ‘mini-refunding’ week”). Other early uses occur in “Rates Jump at Weekly Sale,” *New York Times*, March 8, 1983, p. D9 (in a comment by Phillip Braverman, vice president and bond market specialist at Chase Manhattan Bank, referring to “a huge amount of ‘mini-refunding’ issues”), and “Decline in Bond Prices Pared,” *New York Times*, March 12, 1983, p. 32 (in a comment by Richard Green of Money Market Services in Belmont, California, referring to “new supply in the mini-refunding”).

³ “Treasury Plans to Sell \$23.25 Billion of Notes in 3 Issues Next Week,” *Wall Street Journal*, September 17, 1987, p. 49 (describing mini-refundings as “groups of debt issues the Treasury added to its debt offering cycle in September 1982 because of heavy borrowing requirements”).

Chart 2.1
Tenors of Treasury Bills Auctioned in the First Quarter of 1983



what the Treasury was selling. Treasury officials described mini-refundings as a “new consolidated financing schedule designed to increase bidding interest in the quarterly 4-year, 7-year, and 20-year auctions and to permit a longer period for distribution of the securities.”⁴

Chart 2.1 shows the tenors of Treasury bills auctioned in the first quarter of 1983; Chart 2.2 shows tenors for notes and bonds auctioned during the year. The regularity of the offerings is self-evident. Offering sizes, shown in Charts 2.3 through 2.7, also displayed remarkable consistency over time, growing modestly from offering to offering. Taken together, the offerings clearly justified the sobriquet “regular and predictable.”

In March 1982, Mark Stalnecker, deputy assistant secretary for federal finance, articulated the principles that underpinned the Treasury’s offerings:⁵

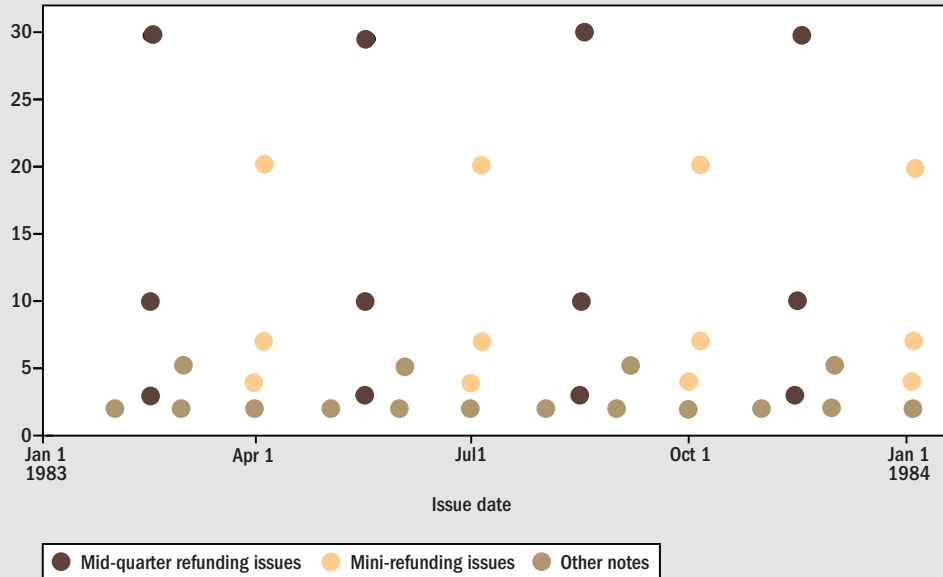
Our operations in the market are conducted so as to minimize disruption and thereby reduce the cost of our debt operations. Disruptive financing operations increase market uncertainty and hence the risk of purchasing securities, raising the rates paid on Treasury obligations. Treasury feels that the most important

⁴ Third-quarter 1982 Treasury policy statement.

⁵ House Committee on Banking, Finance, and Urban Affairs (1982, pp. 5-6).

Chart 2.2
Tenors of Notes and Bonds Auctioned in 1983

Term to maturity, years



element in reducing market uncertainty about debt financing is the maintenance of a regular, predictable cycle of security issuance. Regularity . . . removes a major source of market uncertainty, and assures that Treasury debt can be sold at the lowest possible interest rate consistent with market conditions at the time of the sale.

If [the Treasury's] massive borrowing requirements had been met in a haphazard manner, significant damage to the financial markets would have occurred. Unpredictable shifts of Treasury financing out of one sector of the market to another based on interest rate forecasts or other "opportunistic" rationales could have seriously damaged market confidence and driven rates significantly higher.

Stalnecker further observed that

Treasury sells securities in all maturity ranges to meet the needs of the broadest possible array of investors. Establishment of this regular pattern has contributed to a positive market climate in several ways:

Chart 2.3
Offering Amounts of Treasury Bills Auctioned in the First Quarter of 1983

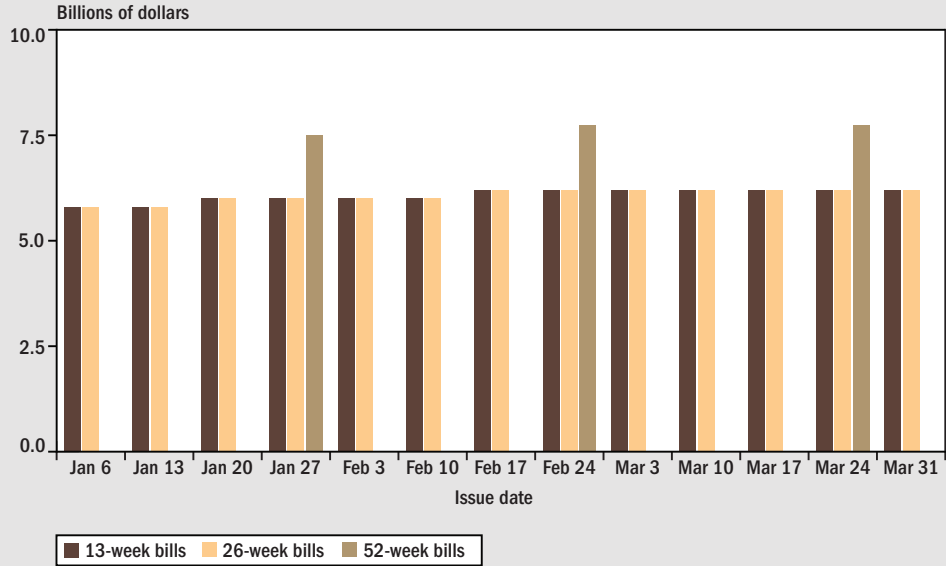


Chart 2.4
Offering Amounts for 2-Year Note Auctions, 1983

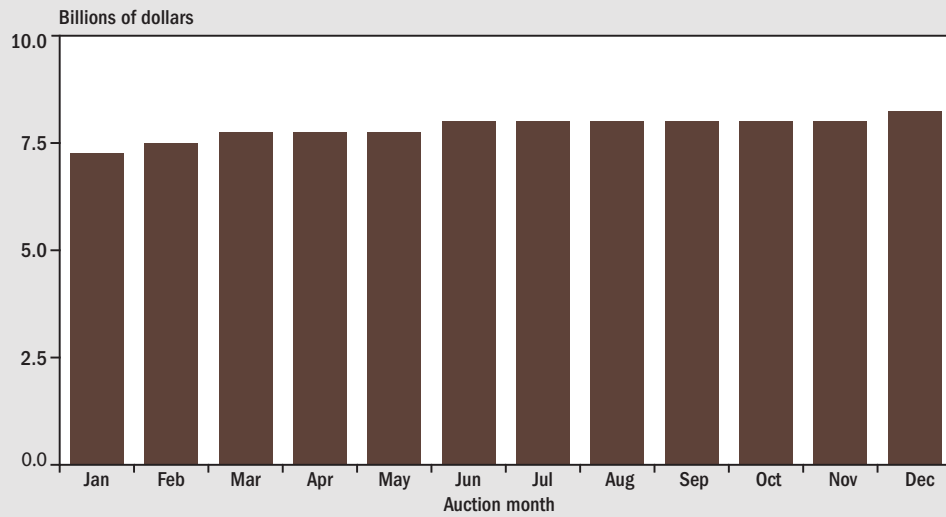


Chart 2.5
Offering Amounts for 5-Year Note Auctions, 1983

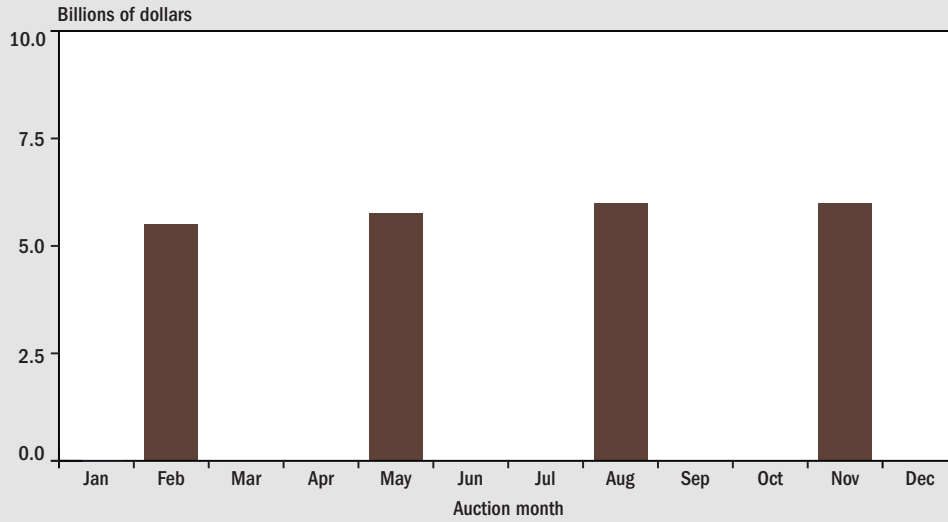


Chart 2.6
Offering Amounts for Mid-Quarter Refunding Auctions, 1983

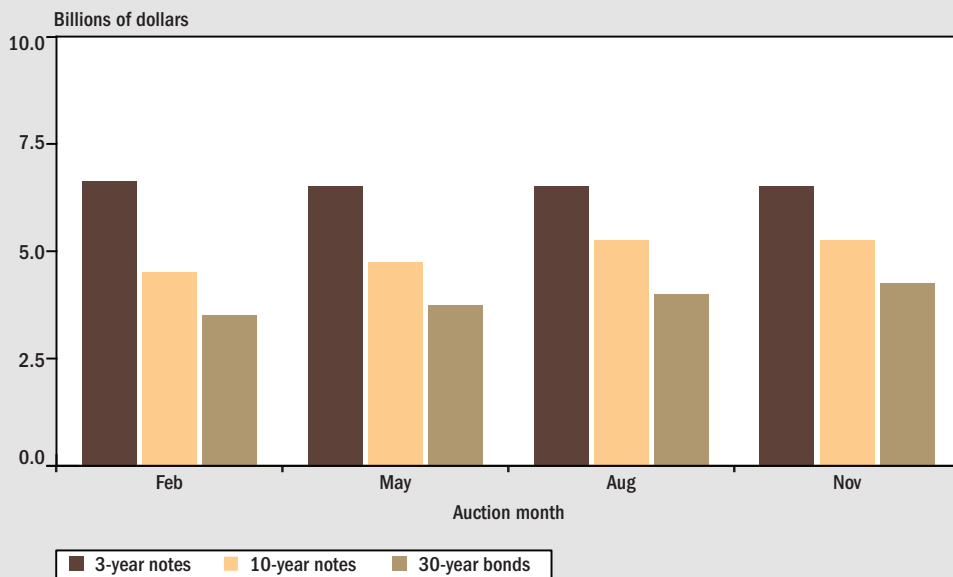
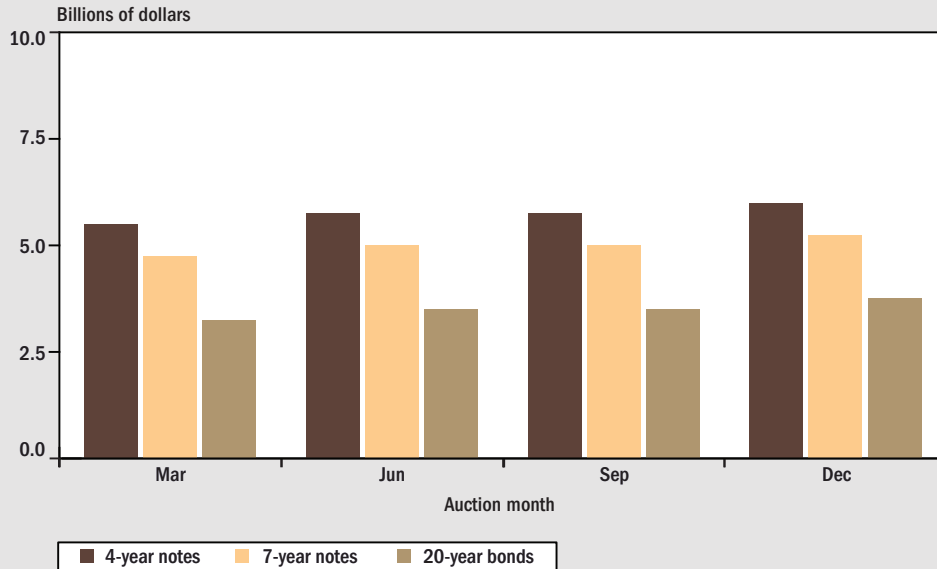


Chart 2.7
Offering Amounts for Mini-Refunding Auctions, 1983



First, by creating a schedule of Treasury security auctions, different investors, as well as dealers, can plan portfolio strategies in advance.

Second, by establishing the potential Treasury new issue calendar in advance, other issuers, including federally sponsored agencies and private borrowers, can plan their financing operations with more certainty.

Third, by spreading Treasury maturities evenly over time, market disruptions are lessened and future refunding and borrowing operations can be facilitated.

This chapter describes the characteristics of the 1983 Treasury auction calendar in detail and establishes a point of departure for the subsequent discussion of how and why that calendar changed. We also describe an important statutory constraint on Treasury debt management: a ceiling of $4\frac{1}{4}$ percent on bond coupon rates. The ceiling was important because it forced a significant contraction in the maturity structure of Treasury debt between 1965 and 1975 that, in turn, generated a countervailing commitment to debt extension that persisted into the early 1990s.

The Treasury's Auction Offerings

In 1983, auction offerings of 13- and 26-week bills were announced on the Tuesday preceding a Monday auction (Table 2.1). The bills were issued on the Thursday following the auction, to mature on a Thursday thirteen or twenty-six weeks after issue. Every 13-week bill reopened a bill that had been sold thirteen weeks earlier as a 26-week bill.

Offerings of 52-week bills were announced once every four weeks, on the Friday preceding a Thursday auction (Table 2.2). The bills were issued a week after they were auctioned, to mature on a Thursday fifty-two weeks later. Every 52-week bill was reopened twenty-six weeks after issue as a 26-week bill, and again thirty-nine weeks after issue as a 13-week bill. Thus, there was a pronounced cyclic structure to bill maturities, with a spike every four weeks.⁶

Two-year notes were auctioned monthly on a Wednesday, about two weeks before the end of the month (Table 2.3). Offerings were announced on the preceding Wednesday and the notes were issued on the last day of the month, to mature on the last day of the same month two years after issue.⁷

Five-year notes were auctioned quarterly, late in the second month of the quarter (Table 2.4). Offerings were announced a week in advance and the notes were issued early in the third month of the quarter, to mature on the fifteenth of the second month of a quarter—five years, two months, and about twelve days after issue.

Mid-quarter refundings came in the first half of the second month of a quarter. Three-year notes were auctioned on a Tuesday, 10-year notes on Wednesday, and 30-year bonds on Thursday (Table 2.5). The auctions were settled on the fifteenth, and the securities matured on the fifteenth of the same month three, ten, and thirty years later. Thirty-year bonds were redeemable at par at the option of the Treasury, on four months' notice, at each coupon payment date beginning five years before maturity. Treasury officials occasionally reopened 10-year notes and 30-year bonds after an initial offering.⁸

Mini-refundings came in the second half of the third month of a quarter. Four-year notes were auctioned on Tuesday, 7-year notes on Wednesday, and 20-year bonds on Thursday (Table 2.6). Four-year notes were issued on the last day of the month, to mature on the last day of the same month four years after issue. Seven-year notes and 20-year bonds were issued early in the first month of the following quarter. Seven-year notes matured on the fifteenth of the first month of the quarter seven years after issue and had a tenor of seven years and

⁶ Fleming (2002) finds that bills under six months to maturity were, on average, more liquid and traded at higher yields if they were first issued as 52-week bills than if they were first issued as 26-week bills.

⁷ In August 1981, the Treasury removed a ban on pre-auction trading in notes and bonds (Federal Reserve Bank of New York Circular no. 9128, "Treasury to Auction \$4,750 Million of 2-Year Notes," August 17, 1981, and Garbade and Ingber 2005, n. 3). In November 1983, the Treasury offset the resulting expansion in when-issued trading by moving note and bond auctions about a week closer to issue dates (fourth-quarter 1983 Treasury policy statement).

⁸ See Appendix B.

Table 2.1
13-Week and 26-Week Bill Auctions in January 1983

Series	Announcement	Auction	Issue	Maturity	Amount (\$Billions)
13-wk	Dec 28, 1982 (Tu)	Jan 3, 1983 (M)	Jan 6, 1983 (Th)	Apr 7, 1983 (Th)	5.80
26-wk	Dec 28, 1982 (Tu)	Jan 3, 1983 (M)	Jan 6, 1983 (Th)	Jul 7, 1983 (Th)	5.80
13-wk	Jan 4, 1983 (Tu)	Jan 10, 1983 (M)	Jan 13, 1983 (Th)	Apr 14, 1983 (Th)	5.80
26-wk	Jan 4, 1983 (Tu)	Jan 10, 1983 (M)	Jan 13, 1983 (Th)	Jul 14, 1983 (Th)	5.80
13-wk	Jan 11, 1983 (Tu)	Jan 17, 1983 (M)	Jan 20, 1983 (Th)	Apr 21, 1983 (Th)	6.00
26-wk	Jan 11, 1983 (Tu)	Jan 17, 1983 (M)	Jan 20, 1983 (Th)	Jul 21, 1983 (Th)	6.00
13-wk	Jan 18, 1983 (Tu)	Jan 24, 1983 (M)	Jan 27, 1983 (Th)	Apr 28, 1983 (Th)	6.00
26-wk	Jan 18, 1983 (Tu)	Jan 24, 1983 (M)	Jan 27, 1983 (Th)	Jul 28, 1983 (Th)	6.00
13-wk	Jan 25, 1983 (Tu)	Jan 31, 1983 (M)	Feb 3, 1983 (Th)	May 5, 1983 (Th)	6.00
26-wk	Jan 25, 1983 (Tu)	Jan 31, 1983 (M)	Feb 3, 1983 (Th)	Aug 4, 1983 (Th)	6.00

Table 2.2
52-Week Bill Auctions in the First Quarter of 1983

Announcement	Auction	Issue	Maturity	Amount (\$Billions)
Jan 14, 1983 (F)	Jan 20, 1983 (Th)	Jan 27, 1983 (Th)	Jan 26, 1984 (Th)	7.50
Feb 11, 1983 (F)	Feb 17, 1983 (Th)	Feb 24, 1983 (Th)	Feb 23, 1984 (Th)	7.75
Mar 11, 1983 (F)	Mar 17, 1983 (Th)	Mar 24, 1983 (Th)	Mar 22, 1984 (Th)	7.75

about ten days. Twenty-year bonds matured on the fifteenth of the second month of the quarter twenty years after issue and had a tenor of twenty years, one month, and about ten days. At the discretion of Treasury officials, 20-year bonds were sometimes reopened after an initial offering.

“Cycle” Securities

Treasury bills were “cycle” securities. Bills in each of the three series (13-, 26-, and 52-week) were issued on a Thursday and matured on a Thursday—a structure designed to facilitate refinancing maturing debt with new debt.⁹

⁹ Synchronization of issue dates with maturity dates was introduced by Treasury Secretary Andrew Mellon in 1922 (Garbade 2012, Chap. 12).

Table 2.3
2-Year Note Auctions in the First Quarter of 1983

Announcement	Auction	Issue	Maturity	Amount (\$Billions)
Jan 12, 1983 (W)	Jan 19, 1983 (W)	Jan 31, 1983 (M)	Jan 31, 1985	7.25
Feb 9, 1983 (W)	Feb 16, 1983 (W)	Feb 28, 1983 (M)	Feb 28, 1985	7.50
Mar 9, 1983 (W)	Mar 16, 1983 (W)	Mar 31, 1983 (Th)	Mar 31, 1985	7.75

Table 2.4
5-Year Note Auctions in 1983

Announcement	Auction	Issue	Maturity	Amount (\$Billions)
Feb 15, 1983 (Tu)	Feb 23, 1983 (W)	Mar 1, 1983 (Tu)	May 15, 1988	5.50
May 18, 1983 (W)	Jun 1, 1983 (W) ^a	Jun 3, 1983 (F)	Aug 15, 1988	5.75
Aug 23, 1983 (Tu)	Aug 31, 1983 (W)	Sep 6, 1983 (Tu)	Nov 15, 1988	6.00
Nov 21, 1983 (M)	Nov 29, 1983 (Tu)	Dec 1, 1983 (Th)	Feb 15, 1989	6.00

^aThe auction, originally scheduled for Wednesday, May 25, was delayed by a temporarily binding debt ceiling constraint.

Similar comments apply to 2- and 4-year notes, which rolled on the last day of a month or quarter, respectively, and it could be anticipated that 7-year notes would, in time, roll on the fifteenth of the first month of a quarter and that 3- and 10-year notes and 30-year bonds would roll on the fifteenth of the second month of a quarter.¹⁰ (However, the issue dates of 7-year notes would have to be delayed about ten days before the notes became “true” cycle notes.) The idea of mimicking bill cycles was an important element in the early development of regular and predictable note issuance.¹¹ In contrast, 5-year notes and 20-year bonds were *not* cycle securities. Both matured on the fifteenth of the second month of a quarter but were issued at other times: 5-year notes early in the third month of a quarter and 20-year bonds early in the first month of a quarter.

¹⁰ The Treasury began issuing 3-year notes on a regular and predictable basis in November 1981, 7-year notes in January 1981, 10-year notes in August 1980, and 30-year bonds in August 1978, so the first issue of each series was still outstanding in 1983.

¹¹ In his March 1972 speech (noted in Chapter 1 above), Under Secretary Volcker stated that Treasury officials were considering a scheme of “more frequent but also more routine *rolling over* of relatively short-term notes” (Volcker 1972, emphasis added).

Table 2.5
**Mid-Quarter Refunding Auctions of 3-Year Notes, 10-Year Notes,
 and 30-Year Bonds in 1983**

Series	Announcement	Auction	Issue	Maturity	Amount (\$Billions)
3-yr	Jan 26, 1983 (W)	Feb 1, 1983 (Tu)	Feb 15, 1983 (Tu)	Feb 15, 1986	6.50
10-yr	Jan 26, 1983 (W)	Feb 2, 1983 (W)	Feb 15, 1983 (Tu)	Feb 15, 1993	4.50
30-yr	Jan 26, 1983 (W)	Feb 3, 1983 (Th)	Feb 15, 1983 (Tu)	Nov 15, 2012 R	3.50
3-yr	Apr 27, 1983 (W)	May 3, 1983 (Tu)	May 16, 1983 (M)	May 15, 1986	6.50
10-yr	Apr 27, 1983 (W)	May 4, 1983 (W)	May 16, 1983 (M)	May 15, 1993	4.75
30-yr	Apr 27, 1983 (W)	May 5, 1983 (Th)	May 16, 1983 (M)	Nov 15, 2012 R	3.75
3-yr	Jul 27, 1983 (W)	Aug 2, 1983 (Tu)	Aug 15, 1983 (M)	Aug 15, 1986	6.50
10-yr	Jul 27, 1983 (W)	Aug 3, 1983 (W)	Aug 15, 1983 (M)	Aug 15, 1993	5.25
30-yr	Jul 27, 1983 (W)	Aug 4, 1983 (Th)	Aug 15, 1983 (M)	Aug 15, 2013	4.00
3-yr	Oct 26, 1983 (W)	Nov 7, 1983 (M)	Nov 15, 1983 (Tu)	Nov 15, 1986	6.50
10-yr	Oct 26, 1983 (W)	Nov 9, 1983 (W)	Nov 15, 1983 (M)	Nov 15, 1993	5.25
30-yr	Oct 26, 1983 (W)	Nov 10, 1983 (Th)	Nov 15, 1983 (M)	Aug 15, 2013 R	4.25

Note: Reopenings are indicated with an "R."

The 4¼ Ceiling on Bond Coupon Rates

Treasury officials had broad, but not unlimited, authority to decide what to issue. Prior to 1939, Congress limited by statute the amount of bills and certificates, notes, and bonds that the Treasury could either issue or have outstanding,¹² but the last vestige of direct congressional control of maturity structure ended with the adoption of the Act of July 20, 1939, which provided for a simple ceiling on the total amount of debt outstanding.

The one remaining area of congressional control was a statutory limit on the coupon rate on a Treasury bond, to not more than 4¼ percent per annum. The "4¼ ceiling" was a vestige of a pre-World War I convention that Congress specified interest rates on new issues of Treasury bonds.¹³

¹² Garbade (2012, Chap. 21).

¹³ Garbade (2012, Chap. 3). A ceiling of 4 percent was imposed by the Second Liberty Bond Act of

Table 2.6
**End-of-Quarter Mini-Refunding Auctions of 4-Year Notes, 7-Year Notes,
 and 20-Year Bonds in 1983**

Series	Announcement	Auction	Issue	Maturity	Amount (\$Billions)
4-yr	Mar 15, 1983 (Tū)	Mar 22, 1983 (Tū)	Mar 31, 1983 (Th)	Mar 31, 1987	5.50
7-yr	Mar 15, 1983 (Tū)	Mar 23, 1983 (W)	Apr 4, 1983 (M)	Apr 15, 1990	4.75
20-yr	Mar 15, 1983 (Tū)	Mar 24, 1983 (Th)	Apr 4, 1983 (M)	May 15, 2003	3.25
4-yr	Jun 14, 1983 (Tū)	Jun 21, 1983 (Tū)	Jun 30, 1983 (Th)	Jun 30, 1987	5.75
7-yr	Jun 14, 1983 (Tū)	Jun 22, 1983 (W)	Jul 5, 1983 (Tū)	Jul 15, 1990	5.00
20-yr	Jun 14, 1983 (Tū)	Jun 23, 1983 (Th)	Jul 5, 1983 (Tū)	Aug 15, 2003	3.50
4-yr	Sep 13, 1983 (Tū)	Sep 20, 1983 (Tū)	Sep 30, 1983 (F)	Sep 30, 1987	5.75
7-yr	Sep 13, 1983 (Tū)	Sep 21, 1983 (W)	Oct 5, 1983 (W)	Oct 15, 1990	5.00
20-yr	Sep 13, 1983 (Tū)	Sep 22, 1983 (Th)	Oct 5, 1983 (W)	Nov 15, 2003	3.50
4-yr	Dec 20, 1983 (Tū)	Dec 27, 1983 (Tū)	Jan 3, 1984 (Tū)	Dec 31, 1987	6.00
7-yr	Dec 20, 1983 (Tū)	Dec 28, 1983 (W)	Jan 4, 1984 (W)	Jan 15, 1991	5.25
20-yr	Dec 20, 1983 (Tū)	Dec 29, 1983 (Th)	Jan 4, 1984 (W)	Nov 15, 2003 R	3.75

Note: Reopenings are indicated with an "R."

There was no similar ceiling on note coupon rates. However, before 1967, the Treasury could not issue notes with a maturity in excess of five years.¹⁴ Thus, prior to that year, it could not issue debt with a maturity in excess of five years at an interest rate in excess of 4¼ percent.

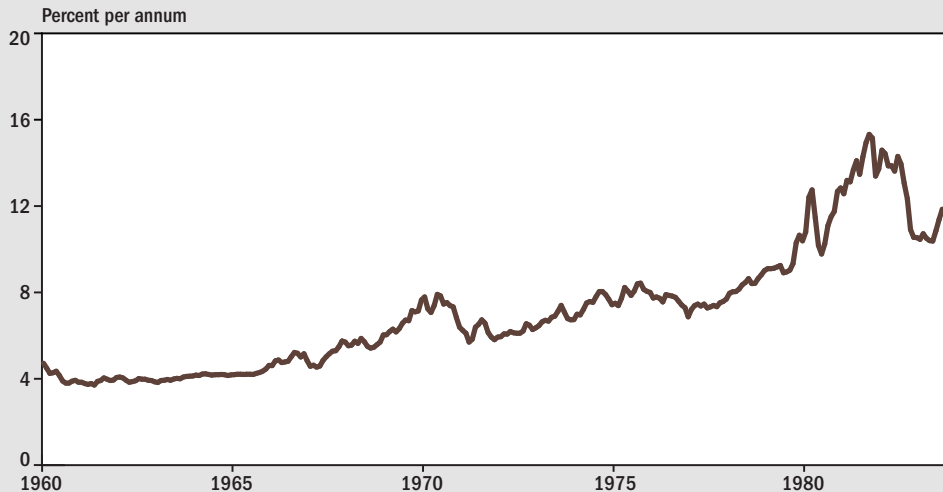
With only two brief exceptions, the 4¼ ceiling was not a binding constraint on Treasury debt management actions before the middle of 1965; yields on long-term Treasury debt were below 4¼ percent and Treasury officials were free to issue bonds whenever they pleased.¹⁵

September 24, 1917. The ceiling was raised to 4¼ percent by the Third Liberty Bond Act of April 4, 1918, and never subsequently changed.

¹⁴ Notes were issued pursuant to the Victory Liberty Loan Act of March 3, 1919.

¹⁵ The 4¼ ceiling prevented issuance of Treasury bonds in late 1931 and early 1932, when bond yields rose in the wake of Britain's departure from the gold standard (Garbade 2012, pp. 273-4) and in 1959 and early 1960 (Meltzer 2009, p. 69).

Chart 2.8
Yields on 10-Year Treasury Debt, 1960 to 1983



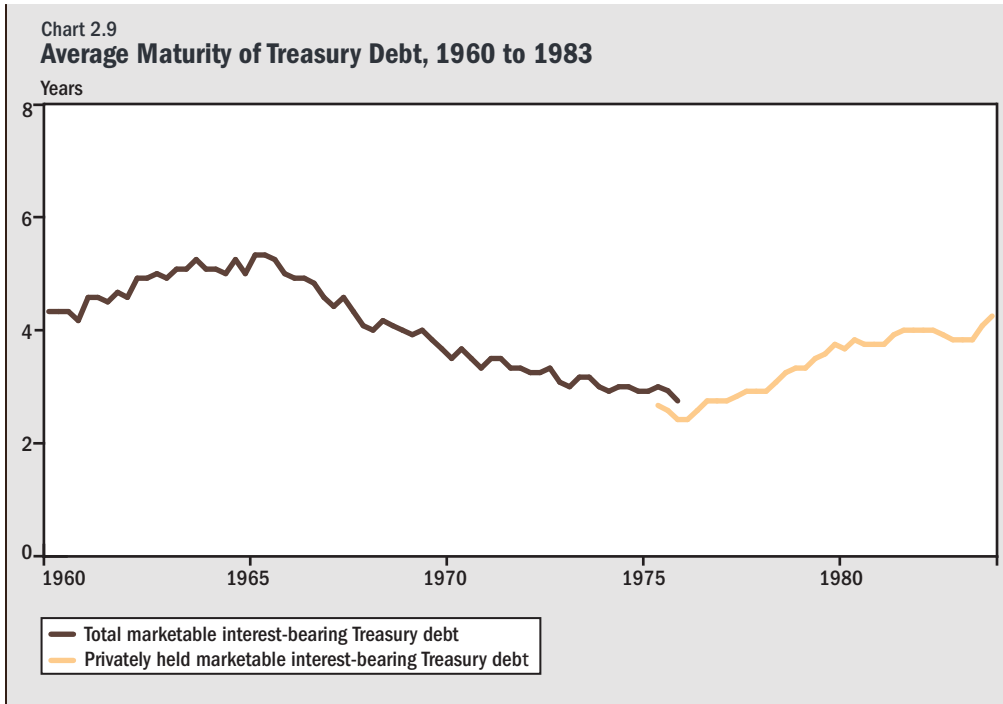
However, when long-term Treasury yields rose above $4\frac{1}{4}$ percent in mid-1965 (Chart 2.8), the Treasury was limited to issuing debt with a tenor of no more than five years. The constraint led to a steady erosion of average maturity over the next ten years (Chart 2.9) and to conflict between Treasury officials concerned about the risk of funding exclusively with shorter-term debt and a Congress reluctant to permit issuance of “expensive” long-term debt.¹⁶

Ever so slowly, Congress relaxed its control of longer-term debt. The Act of June 30, 1967, increased the maximum maturity of a note to seven years, and the Treasury promptly began to issue seven-year debt.¹⁷ After the Act of March 17, 1971, provided authority to issue up to \$10 billion of bonds with interest rates in excess of $4\frac{1}{4}$ percent, the Treasury promptly began to issue such bonds.¹⁸ However, neither act provided leeway sufficient to prevent the continued erosion of average maturity, which fell to a low of two years and five months in December 1975.

¹⁶ See “House Unit Clears Bill to Lift Rate Ceiling of $4\frac{1}{4}$ % on Long-Term Government Bonds,” *Wall Street Journal*, February 19, 1971, p. 2 (observing that “Congress views the [rate] ceiling as symbolic of a commitment to low interest rates and therefore objects to its removal”), and “Treasury Asks \$40 Billion Rise in Debt Limit, to \$435 Billion,” *New York Times*, February 18, 1971, p. 1 (reporting the belief of Representative Wright Patman of Texas, Chairman of the House Banking Committee, that “the existence of the $4\frac{1}{4}$ per cent interest rate ceiling was the only thing that had kept the Treasury from selling bonds with interest rates as high as 8 per cent and maturities of 30, 40 or even 50 years, during the recent period of tight money”).

¹⁷ Garbade (2007, Chart 6).

¹⁸ Garbade (2007, Chart 7).



The turning point came in 1976. The Act of March 15, 1976, increased the maximum maturity of a note to ten years and increased the quantitative exemption to the $4\frac{1}{4}$ ceiling to \$12 billion. The Act of June 30, 1976, increased the exemption further, to \$17 billion, and subsequent legislation raised the ceiling to \$110 billion by the beginning of 1983.¹⁹ The ability to issue notes with a maturity as long as ten years, as well as the ability to issue many more bonds exempt from the $4\frac{1}{4}$ ceiling, allowed the Treasury to raise the average maturity of the debt to four years and three months by the end of 1983.

The prolonged efforts of Treasury officials to extend the maturity structure of the debt implanted a lasting sensitivity among those officials, as well as among market participants (see Box 2.1, p. 26), to excessive reliance on short-term debt.

¹⁹ After 1976, the ceiling was raised progressively to \$27 billion (Act of October 4, 1977), \$32 billion (Act of August 3, 1978), \$40 billion (Act of April 2, 1979), \$50 billion (Act of September 29, 1979), \$70 billion (Act of October 3, 1980), and finally to \$110 billion (section 289(c) of the Tax Equity and Fiscal Responsibility Act of September 3, 1982).

Box 2.1

Expressions of Support for Maturity Extension by the Treasury Borrowing Advisory Committee, 1983-87**First-quarter 1983 committee report to the Secretary of the Treasury:**

“The Committee continues to feel that debt extension and the fostering of an upward sloping yield curve should be primary tenets of Treasury debt management policy.”

Fourth-quarter 1983 committee report to the Secretary of the Treasury:

“The Committee feels that there is opportunity to further address the structure of the debt by continuing to lengthen maturities and at the same time, continue to foster an upward sloping yield curve which will further augment the attractiveness of longer maturity Treasury securities.”

First-quarter 1986 committee report to the Secretary of the Treasury:

“With respect to the appropriate balance between bill and coupon issues in financing through June, the Committee retains its established stance of debt extension emphasizing longer dated securities at the expense of bills.”

First-quarter 1987 committee report to the Secretary of the Treasury:

“Some debt extension is still desirable.”

April 1987 special committee report to the Secretary of the Treasury:

“It was the sense of the Committee that further extension of the debt might be appropriate. The expected persistence of very sizable Federal deficits argues in favor of a long average maturity, because large deficits cannot be financed exclusively in any single maturity sector. Moreover, a long average maturity safeguards against the possibility of a surge in the deficit coinciding with a mountain of short-term maturities.”

Chapter 3

1984–85: New Products

The period from 1980 to 1984 was characterized by growing deficits and escalating increases in Treasury debt. Marketable debt increased a bit less than \$100 billion in 1980 and again in 1981 but thereafter grew more rapidly, increasing by \$160 billion in 1982, \$170 billion in 1983, and almost \$200 billion in 1984 (Chart 3.1).

Alarmed by the accelerating growth, Treasury officials in mid-1984 undertook a broad review of alternative borrowing techniques, looking for new ways to attract investors and reduce financing costs.¹ The review examined, among other things,

- a) securities targeted to foreign investors,
- b) inflation-indexed debt,
- c) 20-year bonds callable any time after five years, and
- d) expansion of the Federal Reserve book-entry system to include stripped principal and interest payments.²

The review produced two failures-to-launch (inflation-indexed debt and bonds callable after five years were not brought to market), one failure-following-launch, and one immense success.

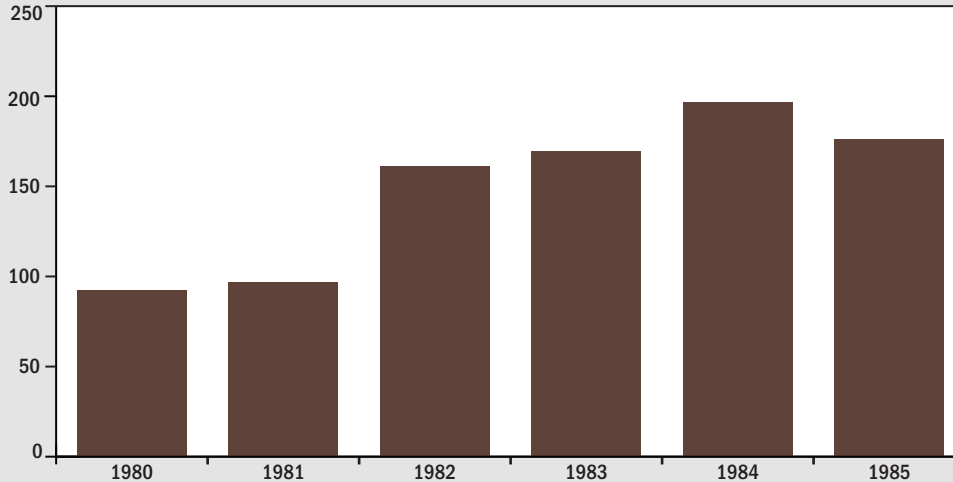
This chapter discusses the success, Treasury STRIPS (Separate Trading of Registered Interest and Principal Securities), and the failure, foreign-targeted notes. STRIPS did not provide a new source of funds—they were issued only in exchange for outstanding notes and bonds—but they expanded the demand for conventional bonds and facilitated the Treasury's efforts at lengthening the maturity structure of the debt.

The tangible and intangible representations of Treasury notes and bonds as bearer, registered, and book-entry securities played an important role in both the STRIPS and foreign-targeted note programs. We begin with a brief description of those representations.

¹ At the Major Issues Conference of the Securities and Exchange Commission on June 28, 1984, Treasury Secretary Donald Regan noted that “Treasury is evaluating alternative debt management techniques to minimize the cost of debt issuance in light of changing market developments” (*Treasury News*, “Address by Donald T. Regan, Secretary of the Treasury, before the SEC Major Issues Conference,” June 28, 1984). The review is also mentioned in “Rising Interest Rates Spur Treasury to Study Debt-Financing Options,” *Wall Street Journal*, July 10, 1984, p. 39; in the third-quarter 1984 Treasury policy statement announcing the August 1984 mid-quarter refunding (“We have been considering a number of alternative Treasury financing techniques, because of recent changes in the law as well as in market conditions which offer the possibility that new financing techniques might help to reduce the interest cost on the public debt”); and in *Treasury News*, “Statement by Donald T. Regan, Secretary of the Treasury,” August 16, 1984 (“It is a regular practice for Treasury to evaluate and reevaluate our borrowing techniques so as to reduce the costs of financing to American taxpayers”).

² “Rising Interest Rates Spur Treasury to Study Debt-Financing Options,” *Wall Street Journal*, July 10, 1984, p. 39, and *Treasury News*, “Statement by Donald T. Regan, Secretary of the Treasury,” August 16, 1984.

Chart 3.1
Annual Increase in Marketable Treasury Debt, 1980 to 1985
 Billions of dollars



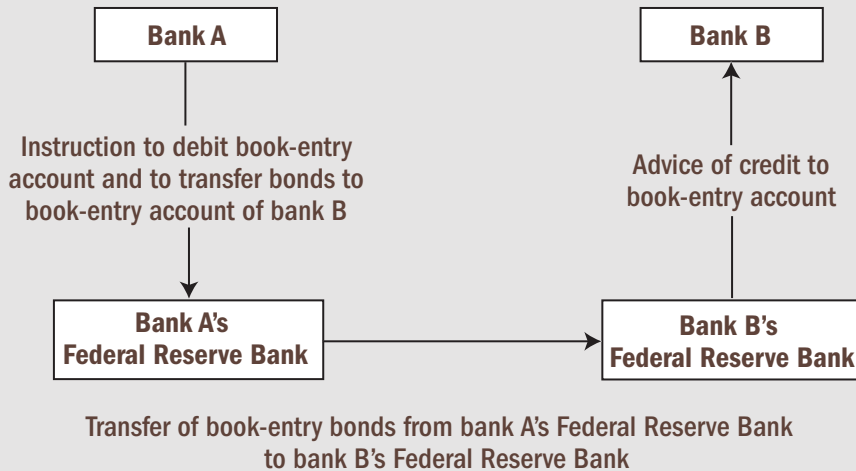
Bearer, Registered, and Book-Entry Securities

At the beginning of 1982, Treasury notes and bonds came in three forms: bearer, registered, and book-entry. The first two forms were engraved certificates; the third was a record in a database maintained at a Federal Reserve Bank. Market participants could convert from one form to another on demand. Bills were available only in book-entry form.

A *bearer* bond consisted of a “corpus,” which conveyed the government’s promise to pay principal and interest, and a series of detachable coupons, each of which was a claim to an interest payment on a specific date. To obtain an interest payment, investors detached the appropriately dated coupon and sent it (through the banking system) to the Treasury for collection. When the bond matured, investors asserted their principal claim by sending the corpus for collection. The government’s promises ran to whatever party held the bond, so bondholders could transfer ownership of their claims simply by delivering the bond to a new owner.

A bond was said to be *registered* if the government’s promise to pay principal and interest ran to a person whose name and address were recorded with the Treasury. There was an engraved certificate associated with a registered bond, on the face of which the name of the owner appeared, but the certificate served primarily as a device for effecting change in the record of ownership. An investor who wanted to convey a registered bond to a new owner inscribed the new registration information on the back of the bond and sent it to the Treasury. Upon receipt, the Treasury would change its records and issue a new certificate to the new owner. The Treasury sent interest checks to the owners of registered bonds on its own initiative. It could have done the same with principal payments, but chose instead to require tender of the certificates as a way to recover matured certificates.

Exhibit 3.1
Transfer of Book-Entry Treasury Bonds from Bank A to Bank B



In addition to the Treasury's bearer and registered bonds, the twelve Federal Reserve Banks maintained computer systems that recorded information on *book-entry* bonds held by member banks, either for their own account or as custodian for a customer (such as a broker-dealer, a pension fund, or an individual). A member bank, call it bank A, that sold a bond to another member bank (bank B) could deliver the bond from its book-entry account by instructing its Reserve Bank to transfer the record of ownership of the bond electronically to bank B's Reserve Bank, for the account of bank B (Exhibit 3.1). A custodial customer of bank A, call it investor a, that sold a bond to investor b (a custodial customer of bank B), could similarly deliver the bond by ordering its custodian to debit its custodial account and to transfer the bond to bank B for the custodial account of investor b (Exhibit 3.2). Transfers of book-entry bonds did not involve movement of engraved certificates and were quicker and cheaper than transfers of bearer or registered bonds.³

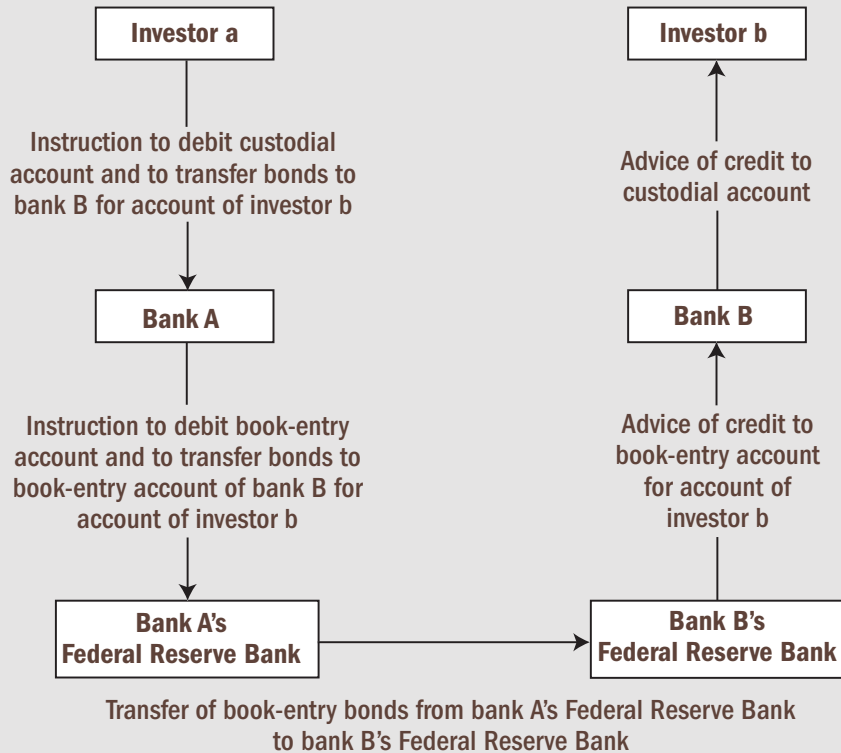
The Treasury paid principal and interest on book-entry securities by transferring to the Federal Reserve Banks funds sufficient for all of the book-entry securities recorded in their systems. The district Banks then credited the reserve accounts of their member banks, who in turn credited the custodial accounts of their customers.

The End of Bearer Securities

Bearer securities were an open invitation to tax evasion and were costly to print and safeguard. Working in cooperation with the Federal Reserve System, the Treasury eliminated bearer

³ Garbade (2004b) discusses the origins of the book-entry system.

Exhibit 3.2

Transfer of Book-Entry Treasury Bonds from Investor a (a Custodial Customer of Bank A) to Investor b (a Custodial Customer of Bank B)

bills in the mid-1970s.⁴ (Bills were never issued in registered form, so the change left bill investors reliant on the Fed's book-entry system.) In 1982, Congress went a step further and mandated, in section 310 of the Tax Equity and Fiscal Responsibility Act of September 3, 1982, that, with one important exception, the Treasury stop issuing new notes and bonds in bearer form.⁵ The so-called "foreign-targeted" exception allowed the Treasury to issue bearer debt

⁴ Federal Reserve Bank of New York Circular no. 7939, "Update on Book-Entry Procedure, Treasury Plans to Phase Out Definite Treasury Bills in New Borrowings," August 20, 1976.

⁵ See also Federal Reserve Bank of New York Circular no. 9363, "Treasury Announces Auctions of \$11,750 Million of Notes and Bonds and Elimination of Bearer Securities for New Bond Issues," September 15, 1982, and U.S. Bureau of the Public Debt (1982). In 1986, the Treasury eliminated registered securities as well (Federal Reserve Bank of New York Circular no. 10,058, "Treasury to Auction \$10,000 Million of 2-Year Notes," July 17, 1986, and Circular no. 10,064, "Treasury Announces August Quarterly Financing," July 31, 1986). See also U.S. Bureau of the Public Debt (1983). Marypenny (1986) examines the transition to a book-entry-only Treasury securities market.

as long as (a) the debt was issued pursuant to arrangements designed to ensure that it was not sold to “United States persons”⁶ and (b) the interest on the debt was not payable in the United States.

Bond Stripping

Bond stripping—splintering the claims to principal and interest payments on a Treasury bond into separate single-payment securities—originated in the late 1970s, in part because high interest rates had led to long-term bonds with durations materially below the investment horizons of long-term investors such as life insurance companies and pension funds.⁷ (In contrast, single-payment claims have durations equal to their time to maturity, regardless of the level of interest rates.) Treasury officials observed that single-payment securities had become “very popular for those who . . . seek greater certainty in matching the maturities of their assets and liabilities.”⁸ Stripping was attractive to the Treasury because it reduced the floating supply of whole bonds and, as noted by the Treasury Borrowing Advisory Committee in 1984, “created the opportunity for the Treasury to sell more long bonds than otherwise would be possible.”⁹

Physical Strips and Custodial Receipts

Prior to 1982, bonds were stripped by physically separating the coupons of a bearer bond from the corpus and from each other. However, physical strips were unpopular with custodians (and their insurance companies) because the coupons were small, difficult to control, and susceptible to theft. Additionally, by the summer of 1982, market participants were well aware that the prospective statutory prohibition of Treasury issuance of new bonds in bearer form meant the supply of strippable bonds would contract over time.

Beginning in mid-1982, bond stripping was done with registered custodial receipts, including TIGRs (Treasury Investment Growth Receipts), a proprietary product of Merrill Lynch launched in August,¹⁰ CATS (Certificates of Accrual on Treasury Securities), a proprietary product of Salomon Brothers launched at the same time,¹¹ and TRs (Treasury Receipts), a generic product launched in early 1984.¹² In each case, an issuer deposited book-entry bonds with a custodian (such as Manufacturers Hanover

⁶ The Treasury defined a “United States person” as “a citizen, national, or resident of the United States; a corporation, partnership, or other entity created or organized in or under the laws of the United States or any political subdivision thereof; or an estate or trust that is subject to United States federal income tax regardless of the source of its income” (Department of the Treasury Circular no. 31-84, “Foreign-Targeted Treasury Notes of September 30, 1988, Series P-1988,” October 10, 1984).

⁷ Garbade (1996, Chaps. 3 and 5) discusses duration and the related concept of immunization.

⁸ *Treasury News*, “Treasury Announces New STRIPS Program,” January 15, 1985.

⁹ First-quarter 1984 TBAC report.

¹⁰ *Wall Street Journal*, August 12, 1982, p. 29.

¹¹ *Wall Street Journal*, August 18, 1982, p. 36.

¹² “Zero Coupon Selling Revised,” *New York Times*, January 10, 1984, p. D7.

Trust Company, the custodian for TIGRs, or Morgan Guaranty Trust, the custodian for CATS) in return for conveniently denominated registered custodial receipts—that is, certificated claims to the individual interest and principal payments on the bonds. The issuer could then market the receipts to interested investors.

The primary drawback to bond stripping with custodial receipts was that sales of receipts settled in the same way as sales of registered Treasury bonds—by delivery of a registered instrument—and had to be followed by a change in the registration records of the custodian bank. The process was time-consuming and costly, and it inhibited the development of a liquid secondary market.

Treasury STRIPS

On August 16, 1984, Secretary of the Treasury Donald Regan announced that the Treasury would soon unveil “an innovation which will increase the efficiency of the new market for zero-coupon securities.”¹³ He observed that “over the past two years Government securities dealers have created a variety of zero-coupon securities by purchasing conventional Treasury securities, ‘stripping’ the interest payments, and selling them directly or through various forms of [custodial receipts].” Regan noted that “these developments have broadened the market for Treasury securities and reduced Treasury’s financing costs.” Now, he said, “the Treasury plans to make the interest payments on certain of its securities available for separate trading on the [Federal Reserve’s] book-entry system. . . . Such an innovation will increase trading and liquidity, and reduce the paperwork and insurance costs in the zero-coupon market, as well as further reduce the cost of financing the public debt.”

The Treasury unveiled its STRIPS program on January 15, 1985,¹⁴ stating that the new program would provide “a more efficient instrument for the market that has developed since 1982 in zero-coupon obligations based on Treasury securities.” Officials expected that STRIPS would “greatly reduce market transaction and financing costs, stimulate competition, and facilitate further expansion of the zero-coupon market.” Of particular importance, “the savings made possible by STRIPS will be reflected in the competitive bidding for Treasury securities.”

The 10-year notes and 30-year bonds offered in the February 1985 mid-quarter refunding were the first securities eligible for the STRIPS program. Box 3.1 discusses two modifications in note and bond contract provisions that were made to accommodate the new program: the elimination of the Treasury’s option to call a 30-year bond for

¹³ *Treasury News*, “Statement by Donald T. Regan, Secretary of the Treasury,” August 16, 1984.

¹⁴ *Treasury News*, “Treasury Announces New STRIPS Program,” January 15, 1985; “U.S. Facilitates Zero Coupons,” *New York Times*, January 16, 1985, p. D17; and “U.S. Is Altering Rules to Accommodate Growing Market in ‘Zero-Coupon’ Bonds,” *Wall Street Journal*, January 16, 1985, p. 43.

Box 3.1

Changes in Treasury Note and Bond Contract Provisions Made to Accommodate the STRIPS Program

The STRIPS program prompted two notable changes in Treasury note and bond contract provisions.

First, because coupons payable after the first call date on a 30-year bond might not be paid (and hence were not separable from the bond's principal), the Treasury stopped including call options on new issues of 30-year bonds. Beginning in February 1985, the Treasury issued only non-callable bonds.

Second, because interest STRIPS were limited to regular semiannual interest claims, the Treasury revised its convention for setting the "dated dates" of 10-year notes and 30-year bonds. (A dated date is the date that interest begins to accrue.) Prior to February 1985, the Treasury set the dated date of a new note or bond to the date the security was issued. If a 10-year note or 30-year bond was issued on the sixteenth or seventeenth of the second month of a quarter (because the fifteenth was a Sunday or Saturday, respectively), the security would have a short first coupon.^a Beginning in February 1985, the Treasury set the dated dates of all new 10-year notes and 30-year bonds to the fifteenth, thus ensuring that the securities would have full first coupons. For example, the 9 $\frac{7}{8}$ percent bond of November 15, 2015, was issued on November 29, 1985 (because of a temporarily binding debt ceiling constraint), but nevertheless had a dated date of November 15. The bond was, therefore, issued with fourteen days of accrued interest.

^a Short first coupons are discussed in Garbade (1996, pp. 13-6).

early redemption and the elimination of "short first coupons" on 10-year notes and 30-year bonds.¹⁵

Generic Interest STRIPS and Reconstitution

The initial version of the STRIPS program provided that interest STRIPS were not fungible with principal STRIPS payable on the same date, and that STRIPS derived from

¹⁵ Twenty-year bonds were also included in the program, but they had a "long first coupon" that could not easily be eliminated and were not eligible for stripping until after they had paid their first coupons. Long first coupons are discussed in Garbade (1996, pp. 16-21).

one note or bond were not fungible with STRIPS payable on the same date but derived from another note or bond. Thus, STRIPS for

- a) the principal payment on the 11¼ percent bond maturing on February 15, 2015,
- b) the last interest payment on that bond, and
- c) the second-to-last interest payment on the 10% percent bond maturing on August 15, 2015,

were distinct securities, even though they were all payable on February 15, 2015. This complicated inventory management for market participants and stunted the liquidity of the new securities.

It was necessary, for purposes of Treasury accounting, to distinguish among principal STRIPS derived from different notes and bonds, and to distinguish interest STRIPS from principal STRIPS payable on the same date, but it was not necessary to distinguish among interest STRIPS payable on a common date but derived from different notes and bonds. In mid-1985, the Treasury introduced generic CUSIP numbers¹⁶ for interest STRIPS payable on a common date, stating that “the change to generic CUSIP numbers will further increase the liquidity of the STRIPS program by substantially reducing the number of CUSIP designations, . . . thereby reducing transaction costs and at the same time broadening the marketability of STRIPS.”¹⁷

Two years later, the Treasury expanded the STRIPS program to allow for the *reconstitution* of a note (or bond) from generic interest STRIPS and principal STRIPS derived from the same note (or bond).¹⁸ Reconstitution facilitated arbitrage between whole notes and bonds and STRIPS and further enhanced the efficiency and liquidity of the STRIPS market.¹⁹

Market Reception

Even before the STRIPS program was implemented, the Treasury Borrowing Advisory Committee stated its belief that STRIPS would “increase demand for long term securities and . . . reduce interest costs on financing the debt.”²⁰ The subsequent market response to the new program fully met the Committee’s expectations.

The Treasury issued \$6.24 billion of 30-year bonds in the first auction offering of strip-pable bonds in February 1985. By the end of the following month, market participants had

¹⁶ A CUSIP (Committee on Uniform Security Identification Procedures) number is a nine-character alphanumeric code that identifies a security for purposes of settling trades. Securities with the same CUSIP number are fungible, while securities with different CUSIP numbers are not.

¹⁷ *Treasury News*, “Treasury Announces Change to Generic CUSIPs for STRIPS,” June 14, 1985.

¹⁸ *Treasury News*, “Treasury Announces Date for Reconstitution of Securities in STRIPS Program,” March 31, 1987.

¹⁹ Jordan, Jorgensen, and Kuipers (2000) provide a clear, careful discussion of arbitrage between whole notes and bonds and STRIPS.

²⁰ First-quarter 1985 TBAC report.

Table 3.1
Stripping Activity in the 30-Year Bonds Issued in 1985

	11¼s of Feb 15, 2015	10½s of Aug 15, 2015	9⅞s of Nov 15, 2015
Percentage of issue stripped at the end of . . .	\$6.24 billion issued on Feb 15; another \$6.44 billion issued on May 15	\$7.15 billion issued on Aug 15	\$6.90 billion issued on Nov 29
Mar 1985	42.9	—	—
Jun	30.7	—	—
Sep	38.6	10.5	—
Dec	59.4	25.9	0.0
Mar 1986	64.2	33.8	0.4
Jun	65.9	35.6	0.4
Sep	66.9	48.0	3.2
Dec	68.0	57.6	5.4
Mar 1987	69.1	64.3	5.4
Jun	70.4	69.7	19.8
Sep	72.1	74.1	36.4
Dec	73.5	73.8	38.8

stripped \$2.68 billion (43 percent) of the issue. The advisory committee remarked that “the stripping feature has obviously been quite successful”²¹ and Treasury officials stated that they were “very pleased with the success of the STRIPS program.”²² In mid-1985 the advisory committee observed that the program “has been very successful in broadening the market for long bonds.”²³

Table 3.1 shows stripping activity in the three 30-year bonds issued in 1985. By the end of 1987, more than 70 percent of the first two issues had been stripped. Stripping proceeded more slowly in the case of the third bond, but even there almost 40 percent of the issue had been stripped by the end of 1987.²⁴

²¹ Second-quarter 1985 TBAC report.

²² Second-quarter 1985 Treasury policy statement.

²³ Third-quarter 1985 TBAC report.

²⁴ The literature on STRIPS includes Livingston and Gregory (1989), Daves and Ehrhardt (1993), Lim and Livingston (1995), Grinblatt and Longstaff (2000), and Jordan, Jorgensen, and Kuipers (2000).

Foreign-Targeted Treasury Notes

Prior to 1984, the Internal Revenue Code assessed a flat 30 percent tax on investment income paid to a non-resident alien or foreign corporation by a U.S. payor.²⁵ The tax was generally collected through withholding by the U.S. payor, but was reduced or omitted if the beneficial owner of the underlying security was a resident of a country with whom the United States had a tax treaty.

In the early 1980s, the principal foreign market for dollar-denominated debt was the Eurobond market in bearer bonds issued and traded outside of the United States. Because the country of residence of the beneficial owner of a bearer bond could not be established reliably, interest on Eurobonds issued by U.S. corporations was subject to the foreign withholding tax. The tax put the all-in cost of the bonds above that of comparable domestic debt and effectively precluded U.S. corporations from accessing the Eurobond market directly. However, they could, and did, access the market indirectly, by issuing registered bonds to a foreign subsidiary (typically domiciled in the Netherlands Antilles), which in turn issued bearer bonds, guaranteed by the parent company, in the Eurobond market. Interest on the former bonds was not subject to the foreign withholding tax because the U.S. had a tax treaty with the Netherlands that extended to the Netherlands Antilles;²⁶ interest on the latter bonds was not subject to the tax because the foreign subsidiary was not a U.S. payor. Issuance through such conduits grew from about \$1 billion in 1978 to about \$5 billion in the first seven months of 1984.²⁷

U.S. issuers criticized the foreign withholding tax, noting that it did little more than force them to go through costly and complicated foreign subsidiaries when they wanted to access the Eurobond market, and they urged repeal.²⁸ Internal Revenue Service officials, however, sought to close the foreign subsidiary loophole by requiring withholding on interest payments either to or by foreign subsidiaries that were little more than conduits.²⁹ The two sides struggled inconclusively until 1984, when the rising deficit led senior Treasury officials, anxious to develop new funding sources, to support repeal.³⁰

²⁵ United States Code, title 26, section 871(a); Franson (1984, pp. 935-6, n. 20); Joint Committee on Taxation (1984a, pp. 3-4); and Joint Committee on Taxation (1984b, pp. 387-8).

²⁶ Franson (1984, pp. 935-6, n. 20), and Joint Committee on Taxation (1984b, pp. 388-90).

²⁷ Franson (1984, p. 938).

²⁸ Franson (1984, p. 938).

²⁹ Franson (1984, pp. 938-9), and Joint Committee on Taxation (1984b, p. 390).

³⁰ Franson (1984, p. 953) describes the Treasury as “a driving force behind the repeal legislation” and notes (p. 941, n. 40) the “aggressiveness” of Secretary Regan in promoting repeal. See also *Treasury News*, “Address by Donald T. Regan, Secretary of the Treasury, before the SEC Major Issues Conference,” June 28, 1984 (stating that repeal of the foreign withholding tax would give the Treasury “an opportunity to distribute issues to a class of international investors who heretofore declined to purchase those securities because of the withholding requirement”), and “Rising Interest Rates Spur Treasury to Study Debt-Financing Options,” *Wall Street Journal*, July 10, 1984, p. 39 (attributing to Thomas Healy, Assistant Treasury Secretary for Domestic Finance, the view that “by tapping the overseas market and encouraging Europeans to participate in auctions for U.S. securities, the government might eventually save itself \$1.5 billion in interest costs each year”).

Repeal of the Foreign Withholding Tax

Section 127 of the Deficit Reduction Act of July 18, 1984, repealed the foreign withholding tax on payments of “portfolio interest” to non-resident aliens and foreign corporations. Interest on a registered or book-entry bond was classified as “portfolio interest” if the payor had received a statement from the payee that the beneficial owner of the bond was not a United States person. Interest on a bearer bond was considered “portfolio interest” if the bond was sold under arrangements reasonably designed to ensure that it was not sold to United States persons and if the interest was payable only outside the United States.

The Treasury Refrains from Issuing Bearer Bonds

Section 310 of the Tax Equity and Fiscal Responsibility Act of 1982 allowed the Treasury to issue bearer bonds targeted to foreigners, and section 127 of the Deficit Reduction Act of 1984 allowed the Treasury to forgo withholding 30 percent of the interest payments on such targeted bonds. Some Administration officials contemplated issuing foreign-targeted bearer Treasury bonds,³¹ but Congress, concerned that the U.S. government would be seen as condoning tax evasion, objected.³² Following discussions with congressional leaders, Secretary Regan announced in mid-August 1984 that the Treasury would not sell debt in bearer form and that any debt sold to foreign investors would, like debt sold domestically, be available only in book-entry and registered forms.³³ Officials also stated that they would market Treasury debt targeted to foreign investors using arrangements designed to ensure sale to parties other than United States persons.³⁴

³¹ “Rising Interest Rates Spur Treasury to Study Debt-Financing Options,” *Wall Street Journal*, July 10, 1984, p. 39. The article states that “the Treasury is considering issuing bearer bonds that could only be purchased overseas, and not by Americans. That would make Treasury securities more attractive to the European markets, where, says [Manuel Johnson, Assistant Secretary of the Treasury for Economic Policy], people ‘want privacy in terms of their investments.’” See also “Decision Soon On Debt Issues,” *New York Times*, August 2, 1984, p. D16 (noting that “bearer bonds, issued without the name of a buyer, to attract new foreign investment” were under consideration by Treasury officials), and “Treasury to Sell \$16.75 Billion of Notes, Bonds,” *Wall Street Journal*, August 2, 1984, p. 34 (reporting that “Treasury has been considering selling bearer bonds to foreigners, enabling those buyers to remain anonymous”).

³² Franson (1984, p. 953), and “Why the Treasury’s Plan to Sell Debt Overseas May Not Fly,” *Business Week*, October 22, 1984, p. 129 (noting “months of controversy over whether the U.S. government could sell unregistered bonds overseas without inviting widespread tax evasion”).

³³ *Treasury News*, “Statement by Donald T. Regan, Secretary of the Treasury,” August 16, 1984 (indicating that “Treasury will . . . provide for additional amounts of certain issues of Treasury notes or bonds which will be targeted to foreign purchasers in a special registered form. *They will not be issued in bearer form.*” Emphasis in the original.).

³⁴ See “Income Taxes; Sanctions on Issuers and Holders of Registration-Required Obligations Not in Registered Form,” *Federal Register*, August 22, 1984, p. 33228 (“Although the Treasury Department has the statutory authority to issue bearer obligations, it has no plans to do so. To the extent that the Treasury Department intends to issue obligations to foreign purchasers, it will issue registered obligations pursuant to arrangements reasonably designed to ensure sale to non-United States persons”). See

Foreign-Targeted Treasury Note Issuance

Between October 1984 and February 1986, Treasury officials auctioned four foreign-targeted notes (Table 3.2): a 4-year note, two 5-year notes, and a 10-year note. All four offerings were made concurrently with auction offerings of conventional notes of the same tenor. (The latter were important because the coupon rate on a foreign-targeted note was not set in the auction for the note, but rather matched to the coupon rate established in the concurrent auction for the conventional note. This unusual procedure was related to a conversion option discussed below.) We describe the first offering in detail; the three succeeding offerings were similar.

The Treasury announced the first foreign-targeted offering on October 10, 1984.³⁵ The notes were auctioned on October 24 (making for an unusually long, but undoubtedly necessary, pre-auction marketing period), and dated and issued on October 31. The notes paid interest on September 30, 1985, and on each subsequent September 30 until and including maturity on September 30, 1988. (Interest was paid annually to match the annual interest convention of the Eurobond market.) Pursuant to section 127 of the Deficit Reduction Act of 1984, payment of interest to a foreign financial institution was not subject to the foreign withholding tax if the payee provided a certificate stating that the beneficial owner of the note was not a United States person.³⁶

The auction for the foreign-targeted notes was complicated by the Treasury's decision to market the notes using arrangements designed to ensure sale to foreign investors. The notes were offered only to (a) United States aliens³⁷ that were not

also "Employment Taxes; Application of the Repeal of 30 Percent Withholding by the Tax Reform Act of 1984 and of Information Reporting and Backup Withholding in Light of Such Repeal," *Federal Register*, August 22, 1984, p. 33239 (providing that "an obligation is considered to be targeted to foreign markets . . . if it is sold . . . only to foreign persons . . . in accordance with procedures similar to those prescribed in [Internal Revenue Service regulation] 1.163-5(c)(2)(i)"), and "Income Taxes, Sanctions on Issuers and Holders of Registration-Required Obligations Not in Registered Form," *Federal Register*, August 22, 1984, p. 33228 (announcing a temporary version of regulation 1.163-5(c)(2)(i) that provided, among other things, that a foreign-targeted obligation could not be offered for sale or delivered within the United States, that underwriters had to confirm with buyers their understanding that the buyers were not United States persons, and that definitive obligations could not be released except upon representation by a recipient that the beneficial owner was not a United States person).

³⁵ Department of the Treasury Circular no. 31-84, "Foreign-Targeted Treasury Notes of September 30, 1988, Series P-1988," October 10, 1984.

³⁶ Additionally, interest was not subject to the tax if the payee provided a certificate stating that the beneficial owner was a foreign branch of a United States financial institution. This provision was necessary if such foreign branches were not to be excluded from participating as dealers in the offshore market for foreign-targeted Treasury debt.

³⁷ A "United States alien" was defined as "a corporation, partnership, individual, or fiduciary that for United States federal income tax purposes . . . is a foreign corporation, a nonresident alien individual, a nonresident alien fiduciary of a foreign trust or estate, or a foreign partnership one or more of the members of which is, for United States federal income purposes, a foreign corporation, a nonresident alien individual, or a nonresident alien fiduciary of a foreign trust or estate" (Department of the Treasury Circular no. 31-84, "Foreign-Targeted Treasury Notes of September 30, 1988, Series P-1988," October 10, 1984).

Table 3.2
Foreign-Targeted Treasury Notes and Concurrently Auctioned Conventional Notes

Series	11 ³ / ₈ s of Sep 30, 1988	11s of Feb 15, 1990	9 ⁷ / ₈ s of Aug 15, 1990	8 ⁷ / ₈ s of Feb 15, 1996
	4-Year	5-Year	5-Year	10-Year
Foreign-Targeted Note				
Dated date	Oct 31, 1984	Dec 3, 1984	Jun 4, 1985	Feb 15, 1986
Issue date	Oct 31, 1984	Dec 3, 1984	Jun 4, 1985	Feb 18, 1986
First coupon date	Sep 30, 1985	Feb 15, 1986	Aug 15, 1986	Feb 15, 1987
Maturity date	Sep 30, 1988	Feb 15, 1990	Aug 15, 1990	Feb 15, 1996
Amount offered, \$billions	1.00	1.00	1.00	1.00
Amount tendered	4.00	2.15	2.46	1.59
Amount issued	1.00	1.00	1.00	1.00
Average auction yield, percent per annum, compounded annually	11.41	11.25	10.00	9.12
Average auction yield, percent per annum, compounded semiannually	11.10	10.95	9.76	8.92
Concurrently Auctioned Conventional Note				
Dated date	Oct 31, 1984	Dec 3, 1984	Jun 4, 1985	Feb 15, 1986
Issue date	Oct 31, 1984	Dec 3, 1984	Jun 4, 1985	Feb 18, 1986
First coupon date	Mar 31, 1985	Aug 15, 1985	Feb 15, 1986	Aug 15, 1986
Maturity date	Sep 30, 1988	Feb 15, 1990	Aug 15, 1990	Feb 15, 1996
Amount offered, \$billions	6.00	6.75	7.00	7.00
Amount tendered	15.96	18.98	15.20	15.77
Amount issued	6.54	6.93	7.16	7.56
Average auction yield, percent per annum, compounded semiannually	11.42	11.02	9.95	8.97

individuals, and (b) foreign branches of U.S. financial institutions. Bidders were required to certify that the notes were not being acquired for a United States person or for resale to a United States person, or that they were being acquired for a foreign branch of a United States financial institution.³⁸

The coupon rate on the foreign-targeted notes was set in a concurrent auction for conventional 4-year Treasury notes. Bidding in the auction for the conventional notes resulted in an average auction yield of 11.42 percent, compounded semiannually, and a coupon rate of 11¾ percent. The coupon rate for the foreign-targeted notes was, consequently, set at 11¾ percent as well.

The auction for the foreign-targeted notes was conducted as a multiple-price auction in terms of yield, compounded annually. The Treasury accepted bids specifying yields up to 11.46 percent; the average accepted yield was 11.41 percent. The invoice price for an accepted tender was computed from the yield specified on the tender using a 30/360 calendar (the convention of the Eurobond market), rather than an actual/actual calendar (the convention of the Treasury market).

A yield of 11.41 percent compounded annually is equivalent to a yield of 11.10 percent compounded semiannually,³⁹ so the average auction yield on the foreign-targeted notes was about 32 basis points lower than the average auction yield on the conventional notes, saving the Treasury a tidy \$3.2 million per year. Secretary Regan was said to be “very pleased” with the results of the auction.⁴⁰

The Conversion Option

Each of the four foreign-targeted notes was convertible, at the option of a holder, into the concurrently auctioned conventional note. The conversion option allowed an investor that wanted to sell a foreign-targeted note to decide whether to (a) sell the note directly or (b) convert the note into a conventional note and sell the conventional note. The conversion option thus backstopped the liquidity of the foreign-targeted notes,⁴¹ a non-trivial matter in view of the fact that the Treasury issued only \$1 billion of each of the notes, compared with between \$6½ billion and \$7½ billion of the concurrently auctioned conventional notes.⁴²

³⁸ The latter provision was needed if such branches were not to be barred from underwriting the offering.

³⁹ $[1 + \frac{1}{2} (.1110)]^2 \approx [1 + .1141]$.

⁴⁰ Fourth-quarter 1984 Treasury policy statement. See also “Treasury Seeks Delay In Agency Debt Sales Targeted to Foreigners,” *Wall Street Journal*, November 1, 1984, p. 47 (quoting Beryl Sprinkel, Under Secretary for Monetary Affairs, as saying that the Treasury was “very pleased” with the auction results).

⁴¹ This was not the first time the Treasury used a conversion option to enhance liquidity. In March 1951, the Treasury offered 2¾ percent *non-transferable* bonds maturing in 1980 in exchange for 2½ percent bonds maturing in 1972. The 2¾ percent bonds were convertible, throughout their life, into *negotiable* 1½ percent 5-year notes (Federal Reserve Bank of New York Circular no. 3671, “Offering of 2¾ Percent Treasury Bonds,” March 19, 1951).

⁴² The Treasury Borrowing Advisory Committee had warned in mid-July 1984 that “the secondary

Conversion proceeded on a par-for-par basis—that is, an investor could convert \$1 million of foreign-targeted notes into \$1 million of conventional notes, together with a side payment that left the Treasury indifferent to the conversion. The side payment was computed as the difference between

- a) the present value of the payments remaining on the foreign-targeted notes, valued at the annually compounded average auction yield on the notes (11.41 percent in the case of the first note), and
- b) the present value of the payments remaining on the conventional notes, valued at the semiannually compounded yield equivalent to the annually compounded average auction yield on the foreign-targeted notes (11.10 percent in the case of the first note).

The Treasury paid the investor if the side payment was positive, that is, if the foreign-targeted notes were deemed more valuable than the conventional notes, and conversely if the side payment was negative. As a general matter, a side payment was positive if conversion was effected in the second half of the annual interest period of the foreign-targeted notes (when the notes carried six more months of accrued interest than the conventional notes) and negative otherwise (because, at any given yield, notes paying on a semiannual basis are more valuable than notes paying the same dollar amount on an annual basis).⁴³

Market Reception

The apparent success of the first offering of foreign-targeted notes proved to be a mirage. Even before the auction, *Business Week* warned that “the first . . . offering will not be much of a test” because “it is still politically unthinkable for a U.S. government issue to flop.” The magazine quoted the head of government bond trading at Salomon Brothers as saying that “people will be supportive because [Under Secretary Beryl W.] Sprinkel and [Assistant Secretary David C.] Mulford have solicited it.” One market participant asserted that “everyone will make an effort for the Treasury. The bottom line is that 80% of this first auction is political.”⁴⁴

Participation in the first auction was as robust as anticipated and produced a bid-to-cover ratio of 4.0. However, in late October, the Treasury Borrowing Advisory Committee

market for targeted issues would be quite limited” (report of the July 10, 1984, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury).

⁴³ Garbade (1987) examines conversion of foreign-targeted notes in more detail.

⁴⁴ “Why the Treasury’s Plan to Sell Debt Overseas May Not Fly,” *Business Week*, October 22, 1984, p. 129.

observed that “a sizable portion of the . . . issue remains to be permanently placed.”⁴⁵ The *New York Times* reported that some market participants believed that “the first auction might have overstated the actual foreign demand, because . . . many securities dealers participated to make a name for themselves [with] the Treasury.” One participant observed that “there is political and publicity value from being involved in the first auction.”⁴⁶

Proceeding opportunistically, rather than regularly and predictably, the Treasury auctioned \$1 billion of foreign-targeted 5-year notes in late November 1984 and again in late May 1985. The average yield in the November auction was 11.25 percent per annum, compounded annually, equivalent to a semiannually compounded yield of 10.95 percent. The average auction yield on the concurrently auctioned conventional 5-year notes was 11.02 percent, compounded semiannually, so the savings to the Treasury amounted to only 7 basis points, or \$700,000 per year. The average yield in the 1985 auction was 10.00 percent, equivalent to a semiannually compounded yield of 9.76 percent. The average auction yield on the concurrently auctioned conventional 5-year notes was 9.95 percent, compounded semiannually, so the savings to the Treasury expanded to 19 basis points.

By the beginning of 1986 it was clear that the foreign-targeted note program was floundering. About 25 percent of both the 4-year notes auctioned in October 1984 and the 5-year notes auctioned in November 1984 had been converted to conventional notes.⁴⁷ The Treasury Borrowing Advisory Committee recommended against a fourth issue because “the majority [of the committee] believes that there is little or no benefit in interest cost to the Treasury and has the view that the buyers will purchase regular Treasury issues as readily as targeted issues.”⁴⁸

Acting contrary to the recommendation of the committee, the Treasury auctioned \$1 billion of foreign-targeted 10-year notes in early February 1986. Bidding was sparse and the bid-to-cover ratio was only 1.6, down sharply from the earlier offerings. The average auction yield was 9.12 percent per annum, compounded annually, equivalent to a semiannually compounded yield of 8.92 percent. The average yield on the concurrently auctioned conventional 10-year notes was 8.97 percent, compounded semiannually, so the savings to the Treasury amounted to only 5 basis points. More than 80 percent of the foreign-targeted note was converted before the end of the year.⁴⁹ The Treasury did not bring a fifth offering.

Why Did the Foreign-Targeted Note Program Fail?

There are several explanations for the failure of the foreign-targeted note program. Foreign custodians were unhappy about the cost and potential legal liability of the requirement

⁴⁵ Fourth-quarter 1984 TBAC report.

⁴⁶ “Foreigners Flock to Note Sale,” *New York Times*, October 25, 1984, p. D1.

⁴⁷ *Treasury Bulletin*, First Quarter 1986, p. 22, Table PDO-1.

⁴⁸ First-quarter 1986 TBAC report.

⁴⁹ *Treasury Bulletin*, First Quarter 1987, p. 28, Table PDO-1.

that they certify that beneficial owners were not United States persons. *Business Week* quoted one banker as saying that ninety-five percent of [Swiss banks] said they wouldn't participate [in the first auction] because of the registration problems.”⁵⁰

Additionally, the notes were offered opportunistically, rather than regularly and predictably. Well before the program got under way, the *Wall Street Journal* observed that “dealers like the regularity and predictability that now characterize government debt issues” and quoted the chairman of the Treasury Borrowing Advisory Committee as warning that “when you have such massive borrowing to do, it is probably best not to get cute with it. You don't want to surprise the market or do exotic things.”⁵¹

⁵⁰ “Why the Treasury's Plan to Sell Debt Overseas May Not Fly,” *Business Week*, October 22, 1984, p. 129.

⁵¹ “Rising Interest Rates Spur Treasury to Study Debt-Financing Options,” *Wall Street Journal*, July 10, 1984, p. 39.

Chapter 4

1986–90: Rationalizing the Auction Calendar

Between 1983 and 1990, offerings of notes and bonds in the mid-quarter refundings, and of 2- and 5-year notes, took place according to the auction calendar discussed in Chapter 2 and illustrated in Chart 2.2. With the exception of two quirks in the offerings of 30-year bonds, both of which were attributable to a temporarily binding $4\frac{1}{4}$ ceiling,¹ offering amounts varied synchronously (Charts 4.1-4.3). Within the limits of its statutory authorities, the Treasury gave every appearance of being a regular and predictable issuer.

In contrast, Treasury debt managers made major changes in the end-of-quarter mini-refundings that, in 1983, offered 4- and 7-year notes and 20-year bonds. By the end of 1990, both the 4-year note and the 20-year bond were gone. This chapter describes the context of those changes, focusing on why they were not criticized as breaches of regular and predictable issuance.

Terminating the 20-Year Bond

During the afternoon of Tuesday, March 18, 1986, Treasury market participants awaited the scheduled announcement of the March mini-refunding, expecting an offering of \$7 billion of 4-year notes, \$6.5 billion of 7-year notes, and \$5.5 billion of 20-year bonds.² Officials had \$8.4 billion of headroom remaining under the existing \$200 billion exemption to the $4\frac{1}{4}$ ceiling³—more than enough for the anticipated bond offering—and legislation was pending to raise the exemption, so there was little reason to think the announcement would not be as expected. However, when the House of Representatives rejected the pending legislation during the day on March 18, the Treasury, in a surprise move, decided not to offer any bonds.⁴ (The

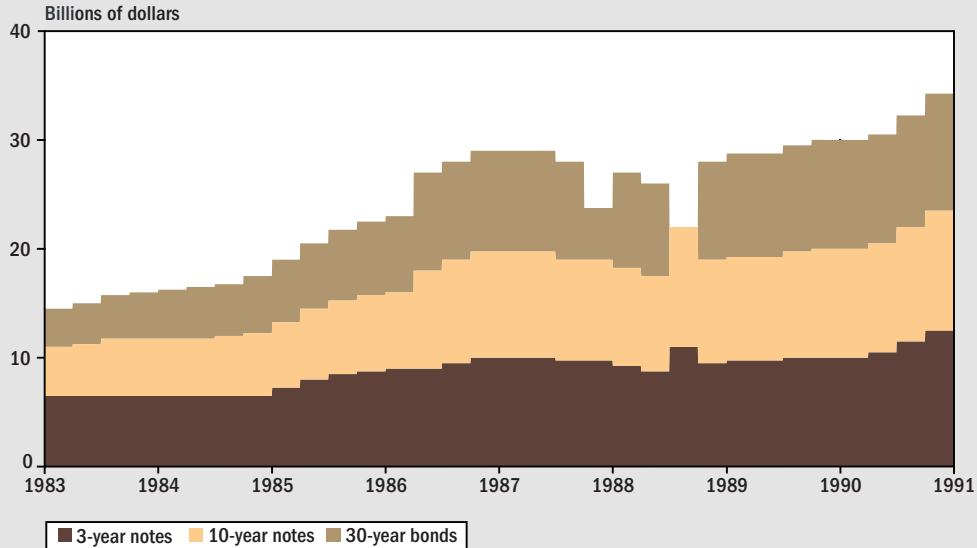
¹ The first quirk was the reduction in the quantity of bonds offered in November 1987—from \$9 billion three months earlier to \$4.75 billion. See “U.S. Will Sell \$23.75 Billion of Notes, Bonds,” *Wall Street Journal*, October 29, 1987, p. 45: “The amount of the 30-year bond is lower than the 30-year bond at the August refunding, [Assistant Secretary for Domestic Finance Charles] Sethness explained, because the Treasury is close to the limits of its authority to issue long-term securities.” The second quirk was the absence of any bond offering in August 1988. See “\$22 Billion Refunding Announced,” *New York Times*, August 4, 1988, p. D13: “As expected, the Treasury said it would not offer a new 30-year bond at next week’s auctions. The department is up against a borrowing ceiling that prevents it from issuing 30-year bonds.”

² “Treasury Returns as Top Borrower,” *New York Times*, March 17, 1986, p. D9.

³ “Bond Prices Rally After Treasury Says It Won’t Sell 20-Year Issue Next Week,” *Wall Street Journal*, March 19, 1986, p. 46. The \$200 billion ceiling was the result of the increase authorized by the Act of May 25, 1984.

⁴ “Treasury Bond Prices Climb,” *New York Times*, March 19, 1986, p. D21, and “Bond Prices Rally After Treasury Says It Won’t Sell 20-Year Issue Next Week,” *Wall Street Journal*, March 19, 1986, p. 46.

Chart 4.1
Offering Amounts for Mid-Quarter Refunding Auctions, 1983 to 1990



Treasury did offer 4- and 7-year notes, in the quantities expected.) The *Wall Street Journal* explained that “the government decided against the 20-year bond issue because of concern that Congress won’t act soon to increase the department’s authority to sell long-term bonds.”⁵ The Treasury had last offered bonds in the February mid-quarter refunding, when it offered \$7 billion of 30-year bonds. It did not have enough room to offer \$5.5 billion of 20-year bonds in the March mini-refunding and to maintain, in the May mid-quarter refunding, the pace at which it was issuing 30-year bonds.

The Treasury’s decision to refrain from offering 20-year bonds in the March mini-refunding raises the question of why it did not, as an alternative, offer 20-year bonds in March and (in the absence of an increase in the exemption to the $4\frac{1}{4}$ ceiling) forgo offering 30-year bonds in May. Why did it favor 30-year bonds over 20-year bonds?

Status of the 20-Year Bond

Bluntly stated, the 20-year bond was a dog. In mid-March 1986, the yield on the bond was 34 basis points higher than the yield on shorter-maturity 10-year notes and 18 basis points higher than the yield on longer-maturity 30-year bonds. A similar pattern of 20s trading cheap relative to both 10s and 30s had prevailed during most of the preceding three years (Chart 4.4).

⁵ “Bond Prices Rally After Treasury Says It Won’t Sell 20-Year Issue Next Week,” *Wall Street Journal*, March 19, 1986, p. 46. The exemption to the $4\frac{1}{4}$ ceiling was ultimately increased to \$250 billion by the Consolidated Omnibus Budget Reconciliation Act of 1985 (April 7, 1986).

Chart 4.2
Offering Amounts for 2-Year Note Auctions, 1983 to 1990

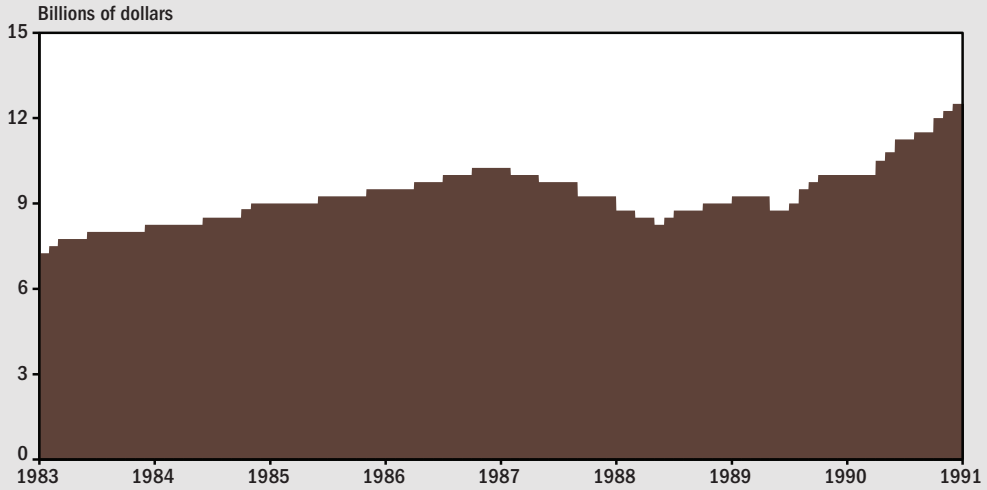
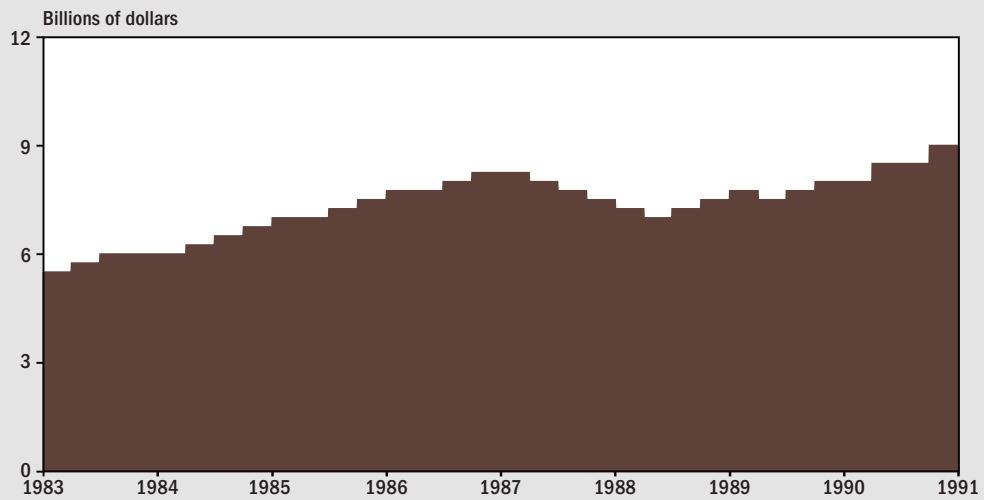


Chart 4.3
Offering Amounts for 5-Year Note Auctions, 1983 to 1990



The common view was that 20-year bonds lacked “sponsorship.” One market participant commented that the issue “seemed to be a bond without a natural home”: the bond “was too long for investors who sought to reduce the risk of falling prices when interest rates rise, but too short for other investors and speculators who want to earn the highest possible profits by correctly guessing changes in interest rates.”⁶

The problem with the 20-year bond was not new. Treasury officials had introduced the series in late 1980 as a substitute for an unsuccessful 15-year series. Fifteen-year bonds were not deliverable against the popular bond futures contract traded on the Chicago Board of Trade but 20-year bonds would be. Officials wanted to issue something longer than 10-year notes and shorter than 30-year bonds and hoped that deliverability would spark interest in the new series. The Treasury Borrowing Advisory Committee emphatically opposed the idea:

A substantial majority of the Committee would not (repeat, would *not!*) favor the substitution of a 20-year bond for the regularly scheduled 15-year bond. This recommendation is based principally on the belief that a 20-year issue would increase the cost of longer-term money without any collateral benefits. Although the 15-year bond has not had an auspicious history in the market, a bond 5 years longer would probably have done worse. . . . We do not feel that the value of creating an issue deliverable against futures trading would overcome these objections.⁷

Despite the Committee’s concerns, the Treasury went ahead with the 20-year bond offering.⁸

Bidding in the first auction was stronger than expected,⁹ but the advisory committee remained leery. In the middle of 1981, the committee reported that “about half of the

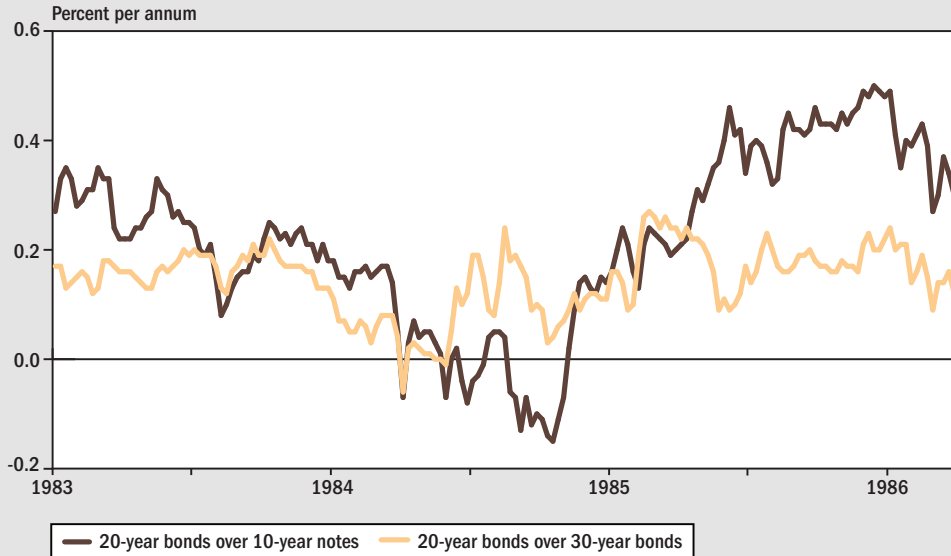
⁶ “U.S. Plans Its Biggest Financing,” *New York Times*, May 1, 1986, p. D1.

⁷ House Committee on Banking, Finance and Urban Affairs (1982, p. 79, reprint of the fourth-quarter 1980 TBAC report; emphasis in the original).

⁸ Federal Reserve Bank of New York Circular no. 8982, “Treasury to Auction \$1,500 Million of 20-Year 1-Month Bonds,” December 23, 1980. The *New York Times* reported that “The Treasury broke new ground yesterday when it announced the 20-year one-month bond issue. In the past, it has sold 15-year bonds every quarter, but that maturity has not been popular in the market and every 15-year issue has been hard to sell despite a yield higher than other Treasury bonds. Observers noted that, by using the 20-year maturity, the Treasury is acknowledging the growing influence and importance of the financial futures markets” (“Yields of Treasury Bills Tumble,” *New York Times*, December 23, 1980, p. D5).

⁹ The advisory committee remarked that it “was impressed with the results. . . . At 11.84%, the stop was about 5 basis points above the curve, a sharply lower discount than the 11 to 30 basis points that the Treasury paid in the earlier 4 auctions for 15-year bonds. Selling an issue deliverable against futures contracts thus may have saved the Treasury as much as 15 basis points in interest costs” (Committee on Banking, Finance and Urban Affairs 1982, p. 84, reprint of the first-quarter 1981 TBAC report).

Chart 4.4
Yield Spread of 20-Year Bonds over 10-Year Notes and of 20-Year Bonds over 30-Year Bonds, January 1983 to March 1986



group would favor abandoning the 15- and 20-year bonds whose market performance has been less than distinguished and substituting some larger amount . . . of 30-year bonds.”¹⁰ The committee’s opinion had not changed two years later:

From time to time the Committee has revisited the question of the advisability of the utilization of 20 year bonds as a financing vehicle. This questioning arises as the 20 year bond generally sells at a high level against the yield curve and does not enjoy a relatively high level of aftermarket trading activity. . . . In our discussion at this meeting, there was a discernible movement in sentiment towards taking a less positive view of 20 year bond financing.”¹¹

Treasury Adjusts the Auction Calendar

Six weeks after omitting the 20-year bond from the March 1986 mini-refunding, Treasury officials announced that they were terminating the series: “Over the past month Treasury has carefully assessed the market’s reaction to the cancellation of the March

¹⁰ House Committee on Banking, Finance and Urban Affairs (1982, p. 93).

¹¹ Fourth-quarter 1983 TBAC report.

Table 4.1
3-Year Notes, 10-Year Notes, and 30-Year Bonds Offered in Mid-Quarter Refundings from November 1985 to November 1986

	3-Year (\$Billions)	10-Year (\$Billions)	30-Year (\$Billions)
November 1985	8.75	7.00	6.75
February 1986	9.00	7.00	7.00
May 1986	9.00	9.00	9.00
August 1986	9.50	9.50	9.00
November 1986	10.00	9.75	9.25

Note: Offerings highlighted in bold were increased to the levels shown to compensate for the termination of the 20-year bond.

20-year bond, and concluded that it would be more cost-effective for the Treasury to issue larger amounts of 10- and 30-year securities rather than 20-year issues.”¹² Table 4.1 shows that the Treasury acted accordingly.

The termination of the 20-year bond left a hole in the mini-refundings. Following a recommendation of the advisory committee,¹³ the Treasury announced that 2-year notes auctioned in March, June, September, and December would be offered in conjunction with the end-of-quarter offerings of 4- and 7-year notes, effectively substituting 2-year notes for 20-year bonds in the mini-refundings.¹⁴ (Offerings of 2-year notes in the first and second months of each quarter were left unchanged.) The action reflected the Treasury’s continuing belief that grouping auctions into refundings served to attract investor interest.¹⁵

A Minor Adjustment to the Auction Calendar

In late 1987, Treasury officials were preparing to change the timing of 7-year note offerings to synchronize the settlement of new 7s with the redemption of maturing 7s—that is, to establish 7-year notes as true cycle notes.¹⁶ The first 7-year notes had been issued on January 5, 1981, to mature on January 15, 1988, and subsequent 7-year notes had

¹² Federal Reserve Bank of New York Circular no. 10,030, “Treasury Announces Elimination of 20-Year Bonds and Consideration of Reduction in Savings Bonds Interest Rate Floor,” May 2, 1986.

¹³ Third-quarter 1986 TBAC report.

¹⁴ “Treasury Sets \$28 Billion Sale,” *New York Times*, July 31, 1986, p. D17, and “Treasury Plans to Sell \$28 Billion of Notes and Bonds,” *Wall Street Journal*, July 31, 1986, p. 36.

¹⁵ Third-quarter 1986 Treasury policy statement (stating that “combining the three note auctions in one week will help focus the market on the end-of-quarter financing”).

¹⁶ The need to resolve the discrepancy between issue dates and maturity dates had been noted in the report of the March 21, 1987, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury.

Box 4.1

**Synchronizing the Issue Dates of 2-Year Notes
When Those Notes Began to Mature**

When the Treasury first began to offer 2-year notes on a regular and predictable basis in 1972, the notes were set to mature on the last calendar day of a quarter but were not issued at the end of the same quarter two years earlier. Consider, for example, the first two 2-year notes:

Security	Issue Date
6% of Sep 30, 1974	Oct 19, 1972
5 $\frac{7}{8}$ % of Dec 31, 1974	Dec 28, 1972

However, when the notes began to mature in the fall of 1974, the Treasury adopted the practice of issuing a new note on the same day that an old note was maturing. Thus, the first two 2-year notes maturing on or after September 30, 1974, were the following:

Security	Issue Date
8 $\frac{1}{4}$ % of Sep 30, 1976	Sep 30, 1974
7 $\frac{1}{4}$ % of Dec 31, 1976	Dec 31, 1974

The same practice was implemented with 4-year notes when those notes began to mature in June 1979.

similarly been issued early in the first month of a quarter to mature on the fifteenth of the same month seven years later. With the first issue approaching maturity, officials decided to shift the settlement date of new issues to the fifteenth. (As explained in Box 4.1, the Treasury had earlier done something similar when 2-year notes began to mature in 1974.) They additionally moved the auction date for 7-year notes to the Tuesday or Wednesday preceding the fifteenth and the announcement date to the week before the new auction date (Table 4.2).

The shift in the timing of the 7-year series broke the series away from the end-of-quarter mini-refundings and left those refundings much diminished—now consisting of only 2- and 4-year notes. And there was reason to believe that 4-year notes were themselves an endangered series.

Table 4.2
7-Year Note Auctions in 1988

Announcement	Auction	Settlement	Maturity	Amount (\$Billions)
Dec 29, 1987 (Tu)	Jan 6, 1988 (W)	Jan 15, 1988 (Tu)	Jan 15, 1995	6.50
Apr 5, 1988 (Tu)	Apr 12, 1988 (Tu)	Apr 15, 1988 (F)	Apr 15, 1995	6.25
Jul 5, 1988 (Tu)	Jul 12, 1988 (Tu)	Jul 15, 1988 (F)	Jul 15, 1995	6.50
Oct 5, 1988 (W)	Oct 12, 1988 (W)	Oct 17, 1988 (M)	Oct 15, 1995	6.75

Status of the 4-Year Note

In March 1987, the Treasury Borrowing Advisory Committee convened in a special meeting to discuss debt management options in light of deficits that had begun to decline. The committee recommended retention of the existing slate of offerings pending more convincing evidence of lower deficits, but suggested that 4-year notes should be the first to go if the deficit continued to decline.¹⁷ The committee pointed out that the notes were “nearly matched in maturity by the three- and five-year issues. Thus, several close substitutes are available to investors.” The committee also noted that “the four-year note offering is less viable in the market than some other issues” and that “the five-year note would become more important were the four-year note dropped.” The committee suggested that if the Treasury eliminated the 4-year note, it should change the 5-year note to mature in exactly sixty months—that is, convert it to a true cycle note.¹⁸

In the event, deficits stopped declining and Treasury officials did not act on the committee’s recommendations. During 1988, 1989, and 1990, the Treasury maintained the slate of regular and predictable offerings illustrated in Chart 4.5. The March 1987 episode was nevertheless important because it evidenced the limited market support for 4-year notes.

Terminating the 4-Year Note and Expanding the 5-Year Note

Faced once again with rising funding requirements, Treasury officials decided in late 1990 to discontinue quarterly issuance of both 4- and 5-year notes and to replace those offerings with *monthly* auctions of 5-year notes. They further decided to convert 5-year notes to true cycle notes. The last quarterly auction of 5-year notes was held on November 28, 1990, and the last auction of 4-year notes was held four weeks later. Offerings of 5-year notes

¹⁷ Report of the March 21, 1987, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury.

¹⁸ This was not the first time that the advisory committee recommended converting the 5-year note to a true cycle note. See the report of the March 5, 1985, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury.

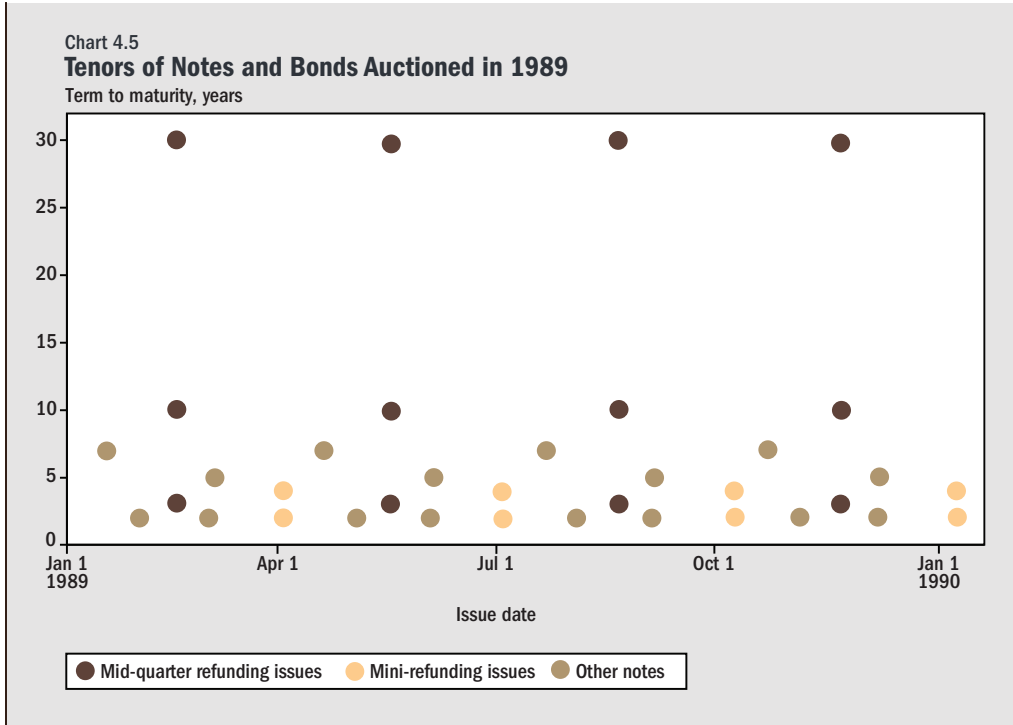


Table 4.3
5-Year Note Auctions in the First Quarter of 1991

Announcement	Auction	Settlement	Maturity	Amount (\$Billions)
Jan 16, 1991 (W)	Jan 24, 1991 (Th)	Jan 31, 1991, (Th)	Jan 31, 1996	9.00
Feb 13, 1991 (W)	Feb 21, 1991 (Th)	Feb 28, 1991 (Th)	Feb 29, 1996	9.00
Mar 20, 1991 (W)	Mar 27, 1991 (W)	Apr 1, 1991 (M)	Mar 31, 1996	8.50

were thereafter announced in the middle of a month and auctioned about the twenty-fifth for settlement on the last calendar day of the month. The notes were set to mature on the last calendar day of the same month five years later (Table 4.3).

In announcing the revisions to the auction calendar, Treasury officials remarked, “On balance, the change in the Treasury’s financing pattern will add four intermediate term coupon offerings each year. . . . The monthly cycle of 5-year notes will have the advantage that the Treasury can raise added cash in the intermediate term maturity sector. . . . Moreover, the end-of-month maturity dates will spread Treasury maturities more evenly throughout the year and lessen the build-up of maturing issues on the Treasury’s regular

mid-quarter refunding dates.”¹⁹ One money market economist stated that the change would “produce a much more rational pattern of debt service payments every quarter. From a debt management perspective, this step is long overdue.”²⁰

Comment

Over the interval from 1986 to 1990, Treasury debt managers pruned two unpopular series and replaced them with more attractive alternatives. Their actions could have been construed as a violation of the principle of regular and predictable issuance, but market participants did not react adversely.

The absence of any adverse reaction suggests that the Treasury had some leeway to vary the auction calendar within the rubric of regular and predictable issuance. The termination of the 20-year bond shows that the Treasury could modify the calendar if the change was unambiguously related to the objective of least-cost financing. The substitution of monthly 5-year notes for quarterly 4- and 5-year notes shows that the Treasury could alter the calendar to accommodate a change in financing requirements.

¹⁹ *Treasury News*, “Treasury Announces Change in Regular Quarterly Auction Cycles Beginning in January 1991,” December 11, 1990.

²⁰ “More Declines in Treasury Yields,” *New York Times*, December 12, 1990, p. D13 (quoting Lou Crandall, then chief economist at R.H. Wrightson & Associates).

Chapter 5

1993: Resetting the Maturity Structure of Treasury Debt Issuance

In the late winter and spring of 1993, Treasury officials addressed, for the first time since the adoption of regular and predictable issuance, the trade-off between the risk of funding with shorter-term debt and the cost of funding with longer-term debt. Risk and cost had previously occupied more or less separate spheres. Cost had been central to the adoption of regular and predictable issuance in the 1970s and had played a key role in the 1986 decision to replace 20-year bonds with 10-year notes and 30-year bonds, but neither of those decisions touched on the risks of short-term finance. Conversely, concern with the risks of short-term finance was the primary driver in the maturity extension program that had been under way since the mid-1970s, but that program had never been scrutinized for its cost implications.

Precursor

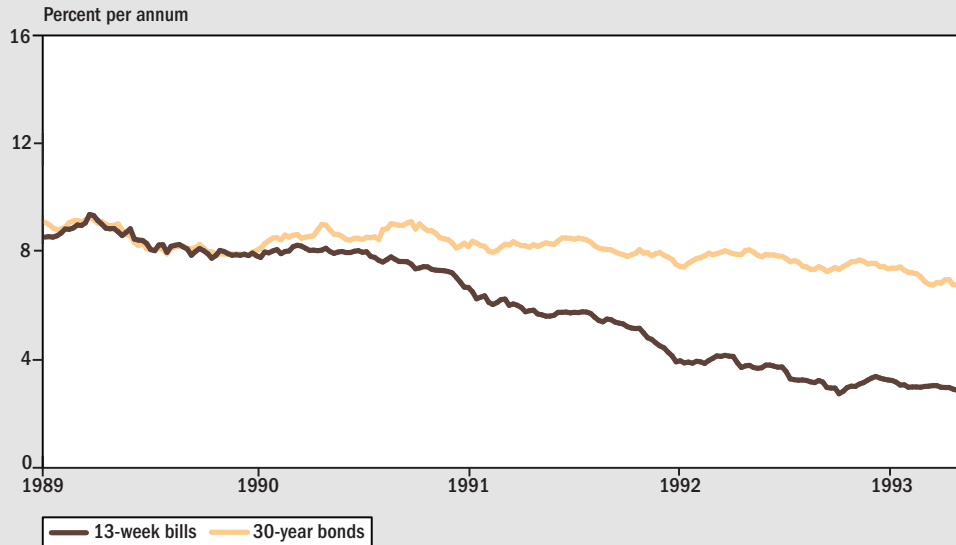
At the end of 1989, the Treasury yield curve was, for all practical purposes, flat. Thirteen-week bills were at 7.94 percent, 2-year notes at 7.89 percent, 7-year notes at 7.99 percent, and 30-year bonds at 7.98 percent.

Over the next two years, the curve steepened as short-term rates fell below long-term yields (Chart 5.1). By the end of 1991, 13-week bills were at 3.92 percent (down 402 basis points since the end of 1989), 30-year bonds were at 7.52 percent (down 46 basis points), and a 360 basis point yield spread had opened between the two (Chart 5.2).

The steep yield curve was seen by some as offering an opportunity to reduce financing costs by substituting low-rate short-term debt for higher-rate long-term debt. A decade earlier, in August 1982, the spread between short bills and long bonds had exceeded 450 basis points but the average maturity of Treasury debt was then only four years, leaving little room to shift issuance to shorter maturities. In contrast, by 1991, average maturity had lengthened to six years (Chart 5.3),¹ a level not seen since the early 1950s, and Treasury officials believed they had room to take advantage of the relatively low short-term rates. Treasury Secretary Nicholas Brady commented during testimony before the House Ways and Means Committee in December that the Treasury was “taking a look” at the amount of long-term debt that it sold, and he hinted that he might consider

¹ The lengthening was facilitated by periodic increases in the exemption to the 4¼ ceiling and then by outright removal of the ceiling. After 1982, the ceiling was raised progressively to \$150 billion (Act of May 26, 1983), \$200 billion (Act of May 25, 1984), \$250 billion (Consolidated Omnibus Budget Reconciliation Act of 1985, enacted April 7, 1986), and finally to \$270 billion (Omnibus Budget Reconciliation Act of December 22, 1987). The ceiling was removed by section 6301 of the Technical and Miscellaneous Revenue Act of November 10, 1988.

Chart 5.1
Yields on 13-Week Bills and 30-Year Bonds, 1989 to Mid-1993



reducing issuance of such debt.² A month later, White House Budget Director Richard Darman remarked that the Administration's budget assumed that "some" borrowing on long-term bonds would be shifted to shorter-term issues.³

On February 5, 1992, the Treasury announced the terms of the February refunding:

- \$15 billion of 3-year notes, up \$1 billion from the November 1991 refunding,
- \$11 billion of 10-year notes, *down* \$1 billion from three months earlier, and
- \$10 billion of 30-year bonds, *down* \$2 billion from three months earlier.

The announcement stated that officials had "reviewed the size and composition of [the] refunding carefully" and had concluded that "taxpayer financing costs can be lowered at the margin by a modest reduction in the maturity structure of the debt."⁴

² "Bonds End Mixed After Gyration on Comment by Brady on Idea of Limiting 30-Year Issuance," *Wall Street Journal*, December 6, 1991, p. C17. See also "CBOT Is Riled by Threat to Long Bond," *Wall Street Journal*, January 28, 1992, p. C1 (noting that "last month Mr. Brady told House Ways and Means Committee members that financing the federal deficit with low-interest short-term securities might be cheaper than heavy use of the so-called long bond").

³ "Darman Hints at Limiting Long-Term Treasury Bonds," *Wall Street Journal*, January 31, 1992, p. C11.

⁴ First-quarter 1992 Treasury policy statement.

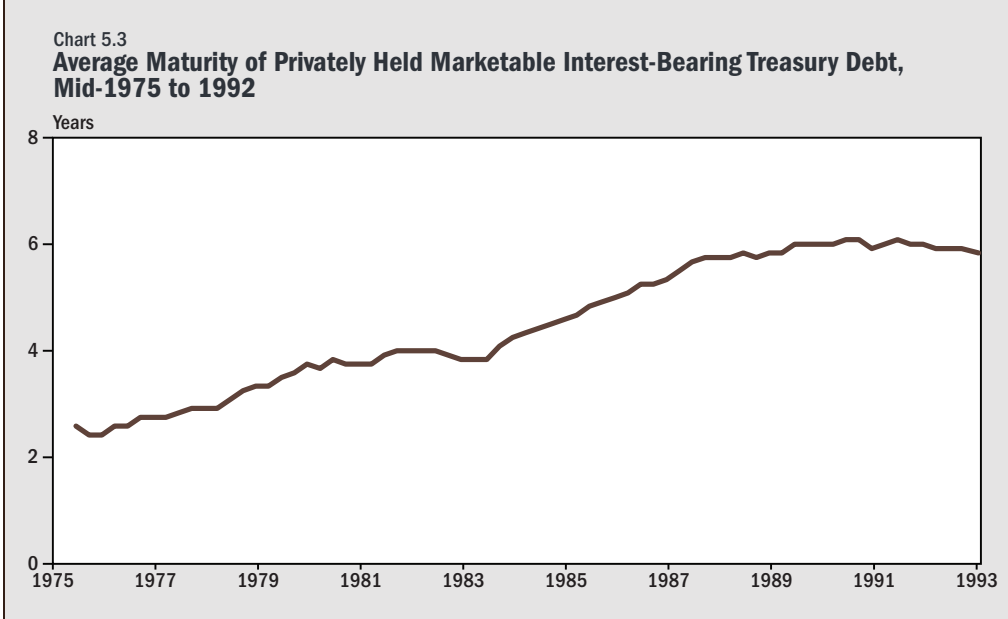
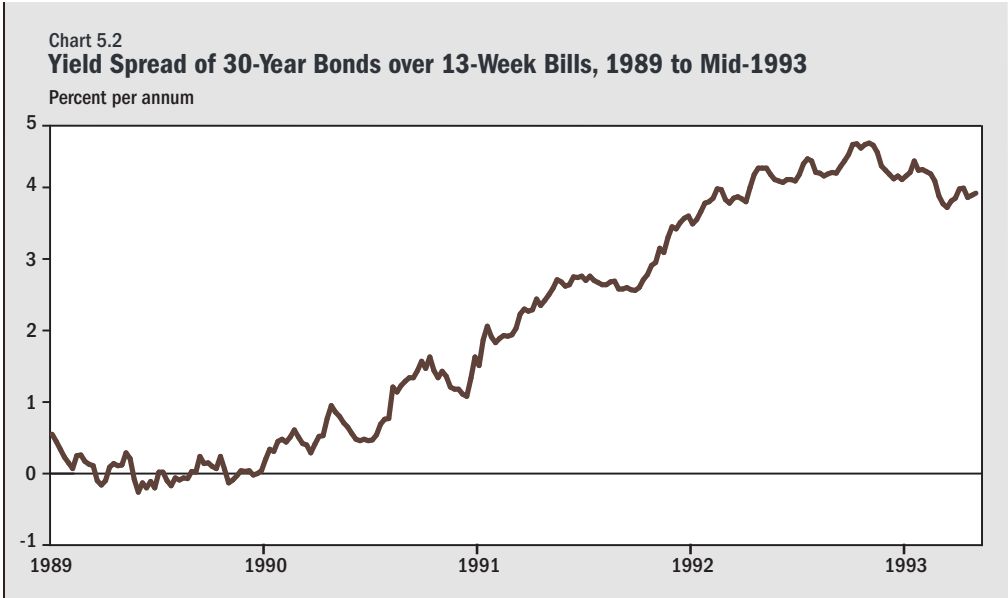
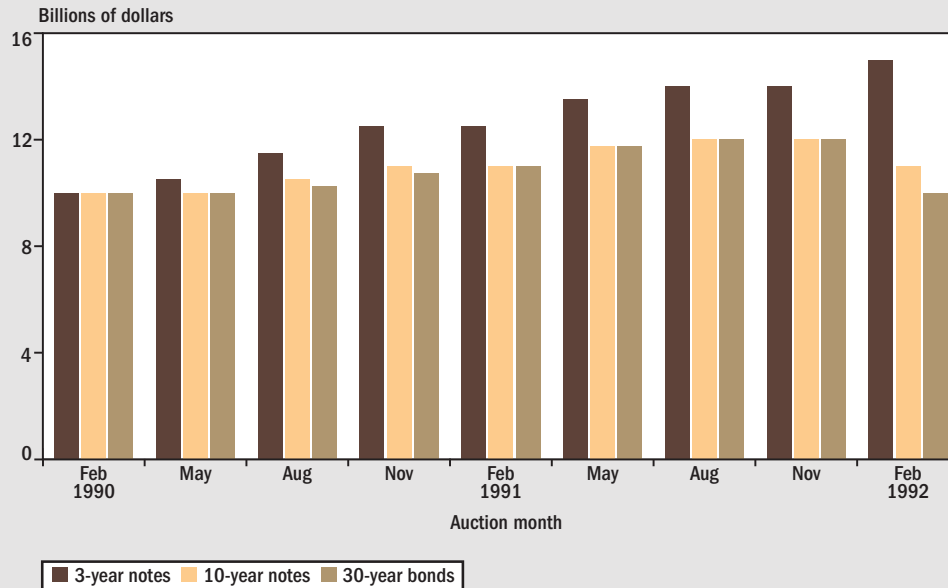


Chart 5.4
**Offering Amounts for Mid-Quarter Refunding Auctions,
 February 1990 to February 1992**



Reducing long-term offerings while funding requirements were expanding—marketable Treasury debt had increased by \$124 billion in 1989, \$250 billion in 1990, and \$276 billion in 1991, and would increase by \$283 billion in 1992—was without precedent. The Treasury had increased issuance of 3-year notes more rapidly than 10s or 30s in 1990 and 1991 (Chart 5.4), but it had not previously reduced either longer-term offering.

Reducing 10- and 30-year offerings also went against the explicit advice of the Treasury Borrowing Advisory Committee, which had recommended a \$12.5 billion 10-year note (up \$500 million from the fourth quarter of 1991) and a \$12 billion 30-year bond (unchanged from the fourth quarter of 1991).⁵ The committee explicitly resisted a shift to shorter maturities, saying that “any material change at this time runs the risk of . . . undoing the gains, earned over years, that routine and consistency have contributed in reducing the ‘uncertainty premium’ in Treasury issues.”

Treasury officials knew that reducing the 10-year note and 30-year bond offerings would be contentious. They sought to limit the damage by stating that “we do not expect to make further cuts in long term financing in the future,” and that the reduction in 10- and 30-year offerings did not signal a “departure from our long-standing view that, over time, the cost of financing the debt is minimized by a stable, predictable pattern

⁵ First-quarter 1992 TBAC report.

of Treasury borrowing.”⁶ The *Wall Street Journal* reported that “no further tinkering is planned” and quoted Assistant Secretary Jerome Powell as saying, “We don’t want to surprise the marketplace. The market charges for uncertainty and we try to avoid [that].”⁷

Conflating Consistency and Predictability

The comments of the advisory committee and the February refunding statement used the words “consistency” and “stability” as synonyms for predictability. But conflating those terms may have placed unnecessary demands on Treasury debt managers.

Predictability requires that the Treasury be a transparent issuer—one whose actions are readily explicable and understandable in light of contemporary economic conditions. Economic conditions generally change slowly over time, so issuance policies should change slowly as well.⁸ But to say that predictability requires consistency goes too far.

Predictable debt management actions might well be based on observable characteristics of the debt and the U.S. economy that are widely accepted as being important for, or relevant to, the purpose at hand: meeting the financing needs of the government at the lowest cost over time. Debt managers could, for example, target a fixed level of average maturity, or they could target a level that varies with the ratio of debt to GDP. What is required is that market participants understand what the Treasury is targeting and how the Department will react to deviations from the target.

Another Round

By the beginning of 1993, the yield spread between 30-year bonds and 13-week bills had widened further, to 425 basis points, as a result of an additional 94 basis point decline in bill yields and a 29 basis point decline in bond yields. Average maturity stood at five years and eleven months, only slightly lower than a year earlier.

Meeting in advance of the February refunding, the advisory committee recommended offerings unchanged from three months earlier: \$15.50 billion of 3-year notes, \$11.25 billion of 10-year notes, and \$10.25 billion of 30-year bonds.⁹ However, Treasury officials decided once again to auction reduced amounts of the longer note and the bond—specifically, \$10.75 billion of 10-year notes and \$9.25 billion of 30-year bonds. They stated that they had “reviewed the composition and size of [the] refunding package carefully, and . . . concluded that Treasury financing costs can be lowered at the margin by this modest reduction in the maturity structure of the debt.”¹⁰

⁶ First-quarter 1992 Treasury policy statement.

⁷ “Treasury to Reduce Some of Its Reliance on 30-Year Bonds,” *Wall Street Journal*, February 6, 1992, p. C18.

⁸ However, economic conditions can sometimes change quite rapidly. The period following the failure of Lehman Brothers in September 2008 is a prominent example—one we will examine in Chapter 13 below.

⁹ First-quarter 1993 TBAC report.

¹⁰ February 1993 Treasury policy statement.

Appearing before the House Budget Committee in early February, Robert Reischauer, Director of the Congressional Budget Office, testified that the smaller offerings of longer notes and bonds could translate into savings of \$300 million to \$400 million in the first year, growing to as much as \$4 billion over six years. He also pointed out that the projected savings would disappear if there was a sharp rise in short-term rates and that the question was “how much risk do you want to expose yourselves to?”¹¹

Debt Management Moves to the Front Burner

Two events transformed debt management into a front-burner issue in mid-February 1993: Treasury officials announced that they were initiating “a thorough review of the composition of [the Treasury’s] marketable financing,” to be completed in advance of the May refunding,¹² and the White House released *A Vision of Change for America*, setting forth the political agenda of the newly installed Clinton Administration.

The *Vision* document included a statement that \$11.5 billion could be saved over the interval from fiscal year 1994 to fiscal 1997, and another \$4.9 billion in fiscal 1998, by shortening issuance maturities. However, the document provided no details on the nature of the shortening, the method used to calculate the savings figures, or countervailing risks that might limit the attractiveness of a shortening.

A Vision of Change left market participants confused and uncertain. The *New York Times* reported that analysts were “skeptical about the projected interest savings. Short-term interest rates would need to remain low over the next four years to meet the projections, . . . and that assumption may rest on increasingly shaky ground as the economy recovers.”¹³ (At the time, the economy was still recovering from a recession that began in July 1990 and bottomed out in March 1991.) Analysts also believed that large amounts of short-term debt would have to be sold in lieu of 10-year notes and 30-year bonds. Lou Crandall, then chief economist at R.H. Wrightson & Associates, conjectured that the Treasury might have to eliminate bond sales altogether. Not a few market participants were uncomfortable with the idea of reducing issuance at the long end of the curve while deficits continued to grow. Richard Kelly, chairman and chief executive officer of Aubrey G. Lanston, a prominent dealer in Treasury securities, remarked that, given the Treasury’s “huge borrowing needs currently and prospectively, it makes no sense to be cutting back in any maturity area.”

¹¹ “Treasury, Trying to Cut Debt Costs, Lessens Reliance on Long-Term Bonds,” *Wall Street Journal*, February 4, 1993, p. C16.

¹² February 1993 Treasury policy statement.

¹³ “Projections on Interest Costs Confuse the Treasury Market,” *New York Times*, February 19, 1993, p. D16. The details in this paragraph are drawn from this article.

In an attempt to dampen rising speculation,¹⁴ Treasury Secretary Lloyd Bentsen stated on March 1 that he did not “propose any dramatic, radical shift” in Treasury debt management policies.¹⁵ A Treasury spokesperson reiterated Bentsen’s comments on April 6.¹⁶

A Special Meeting of the Treasury Borrowing Advisory Committee

In early March, Treasury officials convened a special meeting of the advisory committee to consider four topics:

- the value of regular and predictable issuance,
- the value of continuing to issue 30-year bonds,
- the potential advantages and disadvantages of shortening the maturity structure of Treasury debt, and
- the choice of shorter issuance maturities if the Treasury decided to reduce issuance of longer-term debt.

The committee’s response made the case for maintaining the status quo.¹⁷

The Value of Regular and Predictable Issuance

The advisory committee presented a robust defense of regular and predictable issuance, focusing on the contribution of the policy to reducing Treasury financing costs:

The Committee believes that since [the early 1970s] the Treasury has created and nurtured, through its consistent behavior, a very valuable asset for the taxpayer, and that this hard-won . . . asset of predictability has contributed to a material lowering of overall borrowing costs.

But, the committee cautioned, the Treasury’s credibility was “fragile” and could be “lost in an instant.”

The committee recognized that there had to be room for change: “Predictability . . . need not be adhered to slavishly. Refinements, discussed and described in an open

¹⁴ “Projections on Interest Costs Confuse the Treasury Market,” *New York Times*, February 19, 1993, p. D16 (reporting that “speculation remained intense that the Treasury . . . would continue and perhaps accelerate the shift [to shorter maturity issuance] with the Clinton Administration in power”).

¹⁵ “U.S. Plans No Big Borrowing Shift,” *New York Times*, March 2, 1993, p. D16, and “Bentsen Says Plan to Stimulate Economy Still Stands Despite 4th-Period Strength,” *Wall Street Journal*, March 2, 1993, p. A2.

¹⁶ “Treasury Bonds Make Up Losses from Friday Plunge,” *Wall Street Journal*, April 7, 1993, p. D1.

¹⁷ Report of the March 15, 1993, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury.

and clearly articulated fashion, will always be necessary.” Nevertheless, “gradual and carefully orchestrated changes” defined the limits of acceptable change. The committee warned against changes that might be perceived as opportunistic and targeted toward short-run gains, suggesting that “the marketplace would become instantly sensitive and concerned—expressing this apprehension with price deterioration—if it is perceived that, for reasons of political expediency, changes in the composition and pattern of borrowing of doubtful or debatable virtues are sought in a reach for near-term interest savings at the expense of savings in future years.”

The Value of Continuing to Issue 30-Year Bonds

The committee recommended continued issuance of 30-year bonds on the grounds that, in light of chronic deficits and the “near perpetual nature of existing Treasury debt,” the Treasury should issue at all existing maturity points.

The committee also identified a novel “public good” rationale for continuing to issue bonds, stating that 30-year bonds serve “as a vital benchmark for the pricing and hedging of long-term debt issued by state and local governments, private corporations, and other Federal government entities. These domestic markets and global sovereign issuers would suffer if the liquidity of the long-term U.S. Treasury bond markets were impaired, which would be the result of a discontinuance or meaningful further reduction in the issuance of long-term securities.” The committee further noted, “The liquidity and usefulness of stripped U.S. Treasury obligations would . . . be impaired if there was further meaningful change in the supply of 30-year bonds. The effect of this would spread across the full spectrum of U.S. Treasury debt, as the existence of stripping affords the market the very useful ability to reflect in the pricing of all debt, out to thirty years, the value of cash flows free of credit risk.”

Pros and Cons of Shortening the Maturity Structure of Treasury Debt

The committee did not identify any advantages from shortening the maturity structure of Treasury debt but it did point out several disadvantages, including greater exposure to

- the risk of higher-than-expected future short-term interest rates,
- the risk of a market disruption at a time when the Treasury needs to sell debt,
- the risk of exacerbating inflationary pressures, and
- the risk of impairing market confidence in U.S. economic policies.

The committee noted that “the adoption of a short maturity financing strategy may result in a serious roll over problem which could become particularly acute if Treasury debt is rising relative to GDP [which was the case at the time] or . . . domestic and foreign investors grow uneasy about U.S. fiscal policies. Were this to lead to political or other pressures on the central bank to pursue an easy monetary policy to hold down near term costs, this debt monetization would almost inevitably lead to higher inflation, eventually forcing potentially even sharper and more economically wrenching rises in short-term rates.”

Where to Increase Issuance

The committee did not explicitly identify points on the short end of the yield curve where the Treasury should increase issuance if it decided to reduce issuance of long-term debt. The committee suggested that “the one-year (52-week) bill offers . . . the most significant new borrowing potential with the least market disruption,” but noted that the Treasury could not shift more than about \$125 billion of funding to the one-year sector.

The committee also suggested that the Treasury could fund \$200 billion of indebtedness by reintroducing quarterly sales of 4-year notes (in the amount of \$12.5 billion per quarter), for settlement on the fifteenth of the third month of a quarter,¹⁸ but noted that there were already some “expensive points on the curve . . . between the three and seven-year note range.”

The Treasury Acts

Speculation about what the Treasury would do escalated during the run-up to the refunding announcement scheduled for Wednesday, May 5. The *Wall Street Journal* described the speculation as “intense.”¹⁹ At the close of the market on Friday, April 30, the yield on the 30-year bond was 6.92 percent. The yield dropped to 6.85 percent on Monday and then to 6.79 percent on Tuesday after the Treasury announced an increase in the weekly 13- and 26-week bill auctions, an action that traders interpreted as portending a reduction in longer-term note and bond offerings.²⁰

Finally, on Wednesday, May 5, the Treasury announced that it was terminating the 7-year note and that, after a reduced offering of \$8.25 billion 30-year bonds in the May refunding, it would no longer offer 30-year bonds in the May and November refundings. Officials planned to replace the forgone offerings with increased sales of bills and 2- and 3-year notes. Secretary Bentsen stated that “We have considered this issue very carefully and believe the restructuring of our debt mix, over the long run, is in the best interests of American taxpayers. This action to shorten the maturity of Treasury borrowing will produce real savings on interest costs over time. It is a carefully crafted and moderate move.”²¹

¹⁸ At the time, 7-year notes settled on the fifteenth of the first month of a quarter, mid-quarter refundings settled on the fifteenth of the second month, and 2-year and 5-year notes settled on the last day of every month.

¹⁹ “Bond Prices Climb Again as Speculation Grows that Treasury Will Reduce 30-Year Issuance,” *Wall Street Journal*, May 5, 1993, p. C17.

²⁰ “Treasury 30-Year Bond Price Soars,” *New York Times*, May 5, 1993, p. D18 (indicating that “most of the bond’s advance came in afternoon trading, after the announcement by the Treasury that it would increase next week’s sales of bills”). See also “Bonds Soar on Slowness in Economy,” *Wall Street Journal*, May 5, 1993, p. C1 (stating that “rumors of a cutback in 30-year [offerings] swept through the market late in the session” and quoting one fixed-income strategist as saying that “the market had already partly discounted it, but this afternoon there was a feeding frenzy at the long end”).

²¹ *Treasury News*, “Treasury Announces Shift in Borrowing Maturity Mix,” May 5, 1993.

Traders had anticipated a reduction in longer-term offerings²² and the market response to the announcement was restrained; 30-year bond yields rose one basis point. Although the decision to terminate 7-year notes was a surprise, those notes had rallied in line with 30-year bonds earlier in the week (the yield on 7-year notes fell from 5.63 percent on April 30 to 5.49 percent on May 4) and were similarly unaffected by the announcement.

The Basis for the Treasury's Decision

Before the May 5 announcement, public discussion of the Treasury's policy options had focused on 30-year bonds. The Treasury did cut bond issuance in half, but it terminated the 7-year note series. The latter course of action might have been attractive to the Treasury on several counts: 7-year notes had limited market support, recent 7-year auctions had not gone well, and the termination of the notes would limit speculation that Treasury officials might soon take further steps in the same direction.²³

The most interesting aspect of the May 5 announcement, however, was the *stated* reason for the decision. Prior to May 5, public discussion of whether the Treasury should issue at shorter maturities had been framed in terms of the steep yield curve. However, during a press conference on May 5, the acting assistant secretary for domestic finance stated that the new auction calendar was “not dependent on any particular configuration of interest rates across the yield curve. It is only dependent on the existence over time of something variously called the liquidity premium or the risk premium in longer-term rates.”²⁴ For reasons outlined in the appendix to this chapter, Treasury officials sought to reduce *long-run* funding costs by issuing shorter-term debt that did not carry the risk premiums of longer-term debt. However, they failed to explain clearly the difference between a strategy that stood to benefit when the yield curve was steep (but whose gains would dissipate if short-term rates rose) and a strategy that stood to benefit, over the long run, regardless of the shape of the curve.²⁵

²² “Treasury Slashes Sales of Long-Term Bonds,” *Wall Street Journal*, May 6, 1993, p. C1 (stating that bond traders, “who generally had anticipated some cutback in long-term Treasury bond sales, shrugged”).

²³ “Treasury Maturities Shortened,” *New York Times*, May 6, 1993, p. D1.

²⁴ Transcript of the mid-quarter refunding press conference, May 5, 1993.

²⁵ In failing to distinguish between the two strategies, Treasury officials missed an opportunity to clarify the analytical framework for their debt management decisions. As a result, members of the advisory committee continued to justify extending or shortening issuance maturities in terms of the slope of the yield curve. See the third-quarter 1997 TBAC report (asserting that “the relative flatness of the yield curve supports the issuance of longer dated securities”), the first-quarter 2006 TBAC minutes (reporting the comment of one member that “with the flatness of the yield curve, it should not cost Treasury to move further out the curve”), and the second-quarter 2008 TBAC minutes (reporting a member’s observation that “the yield curve was steep” and that “as a result, bills were the optimal instrument for financing”).

It should also be noted that the idea of risk premiums on longer-term interest rates was neither new nor exotic in 1993. The third edition of Lawrence Ritter and William Silber’s *Principles of Money, Banking, and Financial Markets*, the leading money and banking text when it was published in 1980, devotes several pages to the determinants of the term structure of interest rates and notes that the yield premium demanded by investors for holding long-term debt “is often called a liquidity premium, but it is really a risk premium” (Ritter and Silber 1980, p. 470). See similarly Garbade (1982, Chap. 14).

Maintaining Credibility as a Regular and Predictable Issuer

Market participants did not view the May 5 announcement nearly as benignly as they had viewed the termination of the 20-year bond in 1986 or the termination of the 4-year note in 1990. Although Secretary Bentsen described the action as a “moderate move,” John Costas, managing director of government trading and sales at First Boston, characterized it as “much more toward the radical end of the spectrum and more radical than [Treasury officials] had been leading the market to believe.”²⁶

Treasury officials understood that they needed to reassure market participants that they would not reverse course and return to issuing in greater volume at longer maturities when the yield curve flattened. A Treasury official stated during the May 5 press conference, “We are not engaged in a market-timing strategy here. We do not intend to flip-flop on this. This is our strategy for the long term.”²⁷

One way to enhance the predictability of future debt management actions would be to announce a numerical target for average maturity. There were, in fact, signs that Treasury officials planned to pay more attention to average maturity. During the May 5 press conference, a Treasury official stated that, as a result of the new policy, the average maturity of Treasury debt would be one year lower in five years.²⁸ And on May 27 officials requested another special meeting of the Treasury Borrowing Advisory Committee, this time to discuss “the extent to which average maturity is a meaningful measure” and whether there were “other measures of the maturity mix of outstanding Treasury securities that would be useful to inform debt management policy decisions.”²⁹

The committee met in special session in June and reported back that “it would benefit the Treasury to have at least broad targets in mind to guide its management of the debt” and that “it is difficult to imagine the successful conduct of debt management without some aggregate measure of maturity as a target.”³⁰ Significantly, the committee linked targeting a quantitative measure of maturity to maintenance of the Treasury’s reputation as a regular and predictable issuer: “Consistent with the principle of predictability . . . , a commitment to [comparative] stability or at least no more than slow gradual change was an objective of some virtue.” However, the committee did not recommend a particular numerical target, nor did it opine on which of several measures, including average maturity, duration, or percentage of debt coming due in the next one or two years, might be preferable.

²⁶ “Treasury Maturities Shortened,” *New York Times*, May 6, 1993, p. D1.

²⁷ Transcript of the mid-quarter refunding press conference, May 5, 1993.

²⁸ Transcript of the mid-quarter refunding press conference, May 5, 1993.

²⁹ Letter dated May 27, 1993, from Frank Newman, Under Secretary for Domestic Finance, to Morgan Stark, managing director, Granite International Capital Group.

³⁰ Report of the June 24, 1993, special meeting of the Treasury Borrowing Advisory Committee to the Secretary of the Treasury.

Comment

The discussion of the maturity structure of Treasury debt issuance in the first half of 1993 was important for two reasons. First, it focused attention on the trade-off between risk and cost, a trade-off that was, ineluctably, a matter for policymaker discretion. Second and relatedly, the discussion focused attention on the problem of how to maintain a reputation for regular and predictable issuance when the Treasury auction calendar might have to be revised from time to time to maintain a desired maturity structure. This issue would be addressed repeatedly in the coming years but it was already fairly clear that preserving the benefits of regular and predictable issuance would involve some sort of commitment to a quantitative maturity target.

Appendix**Risk Premiums on Treasury Debt**

This appendix briefly summarizes why financing with shorter-term debt is expected to be less costly for the U.S. Treasury than financing with longer-term debt.³¹ For expositional simplicity, we partition time into years, but (at the cost of some notational complexity) we could equally well introduce subdivisions of a month, a week, or a day.

Consider the partitioning in Exhibit 5.1. Let R_k denote the current yield per annum on a single-payment Treasury instrument that matures at the end of year k , $k = 1, 2, \dots$. The sequence R_1, R_2, \dots is the term structure of spot yields on Treasury debt.³² Let r_k denote the yield on 1-year debt that is currently expected to prevail at the beginning of year k , for $k = 2, 3, \dots$

The Term Structure in the Absence of Risk Aversion

We begin with the simple case where investors are indifferent to risk. In the absence of risk aversion, the yield on 2-year debt must, in equilibrium, be equal to the average of the current yield on 1-year debt and the yield on 1-year debt that is expected to prevail in one year:

$$R_2 = \frac{1}{2} [R_1 + r_2] . \quad (1)$$

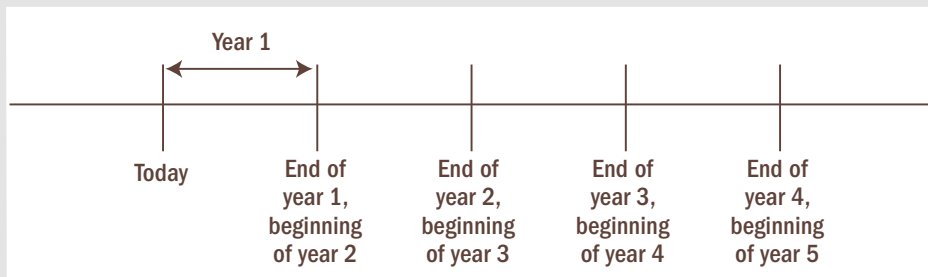
Investors should expect to get the same return over a two-year period regardless of whether they choose to invest now in 2-year debt (and to hold that investment to maturity) or to invest now in 1-year debt (and to roll over the investment after one year).

This reasoning can be extended to the general case. In equilibrium, the yield on n -year debt must be equal to the average of the current yield on 1-year debt and the yields on 1-year securities that are expected to prevail during the succeeding $n-1$ years:

³¹ Bodie, Kane, and Marcus (1999, Chap. 15) provide a more extensive discussion of the same material.

³² The qualifier "spot" indicates that the yields are on single-payment claims, such as bills and STRIPS, rather than multiple-payment claims such as notes and bonds.

Exhibit 5.1
A Simple Partitioning of Time



$$R_n = \frac{1}{n} [R_1 + r_2 + r_3 + \dots + r_n] . \quad (2)$$

In the absence of risk aversion, the cost of funding with longer-term debt should be the same as the expected cost of funding by issuing (and rolling over) shorter-term debt.

The Term Structure in the Presence of Risk Aversion

We next introduce two additional assumptions:

1. Investors have investment horizons and every investor is reluctant to bear risk, where risk arises from investing in single-payment instruments that are either shorter or longer than the investment horizon of the investor.³³
2. If *all* investors were unwilling to bear *any* risk, there would be an excess demand for 1-year debt and an excess supply of longer-term debt that increases with the maturity of the debt.

The first assumption says that investors have maturity preferences and are not indifferent to risk. The second assumption states that (a) there is more longer-term debt than investors with comparable investment horizons, and that (b) the imbalance grows at longer maturities.

Given the two added assumptions, the yield on 2-year debt must, in equilibrium, *exceed* the average of the current yield on 1-year debt and the yield on 1-year debt that is expected to prevail in one year:

³³ If an investor holds debt that is shorter than her investment horizon, she is exposed to the risk that interest rates will be lower than expected when her investment matures and she needs to roll over the maturing investment. If an investor holds debt that is longer than her investment horizon, she is exposed to the risk that interest rates will be higher than expected at the end of her horizon, when she needs to liquidate her not-yet-matured investment.

$$R_2 > \frac{1}{2} [R_1 + r_2]. \quad (3)$$

The “excess” yield on 2-year debt serves to attract investors with a 1-year investment horizon into holding 2-year debt.

The inequality in equation (3) can be restored to an equality by introducing a risk premium (sometimes called a liquidity premium or term premium), denoted L_2 :

$$R_2 = \frac{1}{2} [R_1 + r_2 + L_2]. \quad 0 < L_2. \quad (4)$$

L_2 is the yield premium needed to attract investors with a 1-year investment horizon into holding 2-year debt.

This reasoning also extends to the general case. In equilibrium, the yield on n -year debt must exceed the average of the current yield on 1-year debt and the yields on 1-year securities that are expected to prevail during the next $n-1$ years:

$$R_n = \frac{1}{n} [R_1 + r_2 + L_2 + r_3 + L_3 + \dots + r_n + L_n]. \quad 0 < L_2 < L_3 < \dots < L_n. \quad (5)$$

The risk premiums are increasing functions of futurity because more investors must be given an incentive to hold longer-term debt as a result of the greater excess supply of that debt.

The foregoing discussion implies that the cost of funding with longer-term debt exceeds the expected cost of funding by issuing (and rolling over) shorter-term debt. This conclusion applies to coupon-bearing debt as well as to single-payment debt because the cash flows on a coupon-bearing note or bond can be replicated with a portfolio of single-payment securities.

Chapter 6

1995-97: Harbinger

The interval from 1995 to 1997 is notable because it marked the last expansion of the Treasury auction calendar in the twentieth century, and because early signs of the budget surpluses of the late 1990s became evident, first in a tempering of the expansion in late 1995 and then, more decisively, in the quick reversal of part of the expansion in mid-1997.

A Need for New Cash

In the winter of 1994-95, Treasury debt managers began to contemplate the need to refinance maturing issues of monthly 5-year notes. The notes had been auctioned since 1991 (when, as Chapter 4 relates, they replaced quarterly sales of 4- and 5-year notes) and would begin to mature in January 1996. From then on, proceeds from auctions of new notes would largely go to refinance maturing notes. Officials had to identify an alternative source of new cash.¹

Run-Up to a Decision

In January 1995, Treasury officials solicited the advice of the Treasury Borrowing Advisory Committee on how to adjust the auction calendar. Consistent with their recent emphasis on shortening the maturity structure of the debt, they asked whether the Treasury should increase the auction frequency of 52-week bills or 3-year notes.

The committee did not take the hint, and used the solicitation as an opportunity to reopen the question of the appropriate maturity structure of Treasury debt. It began by focusing on two concerns: average maturity and “the schedule of maturities,” shorthand for the fraction of debt maturing in the near future.²

With respect to average maturity, the committee advised the Treasury as follows:

Although the Committee is aware of no compelling study or argument that points to an optimal average length for the debt, the present pace of decline, if continued, will increase the Treasury’s exposure to variations in the level of interest rates and could become a subject of worry to investors. From its recent peak of 6 years in June 1991, the average length of privately-held marketable debt has fallen to 5 years, 6 months. If the present borrowing strategy is continued into 1996 and beyond, the pace

¹ In August 1995, the Treasury Borrowing Advisory Committee observed that “the 5-year cycle note has been the Treasury’s dominant source of new cash over the past five years” (third-quarter 1995 TBAC report).

² First-quarter 1995 TBAC report.

of the decline would continue unabated. Though it cannot say when, the Committee believes that at some stage the trend will attract the notice of investors in the US and abroad and begin to raise concerns. The consequences are unknown, but it seems highly likely there would be a negative effect on the Treasury's cost of borrowing over the longer-term.

The committee concluded that any revision to the auction calendar should provide for "a slowing or an arresting of the pace of decline in the average length of the debt."

With respect to the schedule of maturities, the committee noted that

for the past several years, the portion of the debt maturing under two years . . . has been reasonably stable at levels under 50 percent. With the current borrowing strategy, the proportion is destined to rise, as it has been recently. While again the Committee knows of no convincing case that points to some ideal schedule of maturities, a rise in the proportion of debt maturing within one or two years, especially in conjunction with a steady decline in the average length of the debt, seems bound ultimately to raise concerns among investors. In the inevitable periods of stress in the financial markets, it is likely that a heavy concentration of maturities to be refinanced in the near-term could add materially to the Treasury's cost of borrowing.

The committee concluded that any revision to the auction calendar should also provide for "a more even spread in the schedule of maturities across the full maturity spectrum."

On the basis of its analysis of average maturity and the maturity structure of the debt, the advisory committee recommended that the Treasury increase the frequency of 10-year note issuance, perhaps to as much as eight times a year, or restore quarterly offerings of 30-year bonds.³ The committee specifically rejected the idea of increasing the frequency or offering size of either 52-week bills or 3-year notes.

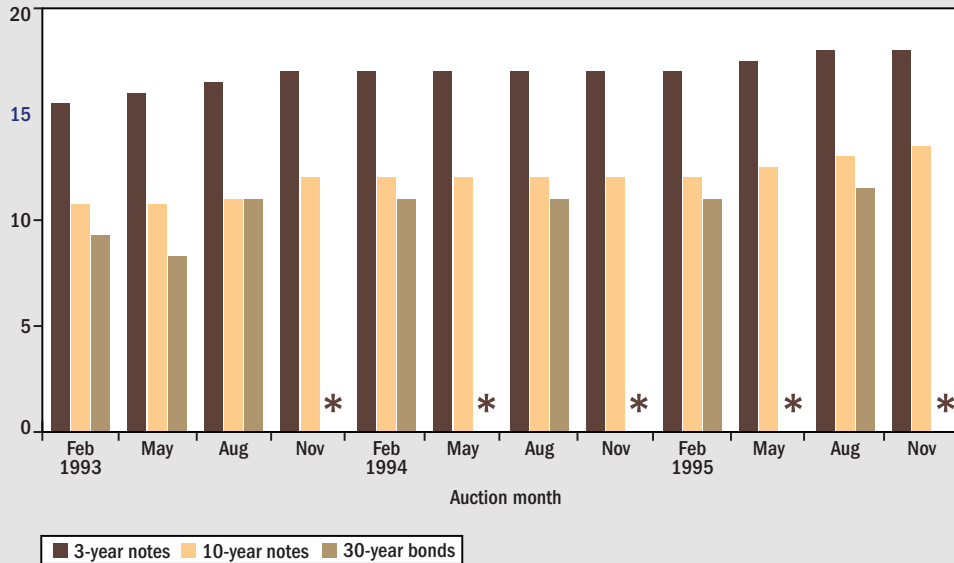
Third-Quarter 1995 Advisory Committee Meeting

At the August 1995 meeting of the advisory committee, Treasury officials renewed their inquiry into how best to raise new cash when the monthly 5-year notes began to mature. In response, the committee noted that it generally preferred to increase individual offerings when additional funds were needed but that "this approach does not appear feasible . . . for meeting the net borrowing requirement faced in

³ First-quarter 1995 TBAC report.

Chart 6.1
Offering Amounts for Mid-Quarter Refunding Auctions, 1993 to 1995

Billions of dollars



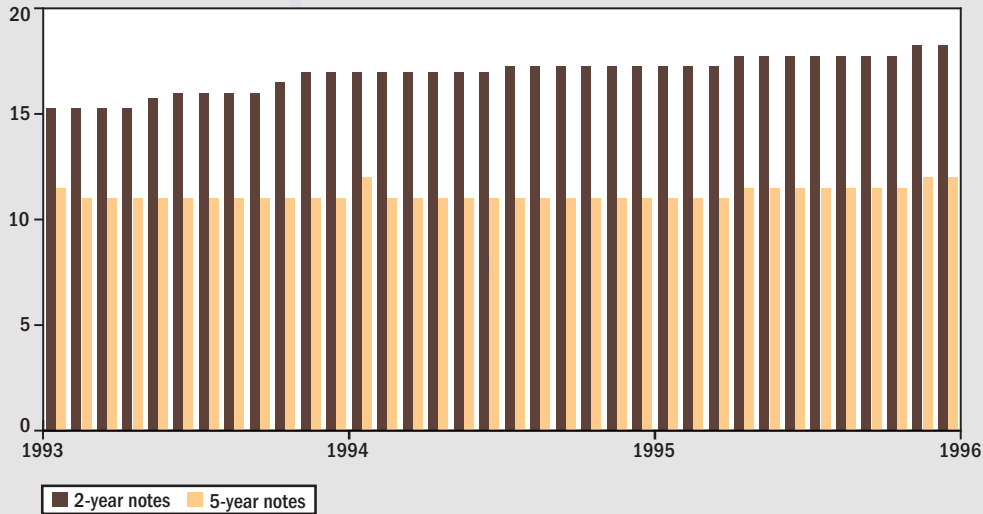
Note: Refundings with no 30-year bond offering are marked with an asterisk.

1996 which likely will approach \$190 billion. The size and pace of the increases in existing cycles that would be required to raise this amount would almost certainly be disruptive to the market and hence costly to the Treasury.”⁴ (Chart 6.1 shows mid-quarter offerings of 3-year and 10-year notes and 30-year bonds for 1995 and the two preceding years. Chart 6.2 shows end-of-month offerings of 2-year and 5-year notes for the same interval.)

As it had six months earlier, the committee recommended that the Treasury increase the frequency of 10-year note offerings, possibly to as much as twelve times a year, noting that each offering should be for at least \$8 billion to \$10 billion “to ensure individual issues remain liquid.” The committee further noted that the 1993 decision to issue 30-year bonds semiannually had had “a noticeable adverse impact on liquidity” and again recommended resumption of quarterly offerings, suggesting that “if the quarterly cycle were reinstated, with minimum issuance sizes of approximately \$10 billion, the previous level of liquidity could be restored reasonably quickly.”

⁴ Third-quarter 1995 TBAC report.

Chart 6.2
Offering Amounts for 2-Year and 5-Year Note Auctions, 1993 to 1995
 Billions of dollars



Fourth-Quarter 1995 Advisory Committee Meeting

Three months later, it appeared that Treasury financing requirements in 1996 would be lighter than previously anticipated.⁵ The advisory committee “reaffirmed” its support for the goals of lengthening average maturity and keeping the fraction of indebtedness due in less than two years under 50 percent, but revised its recommendation for adjusting issuance to *either* increasing offerings of 10-year notes to eight times a year *or* increasing offerings of 30-year bonds to four times a year.⁶ A majority of the committee expressed a preference for the latter option. Because the Treasury had relatively large borrowing requirements in January, July, and October,⁷ the committee suggested that, if officials decided to increase the frequency of 10-year note offerings, the additional auctions should come in the first month of a quarter, for settlement on the fifteenth of the month.

⁵ Fourth-quarter 1995 TBAC minutes (noting that “Treasury borrowing requirements currently estimated for FY 1996 have declined from earlier estimates”).

⁶ Fourth-quarter 1995 TBAC report. See also fourth-quarter 1995 TBAC minutes (stating that “the Committee does not believe both actions [that is, increased offerings of 10-year notes and quarterly offerings of 30-year bonds] are necessary”).

⁷ The larger size of the requirements was attributable, in part, to the need to redeem maturing issues in the recently terminated 7-year note series.

Decision

On Wednesday, May 1, 1996, officials announced that, beginning in the second half of 1996, they would offer 10-year notes six times a year and 30-year bonds three times a year.⁸ Ten-year notes would be offered in the first half of July and October, for settlement on the fifteenth of the month, as well as in the mid-quarter refundings. Thirty-year bonds would be offered in the November refunding as well as in the May and August refundings.

Treasury yields rose sharply during the week of April 29 to May 3. Thirty-year bond yields increased from 6.79 percent at the close of trading on Friday, April 26, to 7.12 percent at the close on May 3. However, most of the increase occurred on April 29 and 30, when bond yields rose from 6.79 percent to 6.89 percent, and on May 2 and 3, when bond yields rose from 6.91 percent to 7.12 percent. Both increases were attributed to news of strengthening economic performance.⁹ Interest rates fell during the morning of the refunding announcement (on favorable inflation news), but then went back up later in the day on the news that the Treasury was stepping up issuance.¹⁰ The net change on the day amounted to only a 2 basis point increase in bond yields.

Table 6.1 shows offerings of 10-year notes from mid-1996 to mid-1997. The July and October offerings were *de novo* issues with a full ten years to maturity; the August and November offerings were reopenings with nine years and eleven months to maturity at the time of issue.¹¹

Comment

It could be argued that, in acting on the repeated recommendations of its advisory committee to issue 10s and 30s more frequently, the Treasury at least partially reversed its 1993 decision to shorten issuance maturities. However, by the time the additional offerings

⁸ Second-quarter 1996 Treasury policy statement. The announcement was a mix of the two alternatives suggested by the advisory committee three months earlier: either increasing the offerings of 10-year notes from four to eight times a year or increasing the offerings of 30-year bonds from two to four times a year.

⁹ "Latest Data Hurt Prices of Treasuries," *New York Times*, May 1, 1996, p. D18; "Bonds Plunge on Signs of Strong Growth," *New York Times*, May 3, 1996, p. D16; and "Data on Jobs Force Down Bond Prices," *New York Times*, May 4, 1996, p. 33.

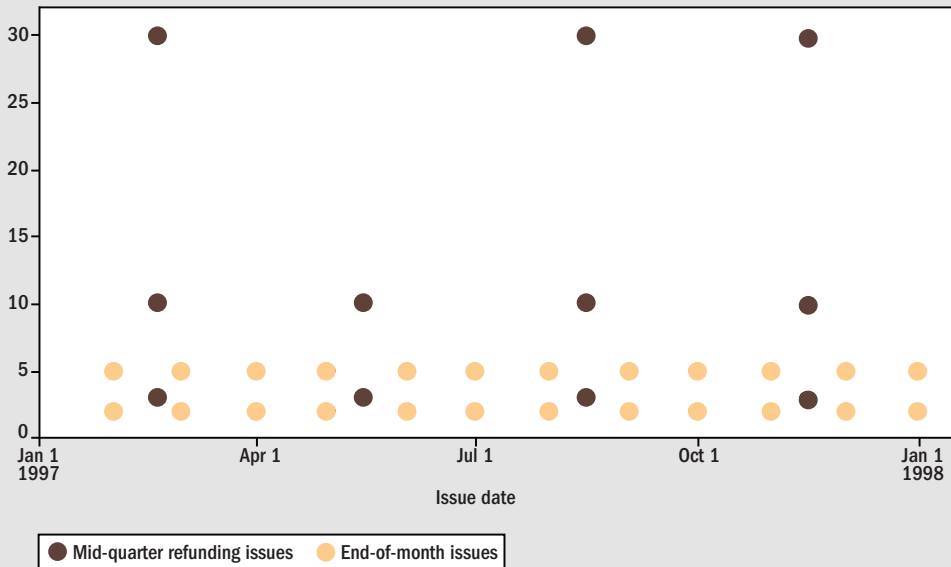
¹⁰ "Prices Show Little Change on Treasuries," *New York Times*, May 2, 1996, p. D19.

¹¹ This unusual structure—which interrupted the long-standing convention that 10-year notes (like 30-year bonds) matured on the fifteenth of the second month of a quarter—could have been avoided if the Treasury had continued to offer *de novo* securities in the mid-quarter refundings, reopened the May 2006 maturity in the July 1996 offering, and reopened the August 2006 maturity in the October 1996 offering. The record suggests that the August and November reopenings were discretionary rather than intended from the outset. See third-quarter 1996 TBAC minutes (the query whether the Treasury should reopen the July 2006 10-year in the August refunding) and fourth-quarter 1996 TBAC minutes (the query whether the Treasury should reopen the October 2006 10-year in the November refunding).

Table 6.1
10-Year Note Offerings, Mid-1996 to Mid-1997

Auction	Settle	Coupon Rate (Percent per Annum)	Maturity	Amount Offered (\$Billions)
Jul 9, 1996	Jul 15, 1996	7.000	Jul 15, 2006	10.0
Aug 7, 1996	Aug 15, 1996	7.000	Jul 15, 2006	10.0
Oct 8, 1996	Oct 15, 1996	6.500	Oct 15, 2006	10.0
Nov 6, 1996	Nov 15, 1996	6.500	Oct 15, 2006	10.0
Feb 12, 1997	Feb 18, 1997	6.250	Feb 15, 2007	12.0
May 7, 1997	May 15, 1997	6.625	May 15, 2007	12.0

Chart 6.3
Tenors of Notes and Bonds Auctioned in 1997
 Term to maturity, years



were announced, average maturity had contracted to five years and three months and was projected to fall further. Thus, the decision may instead have reflected an assessment by Treasury officials that five years was the lower limit of their comfort zone with respect to average maturity. (The events of 1993 had already identified six years as the upper limit.)

Oh, Never Mind

Remarkably, the fiscal landscape changed dramatically within a year. By spring 1997, the deficit was declining¹² and the Treasury had begun to issue inflation-indexed securities (later rebranded as “Treasury Inflation-Protected Securities,” or TIPS). The first offering in the new series—auctioned January 29, 1997, for settlement February 6—was \$7 billion of 10-year notes. The notes were reopened three months later for another \$8 billion, and the Treasury contemplated two more TIPS offerings before the end of the year. Unless it cut back on issuance of nominal bills, notes, and bonds, the Treasury was liable to raise more cash than it needed.

In April 1997, the advisory committee recommended that the Treasury drop the July and October 10-year note offerings and return to regular quarterly offerings in the mid-quarter refundings.¹³ Treasury officials concurred, and announced the decision on June 9.¹⁴ The decision left the Treasury issuing 2- and 5-year notes monthly, 3- and 10-year notes quarterly, and 30-year bonds three times a year (Chart 6.3).

¹² Second-quarter 1997 TBAC minutes (noting that the July and October 10-year notes “had been introduced . . . when projected deficits for 1996 and 1997 were much higher”). By the end of 1997, the outstanding amount of marketable interest-bearing Treasury debt was essentially unchanged from the level reached at the end of 1996.

¹³ Second-quarter 1997 TBAC report.

¹⁴ Treasury press release, “Lawrence H. Summers, Deputy Secretary of the Treasury: Remarks on Inflation Indexed Securities,” June 9, 1997 (attributing the cancellation of the July and October offerings of 10-year notes to “the falling level of the deficit, which is expected to drop below \$100 billion this year, as well as the growth of the inflation-indexed security program”). See also “U.S. to Cut Auctions and Increase Issues,” *New York Times*, June 10, 1997, p. D20.

Chapter 7

1998–99: “Challenges That We Are Delighted to Have”

The chronic budget deficits of the 1980s and early 1990s disappeared in the second half of the nineties—and then turned into surpluses. The peak in nominal marketable debt came at the end of 1996 (Chart 7.1). At first, Treasury officials relied on familiar tools—reductions in offering sizes, offering frequencies, and maturity points—to maintain liquidity and an appropriate maturity structure. But by 1999 they were forced to think more daringly.

The End of the 3-Year Note

The initial response to the improving fiscal environment was to reduce offering amounts of short- and intermediate-term issues. Chart 7.2 shows the reduction in 2-, 3-, and 5-year notes after mid-1996, reductions strongly supported by the Treasury Borrowing Advisory Committee (Box 7.1).

By the spring of 1998, support for further reductions had eroded as a result of deteriorating liquidity. Speaking at the annual meeting of the Bond Market Association (a trade association of firms in the financial services industry, since renamed the Securities Industry and Financial Markets Association) in March, Gary Gensler, Assistant Secretary of the Treasury for Financial Markets, observed that “issue sizes have been the principal tool used over the years to address changes in financing needs.”¹ However, issue sizes “are now back to the level which existed in 1992. We recognize that this has presented challenges for market participants.” Gensler suggested that further reductions might not be the preferred course of action.

The advisory committee noted at its May meeting that the Treasury’s long-term interests might be better served “by modifications to the composition and frequency of existing Treasury coupon offerings, rather than by continued downward adjustment to the sizes of those offerings.”² The committee recommended that the Treasury “shift its financing program in a fashion that would . . . refocus coupon offerings around less frequent larger offerings of benchmark securities [5- and 10-year notes], to help preserve the attractive liquidity features of the Treasury coupon market.” To achieve that objective, the committee suggested eliminating the mid-quarter offerings of 3-year notes, reducing the frequency of 5-year offerings from monthly to quarterly, and moving the 5-year

¹ Treasury press release, “Assistant Secretary for Financial Markets Gary Gensler Addresses the Annual Meeting of the Bond Market Association,” March 6, 1998. See also “Treasury Department Considers a Buyback, Senior Official Says,” *Wall Street Journal*, March 9, 1998, p. B8.

² Second-quarter 1998 TBAC report.

Chart 7.1
Outstanding Amounts of Treasury Bills and Nominal Notes and Bonds, 1980 to 2001

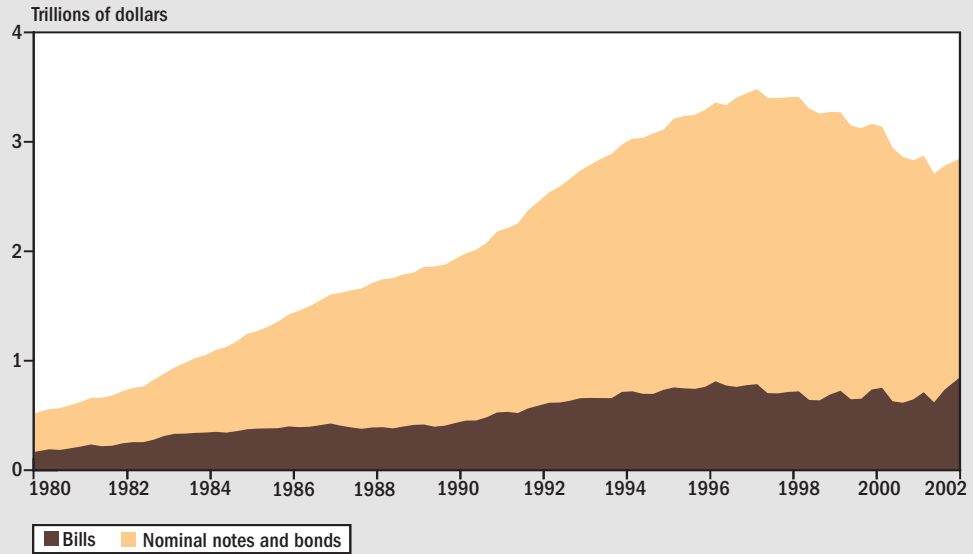
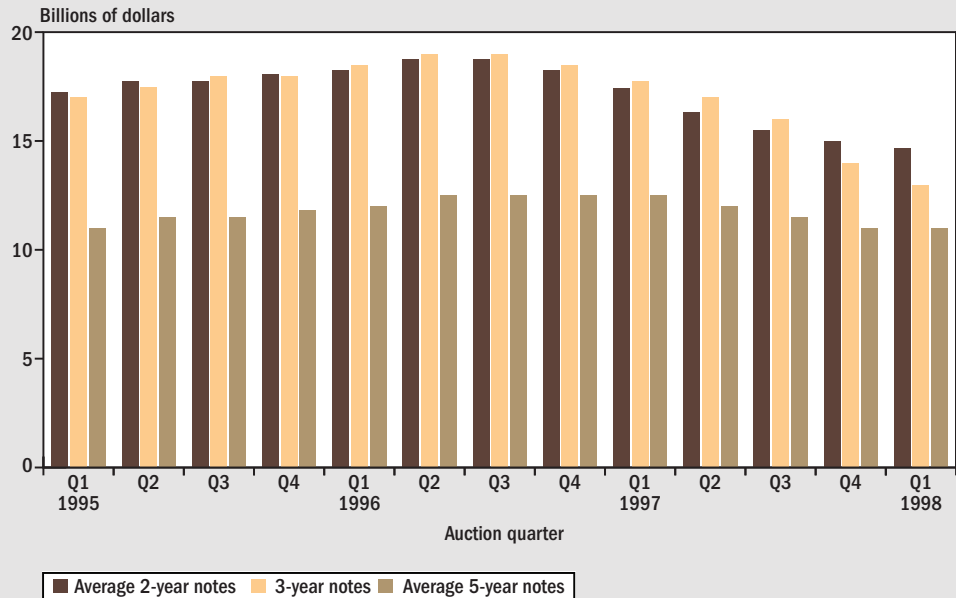


Chart 7.2
Average Offering Amounts for 2-Year and 5-Year Note Auctions and Offering Amounts for 3-Year Note Auctions, by Quarter, 1995 to 1998:Q1



Box 7.1

**Treasury Borrowing Advisory Committee Recommendations
in the Second Half of 1996 and 1997**

Third-quarter 1996 Treasury Borrowing Advisory Committee report:

"If the Treasury sought to issue a lesser amount of securities in the August refunding than the Committee's recommendation, . . . the Committee prefers reducing the 3-year note. This is consistent with the Committee's long-held emphasis on longer-dated securities."

Fourth-quarter 1996 Treasury Borrowing Advisory Committee report:

"In its discussion of the financing schedule for [the first quarter of calendar year 1997], the Committee considered possible adjustments if the Treasury's net borrowing need was somewhat smaller than expected. In such a case, a majority of members preferred a further small reduction in the recommended amounts of shorter-term coupon issues."

Second-quarter 1997 Treasury Borrowing Advisory Committee report:

"[The recommendation of a reduction of \$750 million in the amount of 3-year notes offered] is consistent with the Treasury's recent tendency to reduce modestly offering amounts of short-term coupon issues, reflecting the continued trend of lower budget deficits."

Third-quarter 1997 Treasury Borrowing Advisory Committee report:

"In light of the size of adjustments which the Treasury has successfully made to date, and given inevitable uncertainty over the size of future financing needs, the Committee was unanimous in the view that future adjustments in the financing program were best approached by means of modest further adjustments in the size of existing offerings. Specifically, the Committee members felt that existing note offerings, particularly out to five years, as well as existing bill offerings could be adjusted as needed in response to changing estimates of financing needs."

Fourth-quarter 1997 Treasury Borrowing Advisory Committee report:

"[The recommendation of a reduction of \$1 billion in the amount of 3-year notes offered] is consistent with the Treasury's recent practice of reducing offering amounts of short and intermediate-term issues, reflecting the continued trend of lower budget deficits."

auctions to the mid-quarter refundings. Acting on the proposals would serve to "enhance liquidity" and "restore the market focus on the Treasury's quarterly refundings."

Treasury officials accepted the recommendations of the advisory committee, noting that "it is appropriate at this time to adjust our issuance cycle and the instruments that

we offer, in order to continue to assure large, liquid issues in the coupon sector.”³ In announcing the revisions to the auction calendar, Assistant Secretary Gensler emphasized that the Treasury “would concentrate on having fewer, larger issues,” rather than continuing “to prune across the board.”⁴ The last 3-year note was auctioned on May 12, 1998, the last monthly 5-year note on June 24, and the first quarterly 5-year note on August 11.

Market participants accepted the Treasury’s actions, appreciating that the government’s borrowing needs were shrinking and that the actions preserved liquidity where it was most useful. Ward McCarthy, managing director at Stone & McCarthy Research Associates, observed that “the Treasury has made a trade-off between auction frequency and liquidity. There will be fewer auctions but larger auctions.”⁵ Tom Juterbock, head of U.S. and European bond trading at Morgan Stanley, characterized the actions as “a significant and dramatic change in policy,” adding that “we all knew something was going to happen, and thought they’d eliminate the three-year or cut five-year issuance, but the fact that they changed both was surprising.”⁶ No one complained that the change in the auction calendar violated the principle of regular and predictable issuance.

A Broadening of Treasury Debt Management Objectives?

The Treasury’s spring initiative also hinted at a significant broadening of the department’s objectives. During a speech in early March, Gensler identified three goals of Treasury debt management:

- 1) assuring that Treasury cash balances are sufficient at all times,
- 2) achieving the lowest cost financing for taxpayers, and
- 3) promoting efficient capital markets.⁷

The third objective was new. To elevate capital market efficiency to the level of a goal of Treasury debt management raised a clear question: Was capital market efficiency something that might be traded off against cost? For example, against the cost of longer maturity debt? Would Treasury officials forgo a chance to lower financing costs in order to preserve efficiency? And did the term “capital markets” include markets for federal agency debt, corporate debt, mortgage-backed securities, and interest rate swaps? Market participants relied on Treasury securities to price and hedge positions in all of those other markets,⁸ and reduced liquidity

³ Second-quarter 1998 Treasury policy statement.

⁴ “It’s Two Steps Back for Short-Term Treasurys,” *Wall Street Journal*, May 7, 1998, p. C1.

⁵ “Rising Budget Surplus Spurs Changes in Treasury Note Sales,” *New York Times*, May 7, 1998, p. D11.

⁶ “It’s Two Steps Back for Short-Term Treasurys,” *Wall Street Journal*, May 7, 1998, p. C1.

⁷ Treasury press release, “Assistant Secretary for Financial Markets Gary Gensler Addresses the Annual Meeting of the Bond Market Association,” March 6, 1998.

⁸ Fleming (2000a).

in the 10-year and 30-year sectors was liable to undercut liquidity in those markets as well. Were Treasury officials prepared to accept higher financing costs as the price of preserving the efficiency of federal agency and private debt markets?⁹

Interlude

In August 1998, Treasury officials asked the advisory committee to consider the need for yet more changes in the auction calendar. The committee responded that "the extensive changes in the frequency and size of regular Treasury coupon offerings, which were announced at the time of the [May] refunding, anticipated an extended period of sizable net paydowns in outstanding marketable Treasury debt. While there has been some additional improvement in the current fiscal position and near term outlook since then, there was a consensus among the Committee that there was no near term need to consider implementing significant further changes at this time."¹⁰ However, "in the event that the size of projected net paydowns were to increase significantly from recent estimates," the committee "strongly preferred" reducing the frequency of 2-year note auctions to eight times a year (by omitting the offerings in the second month of every quarter).

In the end, the auction calendar remained unchanged for fifteen months following the May adjustments. In addition to weekly auctions of 13- and 26-week bills, and quad-weekly auctions of 52-week bills, the Treasury offered 2-year notes monthly, 5- and 10-year notes quarterly, and 30-year bonds three times a year (Chart 7.3).

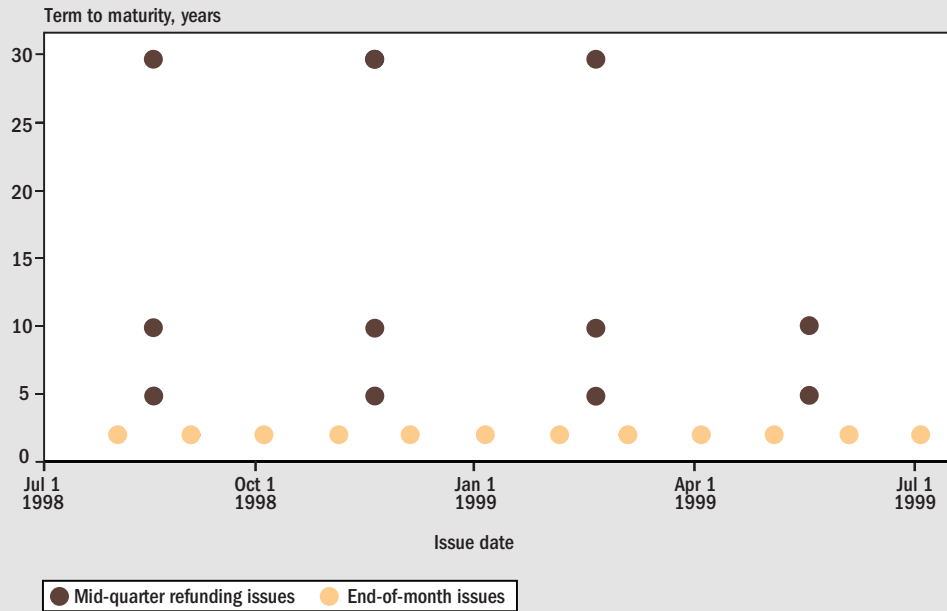
A Growing Sense That More Would Be Needed

During 1999, market participants and Treasury officials gradually came to appreciate that continuing improvements in the fiscal landscape would require further adjustments to the auction calendar. They sought to identify policies and practices that would maintain liquidity at the focal points of the Treasury market: short-term bills and the 5- and 10-year benchmark notes sold in mid-quarter refundings. Discussion focused on two approaches: (1) reducing the size and/or frequency of other offerings, that is, 52-week bills, 2-year notes, and 30-year bonds, and (2) maintaining existing frequencies

⁹ Gensler's March comments were not an isolated case. He repeated his triptych of debt management objectives in the course of speaking before President Clinton's Commission to Study Capital Budgeting in April 1998 (Treasury press release, "Treasury Assistant Secretary for Financial Markets Gary Gensler Addresses the President's Commission to Study Capital Budgeting," April 24, 1998); in the May 1998 refunding announcement (Treasury press release, "Remarks by Assistant Secretary for Financial Markets Gary Gensler to the May 1998 Treasury Quarterly Refunding Press Conference," May 6, 1998); and in testimony before the House Ways and Means Committee in June 1998 (Treasury press release, "Assistant Secretary of the Treasury for Financial Markets Gary Gensler, House Committee on Ways and Means," June 24, 1998). Similar ideas were expressed in the September 1999 testimony of Assistant Secretary for Financial Markets Lewis Sachs before the House Ways and Means Committee (Treasury press release, "Treasury Assistant Secretary for Financial Markets Lewis A. Sachs: Testimony Before the House Committee on Ways and Means," September 28, 1999).

¹⁰ Third-quarter 1998 TBAC report.

Chart 7.3
**Tenors of Notes and Bonds Auctioned in the Second Half of 1998
 and the First Half of 1999**



and offering sizes by recycling excess cash back into the economy with repurchases of seasoned coupon-bearing debt.

Approach One: Reductions

The advisory committee discussed what the Treasury might reduce at its February 1999 meeting. The committee settled on reiterating the recommendation of the preceding August, that the best choices were 2-year notes and 30-year bonds.¹¹ Treasury officials promptly announced that they were considering reducing the auction frequency of both series.¹²

Three months later, the advisory committee came to a different conclusion and recommended that the Treasury first reduce offerings of 52-week bills. The committee stated that the year bill “was viewed as providing the least utility to the Treasury and to the market, relative to other regular offerings” and noted that there were “substantial secondary market alternatives, in terms of the supply of short coupons, to meet investor needs in the 1-year maturity.”¹³

¹¹ First-quarter 1999 TBAC report.

¹² First-quarter 1999 Treasury policy statement.

¹³ Second-quarter 1999 TBAC report.

Approach Two: Buybacks

Buybacks—repurchases of outstanding Treasury debt by the Treasury—were first discussed by the advisory committee in early February 1998,¹⁴ before officials decided to terminate the 3-year series. Buybacks were viewed at that time as a tactical device to maintain issue sizes until the magnitude and duration of the budget surplus became clearer:

The Committee recognized the uncertainty regarding both the size and duration of potential budget surpluses. That uncertainty . . . needs to be taken into consideration by the Treasury in evaluating techniques for modifying existing debt management arrangements in the face of improved fiscal performance.

One such technique would be to introduce arrangements for the repurchase of outstanding Treasury obligations. In the view of most members of the Committee, this debt management technique would be most useful to the Treasury in circumstances where uncertainty regarding the duration of a fiscal surplus made it premature to consider changes in the number or frequency of regular coupon offerings, and where there was only limited scope for further reduction in existing issue sizes, without putting at risk the attractive liquidity features of benchmark issues.¹⁵

Following the May 1998 decision to terminate the 3-year series and reduce the auction frequency of 5-year notes from monthly to quarterly, the advisory committee concluded that buybacks could be moved to a back burner. The committee noted that “in light of the extensive changes being recommended in the regular coupon offering cycle—and given opportunities to raise regular issue sizes as a result of those changes, the debt buyback tool would apparently have limited usefulness to the Treasury at this time.”¹⁶ Assistant Secretary Gensler agreed that the changes in the Treasury auction calendar reduced the need for a buyback program, but noted that it “still remains as a possible tool in the future.”¹⁷

Interest in buybacks resurfaced following the collapse of Long-Term Capital Management (LTCM) in September 1998,¹⁸ when recently auctioned, on-the-run

¹⁴ First-quarter 1998 TBAC report. See also “Treasury Department Considers Repurchase Of Bonds to Take Advantage of Fiscal Surplus,” *Wall Street Journal*, February 5, 1998, p. C25 (stating that “for the first time since the prospect of a surplus has emerged, the Treasury Department is weighing whether it should begin repurchasing government bonds”).

¹⁵ First-quarter 1998 TBAC report.

¹⁶ Second-quarter 1998 TBAC report.

¹⁷ “It’s Two Steps Back for Short-Term Treasuries,” *Wall Street Journal*, May 7, 1998, p. C1.

¹⁸ The collapse of Long-Term Capital Management is recounted in Dunbar (2000) and Lowenstein (2000).

Treasury issues exhibited far more liquidity, and were far more richly priced, than seasoned, off-the-run securities.¹⁹ In November, the advisory committee debated the merits of repurchasing off-the-run securities and issuing increased amounts of on-the-run securities;²⁰ essentially buying back what was cheap and issuing more of what was in demand. The committee was divided. Those in favor

felt that the scale of dislocations was such that the Treasury could both lower its cost of funding and help improve market liquidity. Specifically, the Treasury could capture some portion of the wide disparity in yields between on-the-run and select off-the-run issues, and also help re-liquefy the benchmark issues. . . . Members favoring this course of action also felt that the advantages of an opportunistic response to current dislocated market conditions would outweigh any potential negatives, in terms of the impact on predictability and consistency of normal debt management operations.

Those opposed “felt that such a course of action was not advisable at this time. For one, there was some doubt as to the certainty and scale of financial advantages to the Treasury, since the announcement effect of any such initiative would tend to cause a narrowing of [on-the-run/off-the-run] spreads.” They also noted that the discretionary nature of a buyback-and-issue program would create uncertainty regarding the relative supply of different Treasury securities, violating the spirit of regular and predictable issuance and possibly leading to higher Treasury financing costs:

The introduction of uncertainty, both as to the size and timing of any Treasury market operation, as well as the potential for future operations, would add a higher risk premium to the prices of on-the-run Treasury issues and diminish the long-term benefits of predictability.

In the event, nothing was done.

When market participants and Treasury debt managers began to realize, in 1999, that further responses to the improving fiscal picture would be needed, buybacks resurfaced as an attractive policy instrument.²¹ The advisory committee reported in February that it had

¹⁹ Fourth-quarter 1998 TBAC report (noting “the extent to which price differences had developed between on-the-run and off-the-run Treasury securities, and the extreme and persistent scarcity of on-the-run securities in the repo market”). Krishnamurthy (2002) examines the behavior of the yield spread between on-the-run and off-the-run 30-year bonds from mid-1995 to November 1999.

²⁰ Fourth-quarter 1998 TBAC report.

²¹ First-quarter 1999 TBAC report (noting “a forecasted environment of sizable shrinkage in the size of outstanding Treasury debt”), and “Treasury May Buy Back Debt With Idle Cash,” *Wall Street Journal*, January 11, 1999, p. A2 (reporting that senior Treasury officials were “exploring the mechanics” of buybacks).

"reconsidered the possible use of secondary market debt buyback mechanisms. These mechanisms were viewed as especially useful to the Treasury in terms of managing the impact of debt reduction on various maturity sectors of the market; in terms of [managing] the average maturity of the outstanding debt; and in terms of preserving flexibility to adapt to the impact of a less favorable economic environment or different fiscal policy outcomes."²²

Three months later, the committee reiterated its belief that buybacks had both tactical and strategic uses. In the short run, buybacks could be a "cost saving measure when significant market price anomalies develop," as in the post-LTCM period. Over longer intervals, buybacks could be used as a "tool to manage the impact of debt reduction actions on various maturity sectors of the market; to balance the impact of changes to regular offering cycles and sizes on the average maturity profile of the debt; and to preserve flexibility should less favorable economic or fiscal policy outcomes develop."²³ (Relatedly, the *Money Market Observer* pointed out that the Treasury would, in all likelihood, be buying back seasoned debt in the 15- to 25-year sector of the yield curve, where yields were highest (Chart 7.4).²⁴ Since it would continue to issue lower yielding 10- and 30-year debt, it would thereby capture the yield spread.) The committee urged Treasury officials to move ahead expeditiously.

The Treasury Prepares to Act

By the middle of 1999, market participants viewed the adoption of a buyback program as crucial to the maintenance of liquid secondary markets in on-the-run notes and bonds. In the absence of some way to recycle cash back into the economy, the Treasury would be forced to dramatically reduce auction sizes. One commentator stated that "the idea [of buybacks] has taken on an air of inevitability."²⁵

In August, Under Secretary Gensler reviewed the steadily improving fiscal picture, remarking that "the significant reduction in debt over the last two years has left us with a set of challenges that we are delighted to have."²⁶ He announced that the Treasury would no longer offer 30-year bonds in the November refunding (thereby returning the auction frequency of the long bond to twice a year) and gave notice that he was also considering reducing the auction frequency of 52-week bills and 2-year notes.

However, Treasury officials did not intend to rely on reduced issuance alone. Secretary of the Treasury Lawrence Summers announced concurrently that the

²² First-quarter 1999 TBAC report.

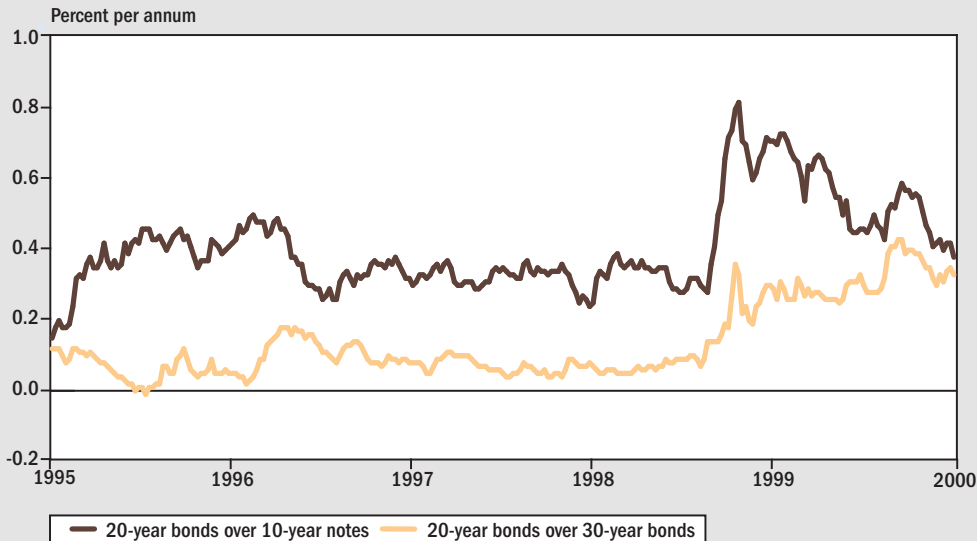
²³ Second-quarter 1999 TBAC report. In a personal communication to the author, Lou Crandall, chief economist at Wrightson ICAP, observed that buybacks became more acceptable to more members of the advisory committee once they were needed to address structural funding issues in addition to being useful as a tactical tool to address market anomalies.

²⁴ "Treasury Financing Outlook," *Money Market Observer*, July 23, 1999.

²⁵ Wrightson ICAP *Daily Commentary*, August 4, 1999.

²⁶ Third-quarter 1999 Treasury policy statement.

Chart 7.4
Yield Spread of 20-Year Bonds over 10-Year Notes and of 20-Year Bonds over 30-Year Bonds, 1995 to 1999



Treasury would soon solicit public comment on a proposed buyback rule. Buybacks, Summers said, offered several advantages for Treasury debt management, including maintenance of liquid markets at benchmark maturities and control of average maturity. He observed that “by prepaying the debt [the Treasury] would be able to maintain larger auction sizes than would otherwise be possible. Enhancing the liquidity of the Treasury’s benchmark securities should lower the government’s interest costs over time and promote overall market liquidity.” He further observed that “by paying off debt that has substantial remaining maturity, [the Treasury] would be able to prevent what would otherwise be a potentially costly and unjustified increase in the average maturity of our debt: from just over five years to more than seven years on the current trajectory.”²⁷

Scheduled Reopenings

In seeking to maintain the liquidity of benchmark securities, the Treasury had one additional trick up its sleeve: scheduled—that is, regular and predictable—reopenings of previously issued notes and bonds.

²⁷ Treasury press release, “Statement by Lawrence H. Summers, Secretary of the Treasury,” August 4, 1999. See also “U.S. May Buy Back Bonds to Trim Debt,” *Wall Street Journal*, August 5, 1999, p. A2; “Government Plans to Buy Back Bonds and Save Interest,” *New York Times*, August 5, 1999, p. A1; and “The Dwindling Market in U.S. Treasury Bonds,” *New York Times*, August 5, 1999, p. C1. The proposed buyback rule appears at *Federal Register*, August 5, 1999, pp. 42626-9.

Scheduled reopenings had been the norm in the bill market for decades (Box 7.2) but, as explained in Appendix B, not for notes and bonds, where the decision to reopen a security had been addressed on a case-by-case basis. In 1999, market participants began to think about using *scheduled* note and bond reopenings as a way to trim the offering size of a benchmark issue below what was needed to ensure a liquid secondary market.²⁸ The Treasury could, for example, offer a conventional quantity of a 10-year note in one refunding and then follow with a smaller offering of the same note in the next refunding. Since the second offering was a reopening, rather than a *de novo* offering, it did not have to be large enough to sustain a liquid secondary market by itself.

The principal impediment to scheduled reopenings was the original issue discount (OID) rule. As explained in Box 7.3, that rule generally provided for special tax treatment of a debt security issued at a discount from par in excess of $\frac{1}{4}$ of 1 percent of principal times the number of full years to maturity. As a result of the rule, a follow-on offering of a security at a price below its OID threshold would not be fungible with the original issue. The Treasury had adopted (in 1992) an exception to the OID rule to facilitate reopenings intended to eliminate acute and protracted shortages, and (as noted in Box 7.3) had invoked that exception in November 1992, but the exception was not applicable in the absence of a declaration of an acute and protracted shortage. A fumbled reopening in February 1999 (Box 7.4) vividly illustrated the importance of expanding the exception.

In November 1999, the Internal Revenue Service issued a broader exception to the OID rule to facilitate the use of scheduled reopenings in Treasury debt management.²⁹ The new exception eliminated the requirement of a declaration of an acute and protracted shortage in a reopening of a security within a year of its original issue.

Summary

By the end of 1999, Treasury officials had prepared the way for scheduled reopenings of benchmark issues and were in the process of finalizing a buyback rule. More generally, they were ready to meet the challenge of maintaining an appropriate maturity structure and liquid markets for benchmark issues in an era of budget surpluses.

²⁸ See the *Money Market Observer*, July 23, 1999, for an early discussion of the prospective use of scheduled reopenings. A week later, the Treasury Borrowing Advisory Committee recommended the use of scheduled reopenings (third-quarter 1999 TBAC report).

²⁹ *Federal Register*, November 5, 1999, pp. 60342-3. See also *Federal Register*, November 5, 1999, pp. 60395-9, and "Treasury Prepares to Reopen Issues More Frequently," *Wall Street Journal*, November 4, 1999, p. C23.

Box 7.2

Regular and Predictable Reopenings of Treasury Bills

The Treasury began auctioning 26-week bills in December 1958.^a From the outset, the bills were issued on a Thursday and set to mature on a Thursday—a pattern already in place for 13-week bills, which had been issued on a regular weekly basis since 1937.^b A 13-week bill issued thirteen weeks after a 26-week bill was fully fungible with the older bill, and it therefore regularly and predictably reopened the older bill.^c

The Treasury began auctioning year bills in March 1959.^d The bills were initially offered quarterly and set to mature on the fifteenth of the first month of a quarter and so were not subsequently reopened by 26- and 13-week bills. They were intended to “make routine a significant part of the one-year debt”^e and to establish a quarterly debt cycle other than the fifteenth of February, May, August, and November so that the mid-quarter refunding dates would not become overloaded.

The year bill calendar was reset in 1963 to monthly offerings that matured on the last day of a month to take advantage of an elevated demand for securities that matured

^a Federal Reserve Bank of New York Circular no. 4663, “Treasury Financing,” November 18, 1958 (announcing a new program for regular weekly offerings of 26-week bills); Circular no. 4670, “Treasury Financing,” December 1, 1958 (giving notice of a forthcoming offer of 26-week bills); and Circular no. 4671, “Offering of Two Series of Treasury Bills,” December 4, 1958 (announcing an initial offering of 26-week bills, to be auctioned on Monday, December 8, for settlement on Thursday, December 11, and due to mature on Thursday, June 11, 1959).

^b Garbade (2012, pp. 298-302).

^c For example, Federal Reserve Bank of New York Circular no. 4711, “Offering of Two Series of Treasury Bills,” March 5, 1959, announced an offering of 13-week bills for settlement on March 12, to mature on June 11, that would be “freely interchangeable” with the 26-week bills issued on December 11, 1958. The circular noted that “it is desirable that all bills maturing on the same date be the same issue regardless of whether they have 91 days or 182 days to run at time of original issuance.”

^d Federal Reserve Bank of New York Circular no. 4715, “Treasury Financing,” March 19, 1959 (announcing the new bill series); “Treasury Plans New Debt Device,” *New York Times*, March 20, 1959, p. 41; “Treasury to Offer \$500 Million of 10-Year, 4% Bonds,” *Wall Street Journal*, March 20, 1959, p. 2; and Federal Reserve Bank of New York Circular no. 4717, “Offering of \$2,000,000,000 of Special 289-Day Treasury Bills,” March 23, 1959 (announcing offerings of 289-day bills, to be auctioned on March 26, 1959, for settlement on April 1, 1959, and due to mature on January 15, 1960).

^e “Treasury Plans New Debt Device,” *New York Times*, March 20, 1959, p. 41, and “Treasury to Offer \$500 Million of 10-Year, 4% Bonds,” *Wall Street Journal*, March 20, 1959, p. 2.

at that time.^f It was reset again in 1972, to quad-weekly auctions of 52-week bills, issued on a Tuesday and set to mature on a Tuesday,^g to make room for the introduction of end-of-month issues of 2-year notes.

The year bill calendar was reset a third time, between November 1979 and November 1980, to quad-weekly auctions of 52-week bills, issued on a Thursday and set to mature on a Thursday,^h to provide year bills that would be fungible with subsequent issues of 13- and 26-week bills. The Treasury stated that the change would "reduce the number of separate bill issues outstanding, facilitate market trading, and improve liquidity for the 52-week bills."ⁱ

^f Federal Reserve Bank of New York Circular no. 5357, "Treasury Considers Monthly Auctions of One-Year Bills," July 16, 1963; Circular no. 5374, "Treasury Offers \$1 Billion of One-Year Bills," August 21, 1963 (announcing offering of 1-year bills for settlement on September 3, to mature on August 31, 1964); "U.S. Shifts Policy on One-Year Bills," *New York Times*, August 22, 1963, p. 50; and "Treasury to Replace Quarterly 1-Year Bills With Monthly Series," *Wall Street Journal*, August 22, 1963, p. 15.

^g Treasury press release, "Treasury Announces Plans for Restructuring of Monthly Bills," August 18, 1972; "Treasury Change in Bill Sales Set," *New York Times*, August 19, 1972, p. 33; and "Treasury Revamping Bill Offerings, Slates 52-Week Issues to Raise New \$1.8 Billion," *Wall Street Journal*, August 21, 1972, p. 4.

^h Treasury press release, "52-Week Bill Dating Change," November 1, 1979, and "Treasury Changes Maturities Pattern for Its 52-Week Bills," *Wall Street Journal*, November 2, 1979, p. 37.

ⁱ Treasury press release, "52-Week Bill Dating Change," November 1, 1979.

Box 7.3

The OID Rule and the 1992 Exception

U.S. tax law generally provides that the difference between the par value of a note or bond and the issue price, commonly called “original issue discount” (OID), is taxed as a capital gain if the security is held to maturity. (Interest payments are taxed as ordinary income as they are received.) However, if a security is issued at a price significantly less than par, purchasers are required to recognize a pro rata portion of the original issue discount as ordinary income each year on their income tax return.^a The “OID threshold” that separates the two regimes is defined as par minus the number of full years to maturity times $\frac{1}{4}$ percent of par per year. Thus, a 9 $\frac{3}{4}$ -year note has an OID threshold of 97 $\frac{3}{4}$ percent of par ($97\frac{3}{4} = 100 - 9$ full years to maturity, times $\frac{1}{4}$ percent per year).

Prior to 1992, a Treasury note or bond issued initially at a price near par could not subsequently be reopened at a price below its OID threshold: differential taxation precluded consolidation of the two issues. To avoid the confusion of having two securities with the same maturity date and the same coupon rate but subject to different tax regimes trading simultaneously, the Treasury did not reopen a security if it was not trading comfortably above its OID threshold.

The 1992 Exception

In January 1992, the Department of the Treasury, the Securities and Exchange Commission, and the Board of Governors of the Federal Reserve System released their Joint Report on the Government Securities Market.^b The report described the Treasury auction process, documented instances of unauthorized and abusive bidding in the 2-year note auction of May 1991, and outlined steps to prevent such bidding and mitigate post-auction squeezes.

The three agencies agreed that one way to address the problem of squeezes was through changes in Treasury debt management practices—“in particular, through a new policy of reopening Treasury issues whenever . . . squeezes occur.” The Joint Report stated that “the Treasury will be prepared to provide the market with additional supply of any security that is the subject of an acute, protracted shortage. The Treasury will not require evidence of manipulation in deciding whether to reopen a particular issue, but instead will reopen any issue that, in its judgment, is the subject of such a shortage.”^c

^a This requirement prevents issuers from converting what would otherwise be ordinary income into capital gains by issuing notes and bonds with low coupons at large discounts from par.

^b U.S. Department of the Treasury, Securities and Exchange Commission, and Board of Governors of the Federal Reserve System (1992).

^c U.S. Department of the Treasury, Securities and Exchange Commission, and Board of Governors of the Federal Reserve System (1992). The passages quoted in this paragraph are

To facilitate the new policy, the Internal Revenue Service announced on March 25, 1992, that, effective immediately, it was revising the OID rule by providing that a reopened Treasury security would not be subject to OID taxation and would be fungible with the original issue, regardless of its issue price, if (a) the reopening was intended to alleviate an acute, protracted shortage, and (b) the reopening took place not more than twelve months after the original issue.^d

At its November 1992 meeting, the Treasury Borrowing Advisory Committee recommended reopening the on-the-run 10-year note in the November refunding. The note was trading below its OID threshold, so a reopening would require a finding that there was an acute, protracted shortage of the issue. The Treasury accepted the committee's recommendation, declaring for the first (and only) time that a reopening was necessary "to alleviate an acute, protracted shortage."^e

from pages 10 and 11 of the report. See also House Committee on Ways and Means (1992, pp. 62-3) for the testimony of Jerome Powell, Assistant Secretary of the Treasury for Domestic Finance, on the importance of developing a public policy specifying when to reopen a security in the event of a shortage.

^d *IRS News Release*, "Taxation of Reopened Treasury Securities," March 25, 1992. The formal notice, IRS Notice 92-13, appeared in the *Internal Revenue Bulletin*, April 13, 1992.

^e Fourth-quarter 1992 Treasury policy statement.

Box 7.4

Reopening the 10-Year Note in February 1999

On February 3, 1999, Assistant Secretary Gensler announced that the Treasury would offer \$10 billion of 10-year notes in the upcoming mid-quarter refunding. In a departure from past practice, Gensler stated that the offering would reopen the on-the-run 10-year note—the 4¾ percent note of November 2008—if the price of the note was 98 percent of principal or higher at 9:00 a.m. Eastern standard time on the day of the auction (February 10). (At the time of the announcement, the on-the-run 10-year note was trading at about 99¼.) However, if the price of the note was below 98, officials were unwilling to take the risk that the price might fall further and breach the OID threshold of 97¾. In that case, Gensler stated, the auction would be for new notes maturing in February 2009.^a

The contingent character of the offering meant that market participants would not know until the morning of the auction whether they would be bidding for more of the 4¾ percent note of November 2008 or for a new, higher-coupon issue maturing in February 2009. The uncertainty dampened when-issued trading and limited pre-auction distribution of the new offering. The *Money Market Observer* later noted that “the uncertainty proved to be very disruptive for the market.”^b The episode demonstrated the importance of expanding the exception to the OID rule before introducing regularly scheduled reopenings.

^a First-quarter 1999 Treasury policy statement. See also *Treasury News*, “Treasury February Quarterly Financing,” February 3, 1999, and *Treasury News*, “Clarification on the Reopening of 9¾ Year Notes,” February 3, 1999. The Treasury Borrowing Advisory Committee had earlier approved the idea of a contingent reopening; the first-quarter 1999 TBAC report notes that “should the Treasury decide to proceed with a reopening, it should clarify for the market that this would be contingent on meeting original issue discount regulations.”

^b “Treasury Financing Outlook,” *Money Market Observer*, July 23, 1999, p. 4.

Chapter 8

2000-01: Buybacks and Scheduled Reopenings

At the beginning of 2000, Treasury officials revealed how they planned to use buybacks and scheduled reopenings to maintain an appropriate maturity structure and liquid markets for on-the-run securities. No one complained that the unprecedented initiatives violated the principles of regular and predictable issuance. Both were clearly driven by growing budget surpluses and both had been widely advertised well in advance.

Buybacks

On Thursday, January 13, Secretary Summers announced that the Department would shortly begin to buy back Treasury debt.¹ Summers reiterated his earlier observation² that buybacks had “several concrete advantages.” “First, they allow us to enhance the liquidity of Treasury benchmark securities, which promotes overall market liquidity and should reduce the government’s interest costs over time.” Summers linked liquidity to financing costs more directly than previously, pointing out the “noticeable differences in yield [of about 20 basis points] between recently issued highly liquid benchmark securities and older, less liquid, debt.”

Summers’ second advantage tracked an argument first made in 1993, that the Treasury could lower its financing costs by reducing the average maturity of its debt, although in 2000 the issue was limiting growth in, rather than reducing, average maturity. Summers argued that “by paying off debt that has substantial remaining maturity, buybacks enable us to prevent what would otherwise be a potentially costly . . . increase in . . . average maturity . . . , which has grown from 5¼ years in 1997 to 5¾ years in 1999 and, absent countervailing . . . actions, would be projected to rise to almost 8 years by 2004.”

The buyback program was not news, but the prospective size of the program—as much as \$30 billion in calendar year 2000—was. One trading manager noted that the size “was a bit larger than expected, and it looks like they’ll be buying the debt back sooner than we thought.”³

¹ Treasury press release, “Statement of Treasury Secretary Lawrence Summers,” January 13, 2000. The Treasury concurrently released a final version of the buyback rule, subsequently published in the *Federal Register*, January 19, 2000, pp. 3114-8.

² Treasury press release, “Statement by Lawrence H. Summers, Secretary of the Treasury,” August 4, 1999.

³ “Treasury Announces Its Plan to Buy Back Debt of as Much as \$30 Billion, Above Expectations,” *Wall Street Journal*, January 14, 2000, p. C19.

Restructuring the Treasury Auction Calendar

On Wednesday, February 2, Under Secretary Gensler announced the second leg of the Treasury's debt management initiative. He noted that Treasury debt held by the public was expected to shrink further and faster in the future than in the two preceding years and that "if we maintain the current level of longer-term financing . . . the average maturity of Treasury debt is forecast to lengthen . . . to approximately 8 years by the end of 2004. Over the long term, this would impose an unnecessary additional cost on . . . taxpayers."⁴

Supported by the Treasury Borrowing Advisory Committee,⁵ Gensler announced an unprecedented restructuring of the auction calendar. At the front end of the yield curve, 52-week bill auctions would be cut back to once every thirteen weeks. The year bill would have been terminated, except that there were several references to auction yields on year bills in the statute books.⁶ Following revision of such references,⁷ the Treasury terminated the 52-week bill series in early 2001.⁸ The last 52-week bill was auctioned on February 27, 2001.

Regular monthly auctions of 2-year notes would continue, but with smaller offering sizes. The advisory committee supported retention, having observed earlier that "the timing of the Treasury's monthly cash flow requirements [in particular, Social Security payments] favor preserving monthly issuance."⁹

Quarterly *de novo* offerings of 5- and 10-year notes and semiannual *de novo* offerings of 30-year bonds would be replaced with alternating *de novo* offerings and scheduled reopenings. New 5-year notes would be offered in the May and November refundings, with the on-the-run note regularly reopened with smaller offerings in February and

⁴ First-quarter 2000 Treasury policy statement.

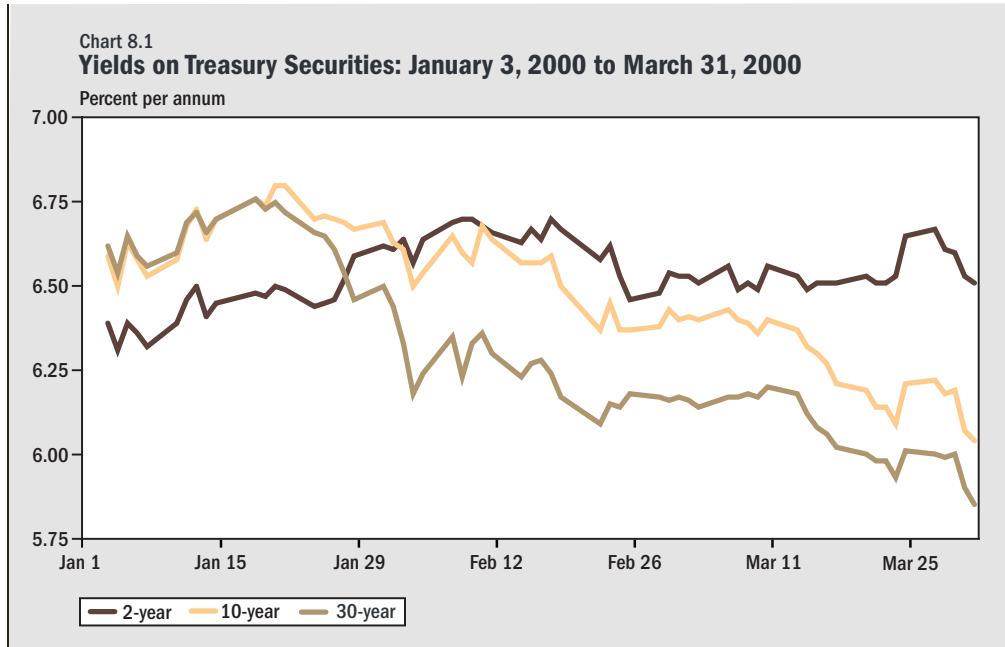
⁵ First-quarter 2000 TBAC report (stating that "the average maturity of the debt should be stabilized, and ideally brought down as debt is retired").

⁶ For example, section 3612(f)(2)(B) of Title 18 of the United States Code provided that "Interest on a fine shall be computed . . . at a rate equal to the coupon issue yield equivalent . . . of the average accepted auction price for the last auction of fifty-two week United States Treasury bills settled before the first day on which the defendant is liable for interest." In a personal communication to the author, Lou Crandall, chief economist at Wrightson ICAP, pointed out that such statutory references illustrate that regular and predictable issuance had become deeply embedded in the fabric of government.

⁷ The Treasury reported progress on the statutory revisions in the second-quarter 2000 Treasury policy statement (pointing out "a limited number of statutory provisions that reference the 52-week bill for the purpose of setting interest rates" and noting that "we look forward to working with Congress to achieve a smooth transition to the eventual elimination of the one-year bill"), the third-quarter 2000 Treasury policy statement (observing that "we are pleased with the progress to date in our discussions with Congress concerning revision of the limited number of statutory provisions that reference the one-year bill for the purpose of setting interest rates"), and the fourth-quarter 2000 Treasury policy statement (reporting "significant progress," noting that "we have received bipartisan support and agreement on the language to be used for these technical and non-controversial revisions," and expressing optimism that "some, if not all, of the revisions will be completed before Congress adjourns this session").

⁸ First-quarter 2001 Treasury policy statement.

⁹ Second-quarter 1999 TBAC report.



August. New 10-year notes would be offered in the February and August refundings, with the on-the-run note regularly reopened with smaller offerings in May and November. New 30-year bonds would be offered once a year, in the February refunding, followed by a “significantly smaller” reopening in August.

Blowback

Announcement of the buyback program and the reduction in bond offerings triggered a steep decline in long-term Treasury yields and an inversion of the yield curve (Chart 8.1).

On January 12, 2000, the day before Secretary Summers announced the launch of the buyback program, the yield curve had a modest positive slope. Two-year notes were at 6.49 percent, 5s at 6.63, 10s at 6.72, and 30s at 6.71. Following Summers’ announcement, market participants began to appreciate that the program was likely to drive long-term yields below shorter-term yields and began to buy bonds in anticipation of the expected inversion.¹⁰ Between January 12 and February 1, anticipatory buying drove yields on 30-year bonds down by 28 basis points, to 6.43 percent, while yields on 10-year notes declined only 10 basis points and yields on 2-year notes *rose* 11 basis points. By the beginning of February, the yield curve from 5s to 30s was inverted.

¹⁰ See “It’s a Tale of Two Bond Markets,” *Barron’s*, January 31, 2000, p. 8; “Pimco Provided Spark for Bond Turmoil,” *Wall Street Journal*, February 25, 2000, p. C1; and “A Bond Master Reflects on Flirting with Disaster,” *New York Times*, February 27, 2000, p. BU1.

Under Secretary Gensler's announcement on February 2 of the restructuring of the auction calendar was widely interpreted as signaling the "imminent demise" of the 30-year bond.¹¹ Ward McCarthy, managing director at Stone & McCarthy Research Associates, observed, "It would not surprise me if the Treasury phases out the 30-year bond over the next several years"; Lou Crandall said the announcement "called into question the reliability" of the bond.¹²

Investor concern with the fate of the long bond sparked a ferocious rally. Thirty-year yields fell 26 basis points in two days, from 6.43 percent on February 1 to 6.17 percent at the close of business on February 3. McCarthy remarked that the on-the-run 30-year was "trading like it's a collectors item."¹³ Donald Fine, chief market analyst at Chase Asset Management, concurred: "The long bond is in a world of its own."¹⁴

On Wednesday, February 9, Summers tried to dampen the frenzy, saying, "I expect the Treasury to continue to use the entirety of the yield curve," but managed only to whipsaw market participants when the yield on the bond jumped 10 basis points.¹⁵ A trading manager complained that when Robert Rubin was Treasury Secretary (from January 1995 to July 1999), communication was "very clear, and the market wasn't confused; now the market is confused."¹⁶ The confusion led to unusually weak demand in the 30-year auction on Thursday, February 10. The *Wall Street Journal* described the bid-to-cover ratio of 1.33 as: "the worst response in 17 years . . . for an auction of similar size"¹⁷

Confusion, price volatility, and reduced auction participation were not what Treasury officials wanted from their debt management policies. Assistant Secretary Lewis Sachs argued that officials had given investors ample notice of the Department's intention to reduce issuance,¹⁸ and one analyst suggested that "Wall Street [had] missed the boat," but the *Wall Street Journal* reported that other market participants nevertheless believed the Treasury "stumbled in its all-important job of . . . avoiding being the source of market turmoil."¹⁹

¹¹ "Treasury Secretary Makes a Statement That Sparks Selling," *Wall Street Journal*, February 10, 2000, p. C1.

¹² "That 30-Year Benchmark? Think 10-Year, Treasury Says," *New York Times*, February 3, 2000, p. C12.

¹³ "That 30-Year Benchmark? Think 10-Year, Treasury Says," *New York Times*, February 3, 2000, p. C12.

¹⁴ "Treasury 30-Year Price Ends Sharply Higher As Traders Scramble to Reverse Hedge Positions," *Wall Street Journal*, February 9, 2000, p. C21.

¹⁵ "Treasury Secretary Makes a Statement That Sparks Selling," *Wall Street Journal*, February 10, 2000, p. C1 (taking note of "whiplashed investors" and reporting that Summers' comment "wasn't quite a 'never mind' . . . but the bond market reacted that way").

¹⁶ "Treasury Secretary Makes a Statement That Sparks Selling," *Wall Street Journal*, February 10, 2000, p. C1.

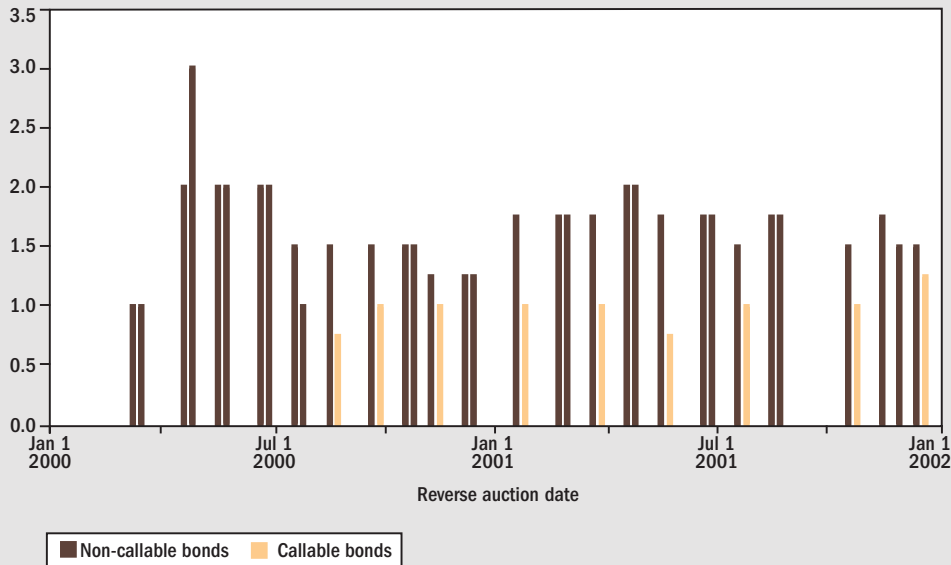
¹⁷ "Confusion Over Treasury Plans Roils Trading Amid Weak Demand at Sale of 30-Year Bonds," *Wall Street Journal*, February 11, 2000, p. C20.

¹⁸ "After Turbulent Week, Treasury Says Bond Market Will Be Orderly with Less Supply," *New York Times*, February 7, 2000, p. C12.

¹⁹ "Confusion Over Treasury Plans Roils Trading Amid Weak Demand at Sale of 30-Year Bonds," *Wall Street Journal*, February 11, 2000, p. C20.

Chart 8.2
**Amount Bought Back in Treasury Buyback Operations,
 March 2000 to December 2001**

Billions of dollars



The Buyback Program

Between March 2000 and December 2001, the Treasury bought back \$63.5 billion of Treasury bonds in a series of forty-two reverse auctions.²⁰ Chart 8.2 shows the timing and sizes of the operations.

The Treasury experimented in the first four operations, moving the amount purchased up from \$1 billion in the first two operations to \$2 billion in the third and \$3 billion in the fourth.²¹ The fourth operation (in late April 2000) proved unwieldy²² and subsequent operations were limited to not more than \$2 billion.

In its May 2000 report to the Secretary of the Treasury, the Treasury Borrowing Advisory Committee recommended that the Treasury put the buyback program on a regular schedule, comparable to auction offerings of new issues. The recommendation underscored the appreciation of market participants for regular and predictable

²⁰ The discussion of the buyback program in this section draws heavily on Garbade and Rutherford (2007). The Treasury bought another \$3.75 billion of bonds in three additional reverse auctions in the second half of April 2002, during a period of seasonally strong tax receipts.

²¹ Officials anticipated that the first few buyback operations would be experimental, and that operating procedures would be refined over time (first-quarter 2000 Treasury policy statement).

²² Garbade and Rutherford (2007, pp. 7-8).

operations. The committee's report observed that a regular schedule "would reduce market disruptions and ultimately allow the Treasury to pay lower prices for the securities repurchased."²³ More specifically, the committee suggested the following:

- weekly or bi-weekly operations,
- a 3- to 5-year maturity band for a single operation, and
- a definite size range—some committee members favoring \$500 million to \$1 billion, others favoring \$1 billion to \$2 billion.

The Treasury accepted the recommendation and announced that it would henceforth hold buyback operations twice a month, generally in the second half of a month when Treasury cash flows were relatively strong.²⁴

Mechanics

The Treasury gave one or two days' notice of an impending operation, specifying the size of the operation (denominated in billions of dollars of par value of bonds sought for purchase) and identifying the eligible bonds.

Over the period from March 2000 to December 2001, the Treasury expressed an interest in buying back a total of forty-two different bonds. (It never offered to buy back a note.) Chart 8.3 shows the eligible bonds in each of the forty-two operations. The shortest eligible bond was the 11¾ percent bond of February 2010, callable in 2005. The longest was the 6½ percent non-callable bond of November 2027. As of December 31, 1999, outstanding amounts in public hands, that is, not held in U.S. government accounts or by the Federal Reserve, ranged from \$1.6 billion of the 11¾ percent bond of February 2010 to \$30.1 billion of the 8 percent bond of November 2021 (Chart 8.4).

When the fourth operation (in which the Treasury identified twenty-six different bonds as eligible for purchase) proved unwieldy, debt managers limited the set of eligible bonds to about ten or twelve bonds per operation. Beginning with the September 28, 2000, operation, they rotated the list sequentially across four panels:

- callable bonds maturing between February 2010 and November 2014,
- non-callable bonds maturing between February 2015 and 2019,
- non-callable bonds maturing between 2019 and 2022 or 2023, and
- non-callable bonds maturing between 2022 or 2023 and November 2027.

²³ Second-quarter 2000 TBAC report.

²⁴ Second-quarter 2000 Treasury policy statement.

Chart 8.3
Bonds Eligible for Purchase by the Treasury in Buyback Operations
 March 2000 to December 2001

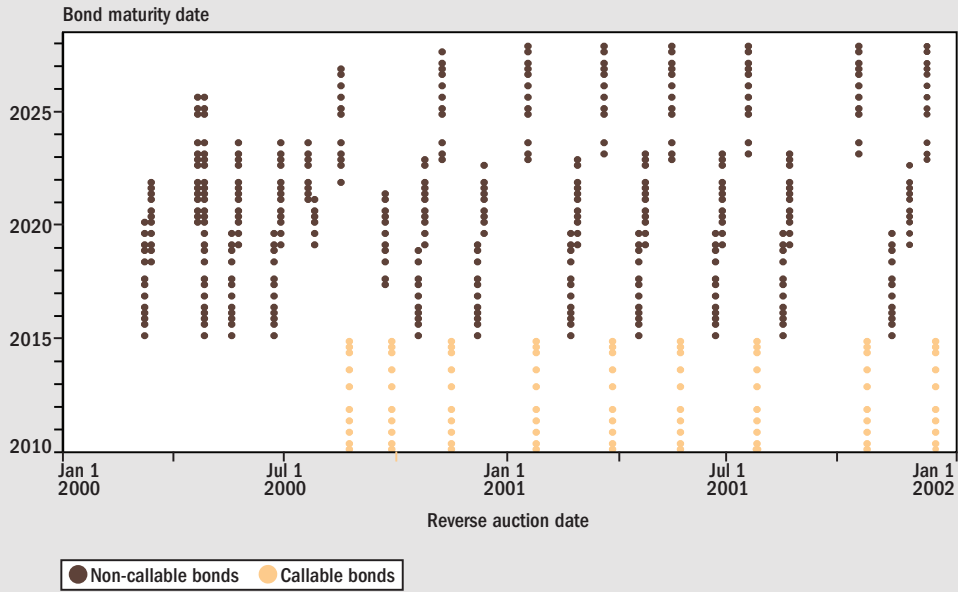
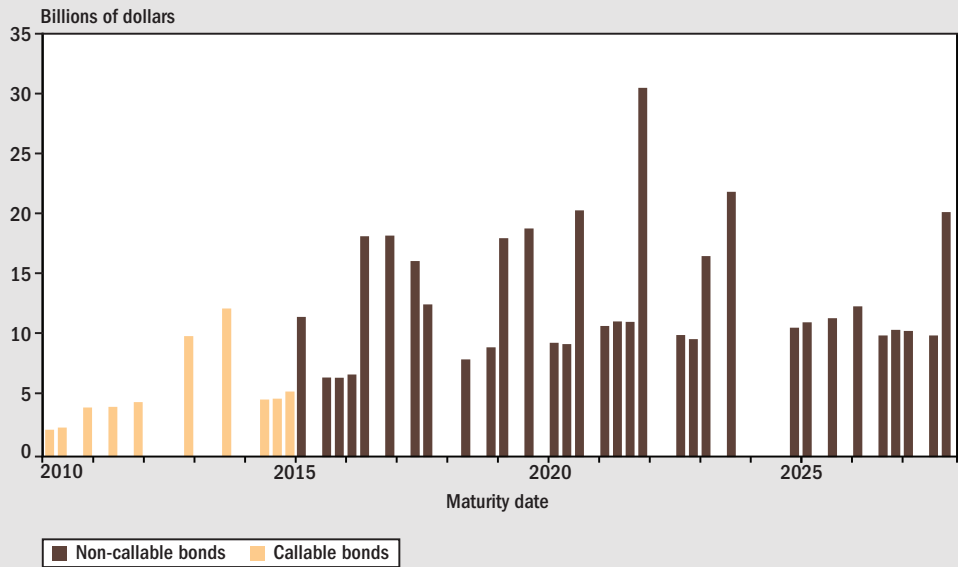


Chart 8.4
Amount Outstanding in Public Hands, as of December 31, 1999, of Bonds Eligible for Purchase by the Treasury in Buyback Operations, March 2000 to December 2001



Each auction tender identified the bond being offered, the principal amount offered, and an offering price (expressed as a percent of principal, net of accrued interest, with fractions of a percent in eighths of a 32nd).²⁵ There was no limit on the number of tenders that an auction participant could submit, of the same security or of different securities.²⁶

The Treasury generally sought to buy bonds that were offered at relatively attractive prices—given their coupon rates, maturities, and call provisions—compared with other bonds eligible in the same operation and compared with secondary market prices for other Treasury securities.²⁷ Following an 11:00 a.m. auction close, Treasury officials evaluated the tenders and, at about 11:05 a.m., informed individual offerors which, if any, of their tenders had been accepted. The auctions were conducted in a multiple-price format: each accepted tender was settled at its own offer price, plus accrued interest to the settlement date.²⁸ At about 11:15 a.m., the Treasury announced the auction results in a press release that disclosed, for each eligible bond, the par amount offered, the par amount accepted, the highest accepted offer price, and the weighted average accepted offer price. Settlement followed two business days later.

Results

The Treasury's buyback operations were well-supported by market participants. Coverage ratios—the ratio of the par amount of bonds tendered to the par amount of bonds sought—ranged from a low of 2.14 to a high of 8.98 and averaged 4.39 (Chart 8.5).

On average, about 14 percent of the amount of a bond publicly held at the end of 1999 was bought back over the course of the program. However, the ratio of amount bought to amount outstanding varied widely (Chart 8.6). The Treasury bought back slightly more than half of the \$6 billion of the 10½ percent bond of August 2015, but did not buy back any of the almost \$18 billion of the 7¼ percent bond of May 2016. This suggests that while some bonds were readily available, others were held by investors who were quite reluctant to sell. Box 8.1 notes that significant quantities of some bonds had

²⁵ 31 Code of Federal Regulations 375.13(b). The amount tendered had to be an integer multiple of \$100,000. Only primary dealers admitted to doing business with the Federal Reserve Bank of New York were permitted to tender bonds (31 Code of Federal Regulations 375.11(a)). All other market participants had to submit orders *through* a primary dealer (31 Code of Federal Regulations 375.11(b)).

²⁶ 31 Code of Federal Regulations 375.13(c).

²⁷ The Treasury did not disclose the criteria that it used in accepting one offer in lieu of another. The *Federal Register* notice of the buyback rule published in August 1999 stated only that “calculation of redemption operation results would occur at the Federal Reserve Bank of New York . . . using a methodology determined by Treasury” (“Marketable Treasury Securities Redemption Operations,” *Federal Register*, August 5, 1999, p. 42627). Merrick (2005) concludes that the Treasury generally avoided buying relatively expensive bonds, but did not succeed in limiting its purchases to relatively cheap bonds.

²⁸ Although the Treasury was contemporaneously auctioning new issues in a single-price format, it adopted a multiple-price auction format for its bond purchases in order “to make immediate use of the Federal Reserve Bank of New York’s electronic system for executing open market transactions” (“Marketable Treasury Securities Redemption Operations,” *Federal Register*, January 19, 2000, p. 3115).

Chart 8.5
Coverage Ratios in Treasury Buyback Operations, March 2000 to December 2001

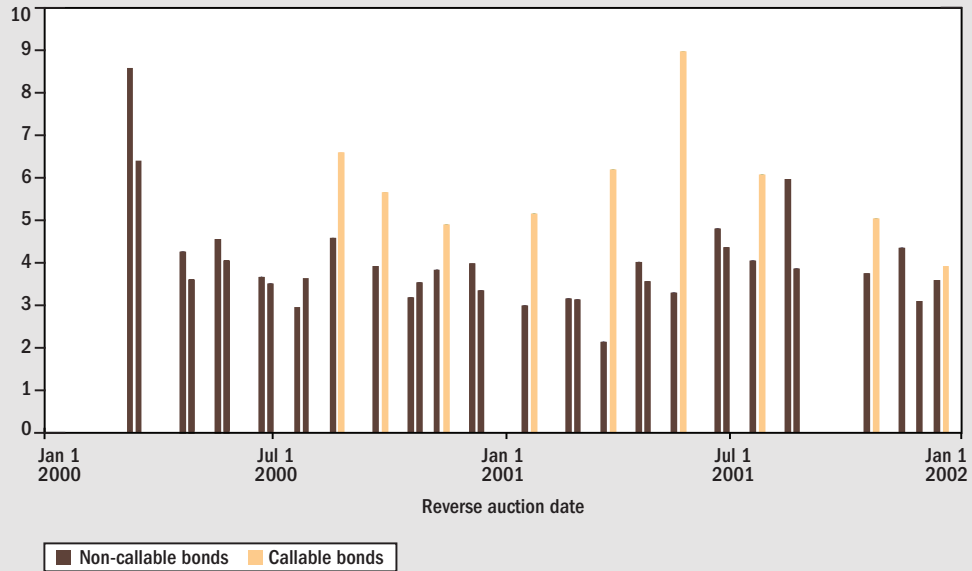
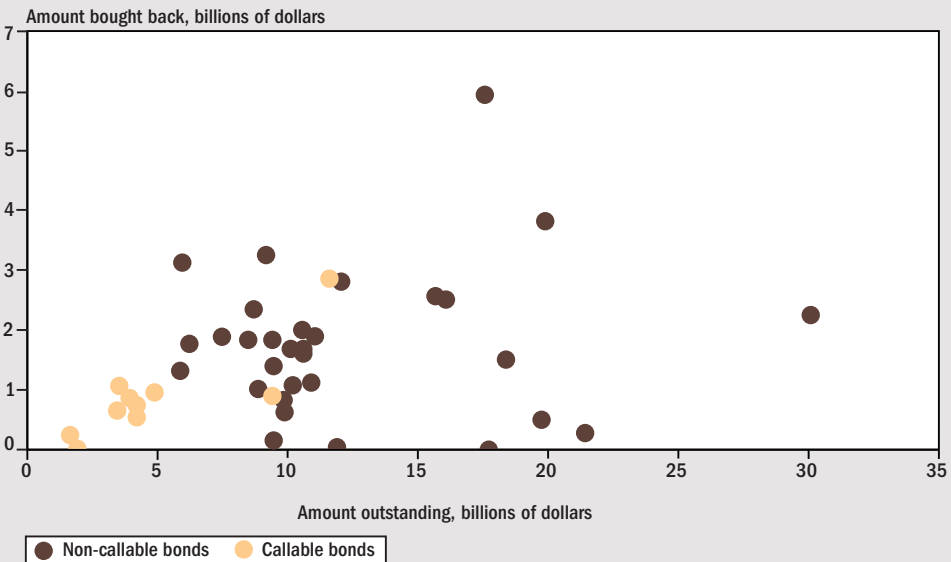


Chart 8.6
Amount of Bonds Purchased by the Treasury in Buyback Operations, March 2000 to December 2001, Plotted against Amount Outstanding in Public Hands as of December 31, 1999



Box 8.1

The STRIPS Problem

Bonds traded at yields above yields on other bonds of comparable maturity were attractive sources of STRIPS and attractive as well to the Treasury buyback program.^a Buybacks forced up the prices of those bonds relative to the prices of the STRIPS derived from the bonds, encouraging dealers and others to buy the STRIPS and reconstitute the bonds (for sale to the buyback program).

However, some STRIPS had been squirreled away to fund specific future cash requirements^b and their holders were reluctant to sell.^c As a result, the amount of a bond available for repurchase by the Treasury was lower than the amount of the bond originally issued. The fraction varied from bond to bond, and depended on who owned the component STRIPS and what they were held for.

^a “May STRIPS Data: Treasury Buybacks and STRIPS Shortages,” *Money Market Observer*, June 12, 2000.

^b Bond Market Association (2001b, p. 2).

^c “May STRIPS Data: Treasury Buybacks and STRIPS Shortages,” *Money Market Observer*, June 12, 2000. The article notes that “bonds have become more difficult to reconstitute this spring. While principal STRIPS are readily available, the coupon STRIPS needed to complete the bond package are increasingly hard to come by—especially in shorter maturities.” A graph on page 2 of the article shows interest STRIPS maturing in August 2002 trading almost 50 basis points lower in yield than principal STRIPS maturing at the same time.

been converted to STRIPS, the holders of which were reluctant to sell to dealers seeking to reconstitute the bonds for sale to the buyback program. Many of the stripped bonds remained unavailable to the Treasury.

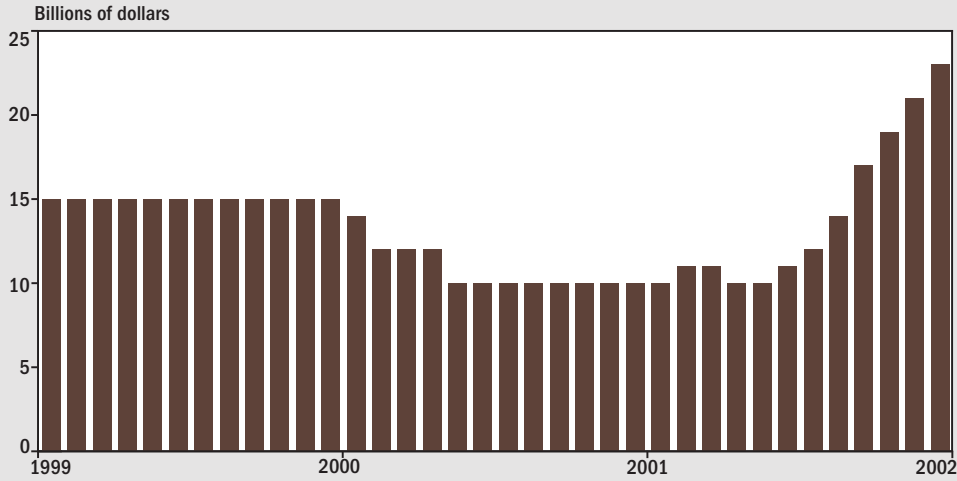
Coupon Offerings in 2000 and 2001

Limiting the size of note and bond offerings with scheduled reopenings was the second leg of the Treasury initiative aimed at maintaining an appropriate maturity structure and liquid markets for benchmark securities. Offerings of 2-, 5-, and 10-year notes and 30-year bonds in 2000 and 2001 followed the pattern set out by Under Secretary Gensler in February 2000.

The Treasury continued to auction 2-year notes on a monthly basis, but reduced the offering size from \$15 billion per month in 1999 to \$10 billion by May 2000 (Chart 8.7). Offerings stayed at the \$10 billion level through May 2001, but climbed to \$23 billion by the end of that year as Treasury financing needs increased.

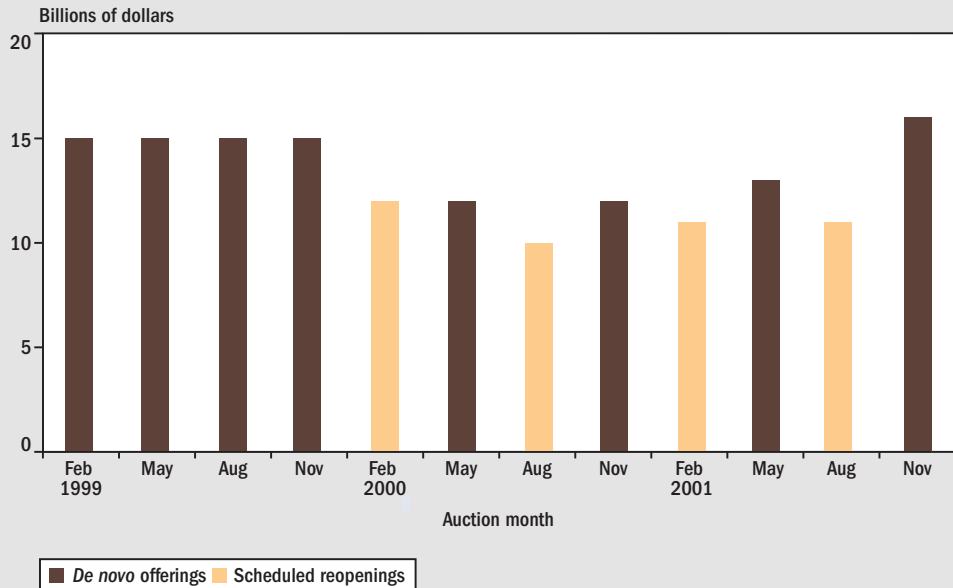
The Treasury brought *de novo* offerings of 5-year notes in May and November and auctioned those notes three months later in smaller reopenings (Chart 8.8). Similarly, new issues of 10-year notes were offered in February and August, and the notes reopened

Chart 8.7
Offering Amounts for 2-Year Note Auctions, 1999 to 2001



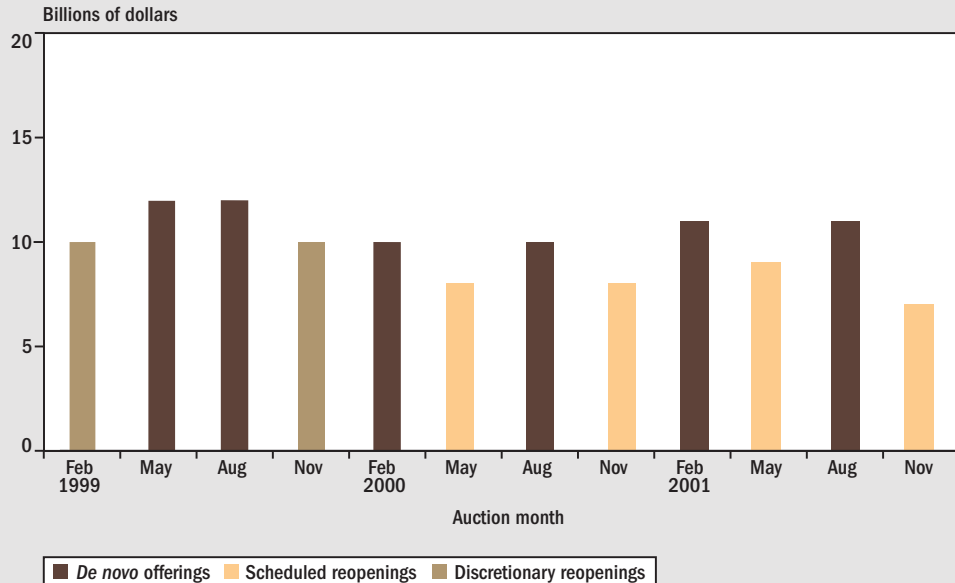
Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with "add-ons."

Chart 8.8
Offering Amounts for 5-Year Note Auctions, 1999 to 2001



Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with "add-ons."

Chart 8.9
Offering Amounts for 10-Year Note Auctions, 1999 to 2001



Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with “add-ons.”

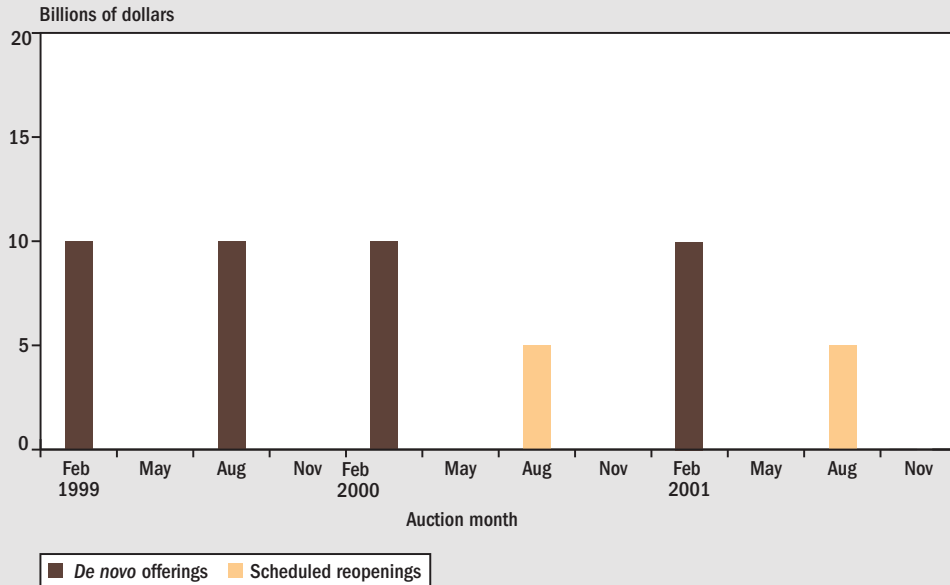
three months later (Chart 8.9).²⁹ New issues of 30-year bonds were offered in February, and the bonds reopened six months later in much smaller auctions (Chart 8.10).

Was the Effort Successful?

Treasury officials identified two key objectives for the buyback program and scheduled reopenings: limiting the projected increase in average maturity and preserving the liquidity of benchmark Treasury securities in an era of rising surpluses.

²⁹ In addition, the Treasury reopened the on-the-run 10-year note in early October 2001 to break a logjam of settlement fails that had developed in the wake of the September 11 attack on the World Trade Center (Fleming and Garbade [2002] discuss the settlement fails that followed the 9/11 attack and the extraordinary reopening of the 10-year note). The Treasury sold \$6 billion of the notes in the October reopening and another \$7 billion of the notes in the November 2001 mid-quarter refunding, when they had been scheduled to be reopened. The November reopening might have been larger had the notes not been reopened in October (“November Refunding Preview,” *Money Market Observer*, October 29, 2001). The *Observer* noted, “When the remedial [October] reopening was announced . . . , the spin Treasury officials put on their decision was that they were just bringing some of the scheduled supply ‘forward by a few weeks.’ They have stuck to that position ever since. Brian Roseboro, the Treasury’s Assistant Secretary for Financial Markets, reiterated last week that the Treasury would take the October reopening ‘into account’ when setting the size of the November 10-year note.”

Chart 8.10
Offering Amounts for 30-Year Bond Auctions, 1999 to 2001



Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with "add-ons."

Chart 8.11
Average Maturity of Privately Held Marketable Interest-Bearing Treasury Debt, 1985 to 2001

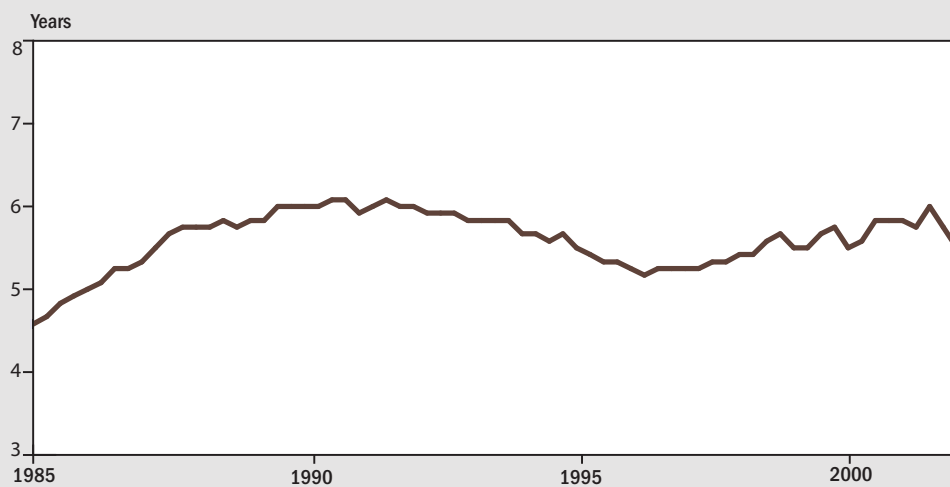


Chart 8.11 shows that they were successful in limiting the projected increase in average maturity. Average maturity was $5\frac{1}{4}$ years at the beginning of the fourth quarter of 1999; it was $5\frac{1}{2}$ years at the end of 2001.

There is no direct evidence on the success or failure of Treasury efforts to preserve the liquidity of on-the-run Treasury securities.³⁰ There is, however, reason to believe that the liquidity of on-the-run 30-year bonds fell sharply in spite of the Treasury's efforts. Bond issuance dropped from \$32 billion in 1996 to \$15 billion in 2001. In light of the relationship between issuance and liquidity, it is difficult to imagine that liquidity was not affected by the reduction.

³⁰ Fleming (2000b) examined the implications of the debt paydown for the liquidity of on-the-run Treasury securities, but his study came too soon to consider the effect of buybacks and scheduled reopenings.

Chapter 9

2001: The Fate of the Long Bond

The announcement of the buyback program in mid-January 2000, paired with the announcement three weeks later of regularly scheduled reopenings of 5- and 10-year notes and 30-year bonds, made it clear that Treasury officials were not going to tolerate a costly increase in average maturity and would do what they could to preserve the liquidity of benchmark issues.

However, there was a fundamental anomaly in the Treasury's initiatives: even while it was buying back seasoned bonds, it was issuing new bonds. During 2000 and 2001, the Treasury issued a total of \$30 billion of new 30-year bonds. Although it could not stop issuing debt altogether—even with the surpluses of 1999 and 2000, the Treasury had to refinance an immense amount of maturing debt—it could have terminated the 30-year series and run a smaller buyback program. Alternatively, it could have terminated the 30-year series and replaced the forgone proceeds with expanded offerings of 5- and 10-year notes. Shifting issuance into shorter maturities would have shortened average maturity—something that the Treasury Borrowing Advisory Committee had identified as desirable in light of the declining debt¹—and enhanced the liquidity of the 5- and 10-year sectors.

Two considerations, however, supported the continued issuance of 30-year bonds. First, there was the usual uncertainty about the fiscal outlook more than six months or a year down the road. Continuing to issue 30-year bonds avoided the cost, in the event the surplus withered, of restarting the series after investors had turned to other markets (such as long-term federal agency or corporate debt) in search of long-duration assets.

Second, the market for 30-year Treasury bonds was seen as an important public good, providing information on the price of long-term risk-free credit and facilitating the risk management activities of market participants. Investors used 30-year bonds as a temporary repository of long-term investment funds when they thought interest rates were likely to fall but could not locate attractively priced long-term corporate or agency issues; dealers used them to hedge underwriting positions in corporate and agency debt. Thirty-year Treasury debt was the keystone of the long-term credit markets. Continuing to issue that debt was justified as advancing the objective of “promoting efficient capital markets” identified by Assistant Secretary Gensler in 1998.²

Despite such well-founded reasons for maintaining issuance, in late October 2001 Under Secretary of the Treasury Peter Fisher announced the termination of the 30-year

¹ First-quarter 2000 TBAC report (stating that “the average maturity of the debt should be stabilized, and ideally brought down as debt is retired”).

² See footnotes 7 and 9 in Chapter 7.

series.³ The action was unexpected and widely castigated as the antithesis of regular and predictable issuance. This chapter explores the background to Fisher's decision and the reasons for the strong market reaction.

Greenspan's Observation

On January 25, 2001, Alan Greenspan, Chairman of the Board of Governors of the Federal Reserve System, testified on the fiscal outlook before the Senate Budget Committee. He observed that "recent projections . . . make clear that the highly desirable goal of paying off the federal debt is in reach before the end of the decade."⁴ Greenspan noted that the prospect of a complete paydown had an important implication for Treasury debt management: "While shorter-term marketable securities could be allowed to run off as they mature, longer-term issues would have to be retired before maturity through debt buybacks." He suggested that "some holders of long-term Treasury securities may be reluctant to give them up" and that "inducing such holders . . . to willingly offer to sell their securities prior to maturity could require paying premiums that far exceed any realistic value of retiring the debt before maturity."

Greenspan's testimony focused attention on the illogic of continuing to issue 30-year bonds. A week after his testimony, the Treasury Borrowing Advisory Committee met to discuss the February refunding. The committee had recognized three months earlier that "a consideration of changes in this period of large surpluses needs to include the possible elimination of the 30-year bond."⁵ Projections of the surplus had only grown larger during the intervening months, the committee noting in late January that "the 10-year projection for the cumulative surplus under current policies has been revised to between \$5 trillion and \$6 trillion from around \$4 trillion, largely because of increased optimism about long run trends in productivity."⁶

Some committee members supported continued issuance of 30-year bonds because the budget outlook, while extraordinarily favorable in the near term, remained uncertain in the medium term and distinctly unfavorable in the long term:

Proponents of continued bond issuance felt that because of the inherent uncertainty surrounding budget projections and the

³ The announcement called it a suspension, but Lou Crandall correctly observed that "the suspension is likely to last for a long time" ("Treasury Refunding Announcement—10:25," *Wrightson ICAP Intraday Updates*, October 31, 2001).

⁴ "Testimony of Chairman Alan Greenspan, Outlook for the Federal Budget and Implications for Fiscal Policy, before the Committee on the Budget, U.S. Senate," Board of Governors of the Federal Reserve System, January 25, 2001. See also "In Policy Change, Greenspan Backs a Broad Tax Cut," *New York Times*, January 26, 2001, p. A1, and "Down Into the Fray," *New York Times*, January 27, 2001, p. A1.

⁵ Fourth-quarter 2000 TBAC report.

⁶ First-quarter 2001 TBAC report.

potential social security liabilities in 2020-2035, the near-term elimination of long-dated issuance seemed premature.⁷

Others favored continued issuance because they viewed the bonds as a public good, believing that “30-year issuance served a distinct public function by providing a risk-free 30-year security to the capital markets.”

Committee members who favored termination noted, like Greenspan, that “it was inconsistent for the Treasury to issue new 30-year debt that matures after most projections predict all debt will be retired.” They believed that “the inherent flexibility in the capital markets would allow the reintroduction of long-dated issuance if needed.”

An informal vote revealed that two-thirds of the advisory committee favored termination after the August 2001 refunding.⁸ The *Money Market Observer* predicted that Treasury officials would ultimately act in accord with the vote, noting that “Greenspan’s landmark testimony . . . laid the groundwork for the elimination of the long bond” and that the advisory committee “picked up where Greenspan left off. . . . Until then, the Street had been seen as the bond’s strongest supporter. Now that even the borrowing advisory committee has acknowledged the need for change, the long bond’s days are numbered.”⁹

Whether the Market for 30-Year Bonds Was Still an Important Public Good

Five days after the advisory committee’s February report, the Bond Market Association (BMA) released a report recommending that 30-year issuance be maintained “as long as . . . practical.”¹⁰ The BMA argued that

- “As one of the few really liquid financial instruments in the long end of the yield curve, the 30-year bond promotes an efficiency in the U.S. capital markets that benefits everyone.”
- “While the debt markets are constantly evolving, the fixed income swaps market, the federal agency securities market, and the corporate bond market all currently rely on the Treasury market in general (and a liquid long bond in particular) as a reliable pricing source and benchmark.”

⁷ First-quarter 2001 TBAC report.

⁸ First-quarter 2001 TBAC minutes.

⁹ “Another One Bites the Dust,” *Money Market Observer*, February 5, 2001. The article further pointed out that “the Bush administration . . . will want to demonstrate its confidence that the public debt can be paid off rapidly, even if substantial tax cuts are enacted. It will be almost a point of honor with the new team at the Treasury to argue that 30-year bond issuance has become counter-productive in the new fiscal environment.”

¹⁰ Bond Market Association (2001a).

- “The existence of a liquid and deep long end of the Treasury yield curve also helps reduce borrowing costs for U.S. corporations, since the corporate debt market still continues to use the 30-year bond for hedging (albeit in increasingly nominal levels) and as the basis for making a quote on a spread basis.”

The BMA’s arguments assumed the continuing utility of the long bond for pricing and hedging but, by mid-2001, it was clear that most market participants had already moved to the 10-year sector. Cash market trading volume reported by primary dealers to the Federal Reserve Bank of New York had shifted, as had trading in futures contracts. There was virtually no trading in 30-year bonds in the special collateral repo market. Put simply, the public good rationale for retaining the bond was no longer viable.

Decision

On Wednesday, October 31, Under Secretary Fisher announced, “We are suspending issuance of the 30-year bond: there will be no auction of 30-year securities in February 2002 and we plan no further auctions of either 30-year nominal or inflation-adjusted bonds.”¹¹

By way of explaining the unexpected action, Fisher reiterated the factors that justified termination:

- The bond was not needed: “We do not need the 30-year bond to meet the government’s current financing needs, nor those that we expect to face in coming years.”
- The public good argument no longer carried any weight: “The 30-year bond no longer maintains a position of significance in the financial markets. Its role and its liquidity have been significantly impaired by the substantial reduction of issuance that has occurred over the past decade. But the markets have functioned smoothly during this period while both activity and attention have shifted to our 10-year offerings.”
- If it was needed in the future, it could be reintroduced without undue cost: “The reintroduction of the 30-year bond, at some point in the future, if necessary, will likely be costless to the Treasury.”

The decision to terminate issuance would have surprised no one had it come in August. Fixed-income markets had adapted to sharply reduced issuance, fiscal projections were robust, and Greenspan had pointed out the illogic of continued issuance. However, by the

¹¹ Fourth-quarter 2001 Treasury policy statement. Fisher also announced suspension of the buyback program, from the end of 2001 until February 2002, and indicated that the Treasury would announce in February 2002 its buyback plans for the subsequent three-month period.

time the November refunding came around, market participants were questioning the likelihood of continued surpluses. The advisory committee noted that the economy had weakened since the summer and that “the outlook for Treasury financings has changed significantly. . . . Three months ago, consensus forecasts were for a surplus of \$120 billion to \$150 billion in fiscal year 2002. Now the consensus is for a deficit of \$25 to \$50 billion or possibly higher.”¹² For the first time since 1996, the committee contemplated *expanding* the auction calendar, noting that “if the move to deficit . . . persists into 2004 and grows, the Treasury will have to take further action in the coupon sector, either by more significantly increasing issue size or increasing the frequency of offerings, or both, depending on the size of the deficits.”¹³

Fisher’s announcement stunned market participants and caught bond traders and analysts “flat-footed.”¹⁴ The *New York Times* reported that “traders had come to believe that because the federal budget surpluses have all but vanished, the government would have to resume heavy borrowings to finance deficit spending.”¹⁵ Thus, the announcement was much less consistent—albeit not grossly inconsistent—with market assessments of current economic conditions than would have been the case had the announcement come in August.

The price action following the announcement confirmed the extent of the surprise. The yield on the 30-year bond fell 33 basis points, from 5.22 percent at the close of trading on October 30 to 4.89 percent at the close on October 31, the biggest one-day move since the 1987 break in the stock market. Dealer firms incurred significant losses. The *New York Times* quoted one trader as saying that the announcement was “a complete blind siding” and reported that “traders who had sold long-term Treasuries short to hedge their holdings in corporate bonds and mortgage-backed securities got crushed.”¹⁶ Many dealers and hedge funds also lost money on curve trades in which they had bought short-term debt while selling weighted amounts of long-term debt,¹⁷ looking for short-term rates to fall as the Federal Reserve moved to cushion the slowdown in business activity and for long-term rates to rise as a result of the larger and longer-lasting budget deficits anticipated in the wake of the 9/11 attacks.¹⁸

¹² See fourth-quarter 2001 TBAC report.

¹³ Fisher recognized that the fiscal environment had changed since the summer: “As a consequence of the further weakening of the economy and the increased federal outlays that have occurred since the attacks of September 11th, the near-term financing requirements of the federal government are larger than we anticipated just three months ago.” Nevertheless, he believed that the renewal of deficit financing would be short-lived and that the federal government would “return to surpluses in the coming years.”

¹⁴ “U.S. Will End Regular Sale of Long Bond,” *New York Times*, November 1, 2001, p. C1.

¹⁵ “Market Place,” *New York Times*, November 1, 2001, p. C7.

¹⁶ “Market Place,” *New York Times*, November 1, 2001, p. C7.

¹⁷ Garbade (1996, Chap. 11) discusses the construction of curve trades.

¹⁸ “Treasury’s Shift Sticks Traders with Big Losses,” *Wall Street Journal*, November 2, 2001, p. C1 (reporting that curve trades had become “the hot move on Wall Street”).

The Treasury's decision to terminate the bond was widely regarded as a material departure from regular and predictable issuance because the decision was not readily understandable and explicable in light of contemporaneous economic conditions. The *Wall Street Journal* quoted one senior trader as saying, "If you don't know when issuance will [come], or how much, you have to assess a risk premium to Treasurys."¹⁹

Restating the Objective of Treasury Debt Management

Intense criticism of Fisher's decision to terminate the long bond led the under secretary to revise and restate the objective of Treasury debt management.²⁰

Fisher began with the existing understanding that Treasury debt management had three objectives: minimizing borrowing costs over time, promoting efficient capital markets, and managing cash balances efficiently. "For many years, these three . . . objectives appeared to be complementary and market participants have often thought of them as self-reinforcing." Nevertheless, "debt management has always involved trade-offs . . . and these trade-offs have become more evident in recent years." In particular,

in the late 1990s, as surpluses rapidly materialized and it became necessary to reduce issuance, the tension became obvious between promoting capital markets, on the one hand, and achieving the lowest cost borrowing, on the other. Market participants habituated to the use of Treasury securities for pricing and hedging . . . perceived continuation of established issuance patterns as desirable for the promotion of efficient capital markets.

Fisher explained that he was dissatisfied with the triptych of objectives because "they give no guidance as to how we will make trade-offs and choices among them." He therefore restated the objective of Treasury debt management as seeking to "meet the financing needs of the federal government at the lowest cost over time." Cash management, he believed, "is better thought of as a constraint on our actions, not an independent objective." He appreciated that capital market efficiency was important, but argued that it "should not be thought of as an independent objective," as something that could be traded off against the cost of finance over time.

¹⁹ "Treasury's Shift Sticks Traders with Big Losses," *Wall Street Journal*, November 2, 2001, p. C1.

²⁰ Treasury press release, "Remarks of Under Secretary of the Treasury Peter R. Fisher to the Futures Industry Association, Boca Raton, Florida," March 14, 2002. See also Treasury press release, "Debt Management: Regular and Predictable in a Changing World, Under Secretary of the Treasury Peter R. Fisher, Bloomberg News' Bonds Roundtable 2002, New York, NY," February 13, 2002, and Treasury press release, "Remarks of Under Secretary of the Treasury Peter R. Fisher to the Council of Institutional Investors, Washington, DC," March 25, 2002.

To achieve the objective of lowest-cost financing over time, Fisher stated his intention to “maintain a pattern of regular and predictable issuance of as broad a portfolio of instruments as is consistent with (a) our best projections of likely borrowing requirements, (b) our ability to respond if those projections are not realized, and (c) our current understanding of what will provide the lowest borrowing cost over time.” After ensuring that the financing needs of the federal government would be met, the Treasury would filter all remaining issuance options through the sieve of “least cost over time.”

Having restated the objective of Treasury debt management, Fisher undertook to explain his decision to terminate the long bond. The decision, he said, followed from the observation that “given the likely path of our borrowing needs over the coming decade, we could not sustain continued issuance of our complete portfolio of instruments. Because we want to maintain the liquidity and depth of the instruments we issue—as a means of achieving the lowest borrowing cost over time—we suspended issuance of the 30-year bonds so we could concentrate our borrowing needs on our other instruments. Consolidating our long-term borrowing at the 10-year point is the most effective way for us to maintain a reasonable yield curve and to provide the supply necessary for adequate liquidity.”

However, the fact remains that Fisher’s decision was unexpected by market participants and not readily explicable in light of their assessment of economic conditions. By late October 2001, market participants had concluded that the era of surpluses and buybacks was ending and that a new era of renewed deficits was beginning. Treasury officials had not kept up with the change in their thinking. The result was a debt management action that went against the grain of market expectations.

Chapter 10

2001: Four-Week Bills

Throughout the period from 1983 to 2012, the U.S. Treasury maintained cash balances—in the form of deposits at Federal Reserve Banks and at commercial banks—to buffer short-run fluctuations in receipts and expenditures. The deposits earned interest¹ at rates below the cost of funds to the Treasury and officials sought to manage them at the lowest levels consistent with their role as liquidity buffers.

Managing cash balances efficiently meant Treasury officials sometimes had to borrow on an “as needed” basis, when expenditures were unexpectedly high or receipts unexpectedly slack. Such borrowings conflicted with the principles of regular and predictable issuance. The conflict was mediated in the front end of the yield curve by varying 13- and 26-week bill offerings and by issuing “cash management bills” (CMBs) on a one-off basis.²

Cash management bills were an expensive source of funding precisely because they were issued “as needed.”³ Treasury officials sought to limit their use, but growth in the volume and volatility of receipts and expenditures in the second half of the 1990s, coupled with a decline in the volume of regular bill issuance associated with the decline in aggregate Treasury debt outstanding, forced a steady increase. Desirous of reducing the use of CMBs, yet reluctant to vary more aggressively the offering sizes of 13-week bills, officials opted in 2001 to introduce a new series of 4-week bills that could be issued with more regularity and predictability than cash management bills but also with more variability than 13-week bills.

Cash Management and Cash Management Bills

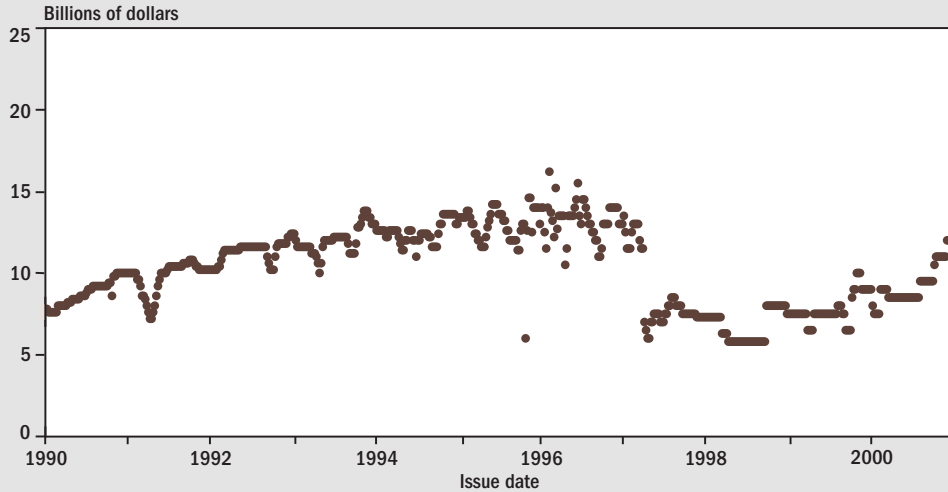
A comparison of the offering amounts of different short-term securities illustrates the difference between issuing on a regular and predictable schedule and issuing as needed. Charts 10.1 and 10.2 show weekly auctions of 13- and 26-week bills, respectively, from 1990 to 2000. Charts 10.3 and 10.4 show quad-weekly auctions

¹ Treasury deposits at commercial banks earned explicit interest. See Garbade, Partlan, and Santoro (2004), Hrungr (2007), and Santoro (2012). Deposits at Federal Reserve Banks earned implicit interest because the Fed offset the reserve drain of Treasury deposits by lending on repurchase agreements. The earnings on the repos were remitted to the Treasury as part of the regular repatriation of excess Federal Reserve earnings.

² Seligman (2006, p. 990) states that “Treasury manages cash balances as a function of expected revenue and obligations so as to minimize the stock of excess cash on hand. From time to time, as a function of circumstance, the U.S. Treasury finds cash balances to be less than desirable. The Treasury then issues debt in the form of a Cash Management Bill to meet anticipated cash inventory shortfalls.”

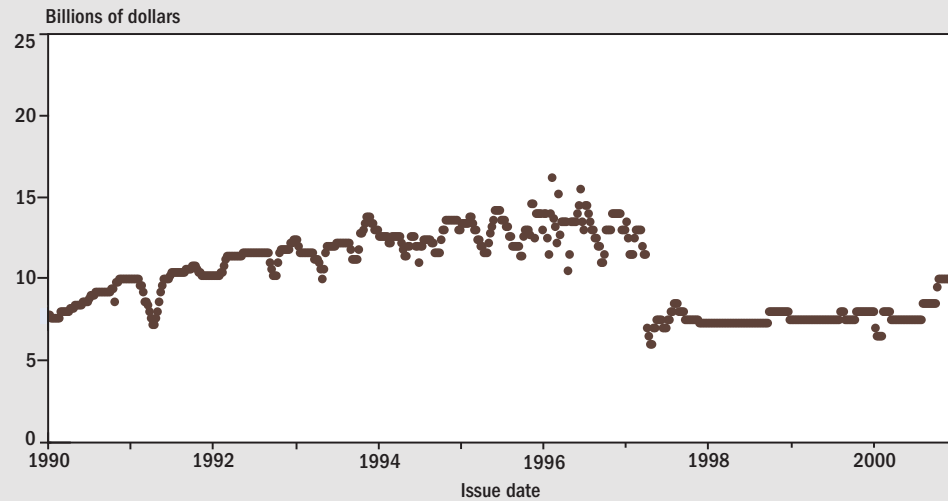
³ Simon (1991) and Seligman (2006). Seligman (p. 1010) concludes that cash management bills “have significant yield differentials that make them more expensive than regular bills.”

Chart 10.1
Offering Amounts for 13-Week Bill Auctions, 1990 to 2000



Note: The offering auctioned on October 26, 1995—a clear outlier in the chart—was reduced to \$6 billion to preserve room for an end-of-month offering of 2-year notes and 5-year notes in light of a looming debt ceiling problem. As explained in Appendix A, bill offerings prior to March 26, 1997, included amounts purchased for the Federal Reserve's System Open Market Account. Bill offerings after that date excluded such purchases, which were thereafter filled from "add-ons" to the announced offering size. The chart is discontinuous at the time of the change.

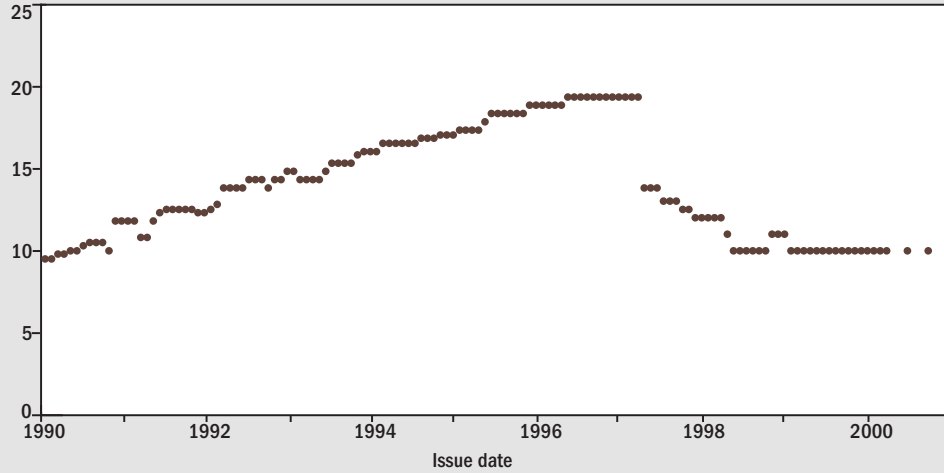
Chart 10.2
Offering Amounts for 26-Week Bill Auctions, 1990 to 2000



Note: As explained in Appendix A, bill offerings prior to March 26, 1997, included amounts purchased for the Federal Reserve's System Open Market Account. Bill offerings after that date excluded such purchases, which were thereafter filled from "add-ons" to the announced offering size. The chart is discontinuous at the time of the change.

Chart 10.3
Offering Amounts for 52-Week Bill Auctions, 1990 to 2000

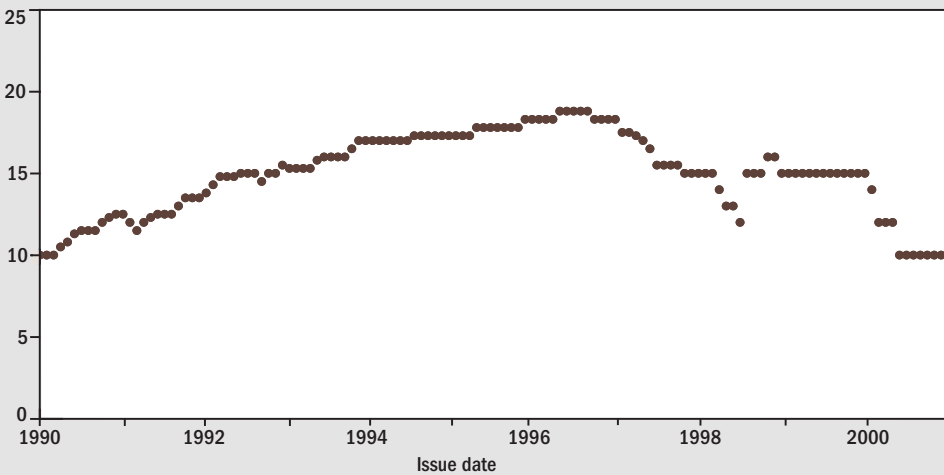
Billions of dollars



Note: As explained in Appendix A, bill offerings prior to March 26, 1997, included amounts purchased for the Federal Reserve's System Open Market Account. Bill offerings after that date excluded such purchases, which were thereafter filled from "add-ons" to the announced offering size. The chart is discontinuous at the time of the change.

Chart 10.4
Offering Amounts for 2-Year Note Auctions, 1990 to 2000

Billions of dollars



of 52-week bills and monthly auctions of 2-year notes, respectively, over the same interval. Offerings of all four series varied over time, but the greater auction-to-auction variation in the two shorter bills reflects the Treasury's efforts to accommodate short-run fluctuations in net expenditures.

The variation in 13- and 26-week bill offerings, although hardly trivial, was dwarfed by the variation in cash management bills, securities that were issued at tenors and in amounts that varied sharply from offering to offering (Charts 10.5 and 10.6). They were issued when cash was needed, in amounts dictated by the needs of the moment, and timed to mature when funds would be available. A preponderance of the bills were issued shortly before, and matured soon after, major tax payment dates in mid-April, mid-June, mid-September, and mid-December (Chart 10.7). Hardly any matured in the first half of a month, periods of relatively heavy expenditures and slack receipts.⁴

CMB issuance increased in the second half of the 1990s. The increase is suggested by the year-to-year growth in the number of offerings, the average size of an offering, and the total amount borrowed (Table 10.1), but is most clearly evident in the behavior of dollar-days borrowed (Chart 10.8). (A dollar-day is one dollar borrowed for one day.) The increase led Treasury officials to think about issuing a new series of short-term bills on a more regular basis than CMBs but in more variable offering sizes than 13-week bills.

The Idea of a 4-Week Bill

Deputy Assistant Secretary Michael Paulus broached the idea of a 4-week bill at the first-quarter 2001 meeting of the Treasury Borrowing Advisory Committee. He suggested that auctions might be held weekly, with an offering size between \$6 billion and \$16 billion, depending on the Treasury's needs.⁵

The response was favorable. In its report to the Secretary of the Treasury, the committee opined that a 4-week bill "would be received most favorably by the market" and that the Treasury could expect to issue at a cost below that of cash management bills.⁶

The February 5, 2001, issue of the *Money Market Observer* examined the idea of a 4-week bill in more detail. The *Observer* conjectured that offerings of the new bills "would creep up [in late winter] toward the high end of [the \$6 billion to \$16 billion] range as the Treasury borrowed money temporarily in anticipation of the April tax season. By late March, the sizes presumably would start to fall, reaching the low end of the range by the [April 15] tax date." The *Observer* reported the Treasury's hope that the bills could be priced "at something similar to traditional Treasury bill yields instead of the [repurchase agreement]-like rates paid on cash management bills."

⁴ "Implications of the Change in the Treasury's 5-Year Note Auction Schedule for 2006," *Money Market Observer*, November 7, 2005 (noting that "the Treasury's cash flow tends to be weakest in the first week of the month, and in many cases turns positive in the second half of the month").

⁵ First-quarter 2001 TBAC minutes.

⁶ First-quarter 2001 TBAC report.

Chart 10.5
Tenors of Cash Management Bills with Less Than 13 Weeks to Maturity, 1990 to 2000

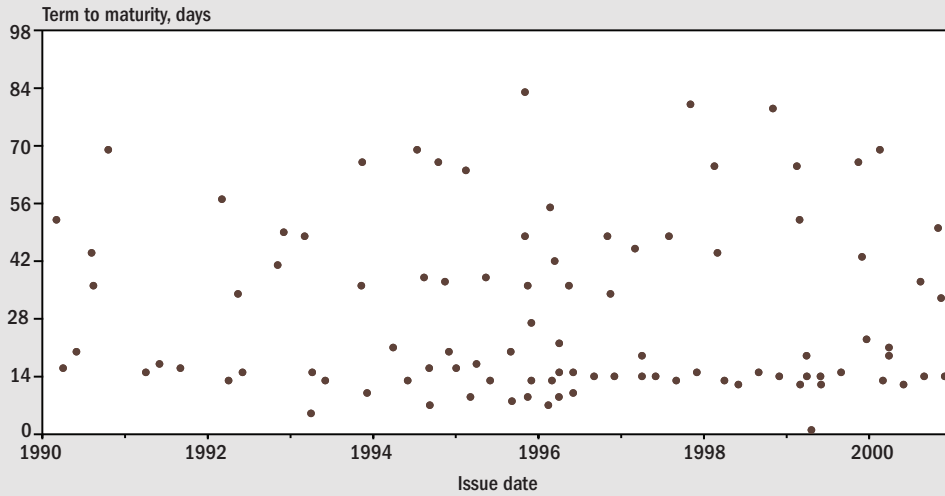


Chart 10.7
Maturity Date (Month and Day) of Cash Management Bills with Less Than 13 Weeks to Maturity, Plotted against Issue Date (Month and Day), 1990 to 2000

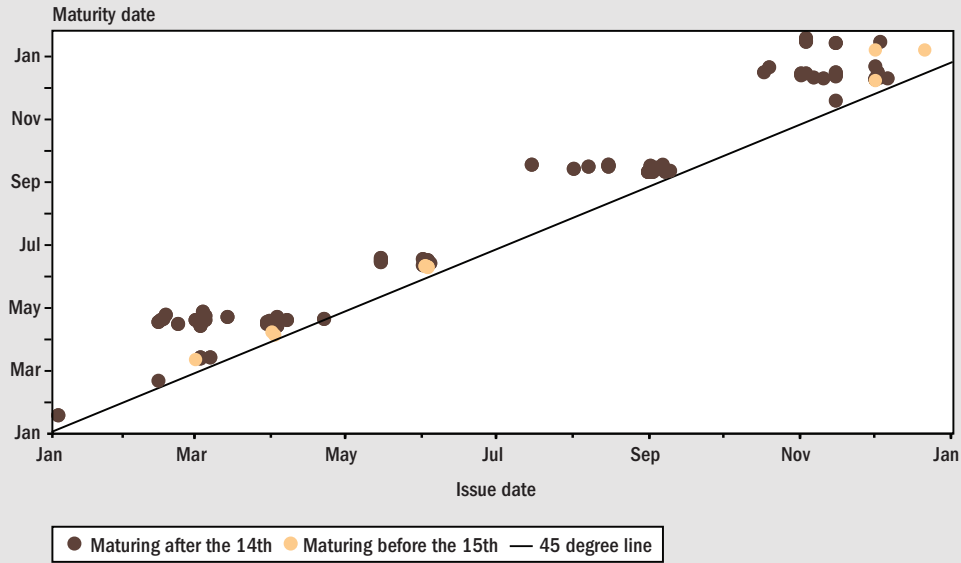
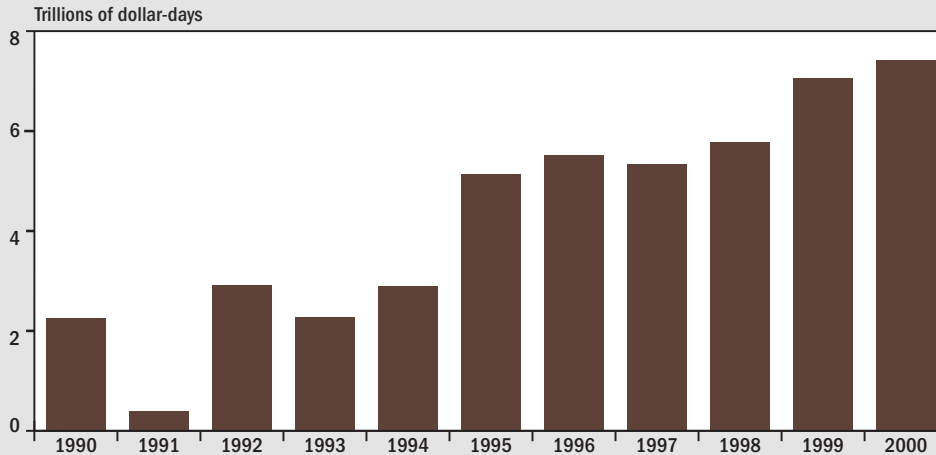


Table 10.1
Offerings of Cash Management Bills with Less Than 13 Weeks to Maturity, 1990 to 2000

Year	Number of Offerings	Average Size of Offering (\$Billions)	Total Offerings during Year (\$Billions)
1990	6	9.3	56
1991	3	8.5	26
1992	6	13.8	83
1993	7	11.1	78
1994	9	9.7	87
1995	14	14.6	205
1996	14	15.6	219
1997	8	22.5	180
1998	7	23.9	167
1999	12	20.1	241
2000	10	25.3	253

Chart 10.8
Dollar-Days Borrowed with Cash Management Bills with Less Than 13 Weeks to Maturity, 1990 to 2000



Refining the Idea

In May 2001, Treasury officials continued to discuss 4-week bills with the advisory committee, seeking the suggestions of the committee on how to structure issuance cycles and whether issuance might be limited to those times of the year when cash was needed.⁷

Confirming the value of regular and predictable issuance and large issue sizes, the committee recommended regular Tuesday auctions, for settlement on Thursday and maturity four weeks later on Thursday, so the new bills would be fungible with longer-term bills issued earlier with the same maturity date.⁸ The committee emphasized the need for regular issuance to establish a “consistent investor base” and suggested that offerings be at least \$5 billion to \$6 billion, with no set maximum. It noted that “while some [committee members] are concerned that providing no maximum . . . might make the bills trade higher in yield like traditional cash management bills, most feel that market participants could quickly ascertain relative auction size based on cash management projections and prepare in advance for [the] sometimes large size variations.” The committee further noted that “with a consistent investor base . . . the maximum size of a . . . 4-week bill offering could be quite large (up to \$40 billion) and [offering sizes] could vary significantly from week to week.” It conjectured that “the new bill will probably trade in yield somewhere between cash management bills and [13-week] bills.”

⁷ Second-quarter 2001 TBAC minutes.

⁸ Second-quarter 2001 TBAC minutes and report.

In the wake of the positive response from the advisory committee, Treasury officials announced that they planned to introduce the new series before the end of the summer.⁹ Market response was generally favorable. An economist at Goldman Sachs commented that “28-day bills will go a long way toward reducing average financing costs in the bill market, since investors will pay a premium for their predictability.”¹⁰ However, the *Money Market Observer* pointed out that “four weeks is not an ideal maturity for the Treasury’s cash management purposes.”¹¹ For example, “if the Treasury boosted the size of a 4-week bill in order to cover a monthly social security benefit payment on the third of a given month, it would have to redeem the bill 28-days later—just before the next month’s social security payments took another big bite out of the government’s cash position.” The *Observer* noted that “the largest swings in the Treasury’s cash balance are between the turn-of-the-month outflows and the mid-month inflows around major tax dates” and that “60 percent of the cash management bills issued since the beginning of 1998 have had maturities of either two or three weeks.” It suggested that the “new 4-week bill cycle can replace all of the longer-dated CMBs and some of the shorter-dated issues, but 2- to 3-week [cash management] bills will continue to have a role to play in preparing for quarterly tax dates.”¹²

Launch

On July 23, 2001, the Treasury announced the imminent launch of 4-week bills.¹³ The first auction, an offering of \$10 billion of bills maturing on Thursday, August 30, 2001, was held on Tuesday, July 31, and settled on Thursday, August 2. The Treasury received tenders for \$33.7 billion of the bills. Officials stated that they were “pleased” with the reception and anticipated that the new series would “become an important part of the Treasury’s ongoing debt management strategy.”¹⁴

At the end of October, the advisory committee reviewed the results of the first three months of 4-week bill auctions.¹⁵ It concluded that the program had been a “resounding success,” that it was “developing an investor base,” and that it “enjoys good support from both dealers and retail investors.” The committee further noted that the new bills “trade better than cash-management bills” and were “meeting Treasury’s objective for a cheaper alternative to CMBs.” It suggested that the Treasury “could easily increase the weekly

⁹ Second-quarter 2001 Treasury policy statement.

¹⁰ “Treasury Plans Weekly Auction of 28-Day Bills,” *Wall Street Journal*, May 3, 2001, p. C19.

¹¹ “The Treasury’s New 4-Week Bill Cycle,” *Money Market Observer*, May 7, 2001.

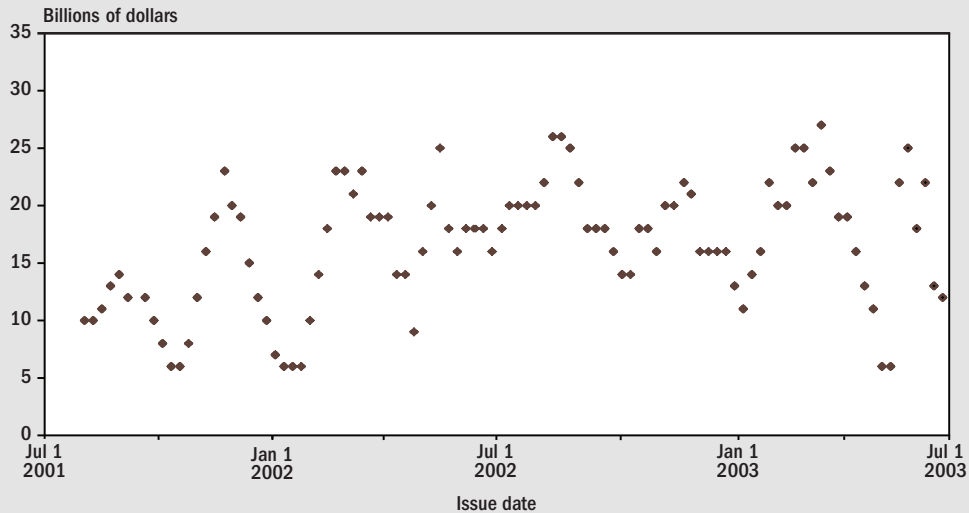
¹² See similarly “Treasury Plans Weekly Auction of 28-Day Bills,” *Wall Street Journal*, May 3, 2001, p. C19 (citing a comment from Lou Crandall that “cash management bills would still be needed in abundance, but that more of them could be restricted to maturities of two weeks or so”).

¹³ Treasury press release, “Treasury to Issue Four-Week Bills,” July 23, 2001.

¹⁴ Third-quarter 2001 Treasury policy statement.

¹⁵ Fourth-quarter 2001 TBAC minutes and report.

Chart 10.9
Offering Amounts for 4-Week Bill Auctions: July 1, 2001, to July 1, 2003



auction sizes of 4-week bills to the \$24 billion range before the instrument would start trading on top of [repurchase agreements]” and that the market would be able to handle week-to-week variations of between \$4 billion and \$8 billion as soon as market participants learned to anticipate seasonal variations in Treasury financing requirements.

Over the first two years of the program, 4-week bills were issued on a regular weekly basis in amounts that varied widely with seasonal fluctuations in Treasury financing requirements (Chart 10.9). Offerings ranged from a low of \$6 billion to a high of \$27 billion. The largest reduction over a one-week period was \$9 billion (from June 12 to June 19, 2003); the largest increase was \$16 billion (May 15 to May 22, 2003). CMB issuance fell sharply from 1999 and 2000 levels, to an average of 8.5 offerings per year with an average issue size of \$15.6 billion. CMB borrowings declined to \$1.2 trillion dollar-days between August 2001 and mid-2002 and \$1.1 trillion dollar-days between mid-2002 and mid-2003. The average tenor of a cash management bill over the twenty-three-month interval was 8.2 days; the longest tenor was 19 days.

Chapter 11

2002-03: Rebuilding the Auction Calendar

At the end of 2001, the Treasury auction calendar was hardly more than a shadow of its former self, reduced as it was to weekly 4-, 13-, and 26-week bills, monthly 2-year notes, and quarterly 5- and 10-year notes that alternated between *de novo* offerings and scheduled reopenings. Fifty-two-week bills had been eliminated at the beginning of the year and 30-year bonds had just been terminated. But that was the nadir.

Between 2000 and 2002, Treasury debt managers transitioned from managing an unprecedented surplus to managing, once again, a large and growing deficit. After declining by \$335 billion in 2000, nominal marketable Treasury debt grew by \$230 billion in 2002. The swing year was 2001: nominal marketable debt fell by \$120 billion during the first half of the year, then rose by \$117 billion during the second half.

The build-out of offering sizes, auction frequencies, and maturity points required to accommodate the changed fiscal environment provides a textbook example of how to expand issuance. Treasury officials turned initially to bills and 2-year notes to satisfy their cash needs. Bills outstanding increased by \$191 billion in the second half of 2001, from \$620 billion to \$811 billion. Two-year note offerings rose from \$10 billion in May 2001 to \$25 billion in January 2002 (Chart 11.1). By early 2002, most members of the Treasury Borrowing Advisory Committee believed that the market was “having some difficulty absorbing the increase”¹ and that “there was little room for additional increases.”²

At its January 2002 meeting, the advisory committee reviewed Treasury debt management as it had been conducted under the rubric of regular and predictable issuance. The committee observed that the Treasury could raise more money by taking certain steps, including, in order of decreasing reversibility:

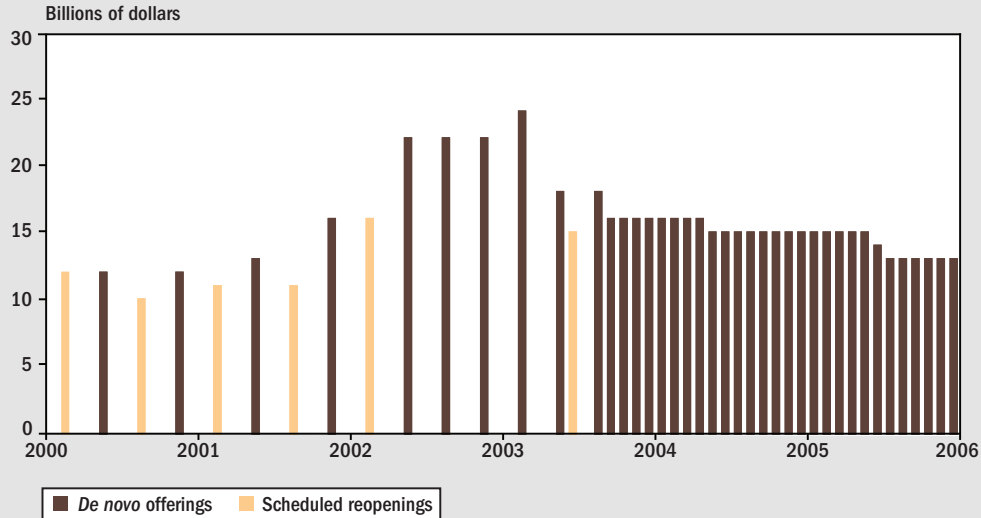
- increasing offering sizes,
- increasing auction frequencies (possibly staging an increase by first adding small scheduled reopenings after existing *de novo* offerings and then converting scheduled reopenings to larger *de novo* offerings), and
- increasing the menu of maturity points.³

¹ First-quarter 2002 TBAC report.

² First-quarter 2002 TBAC minutes.

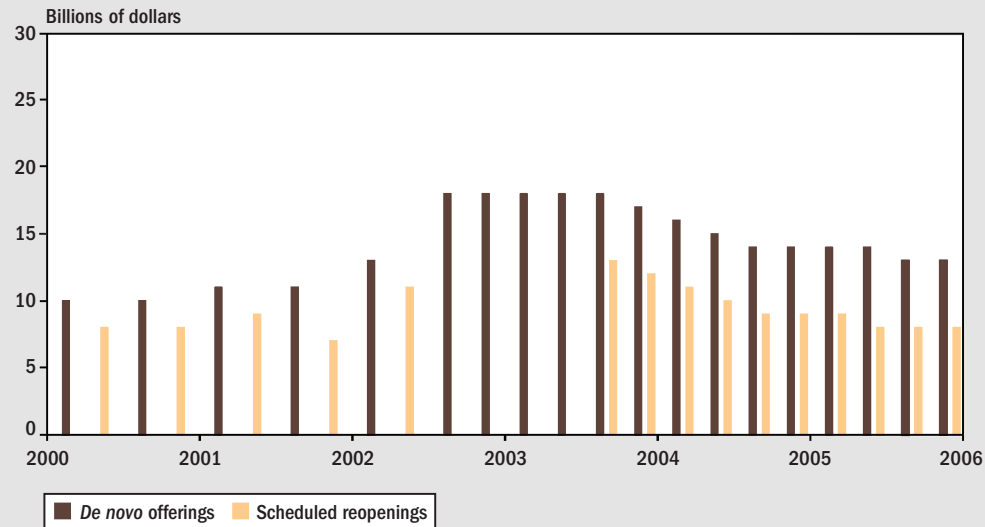
³ First-quarter 2002 TBAC report. See also the discussion in the fourth-quarter 2002 TBAC report.

Chart 11.2
Offering Amounts for 5-Year Note Auctions, 2000 to 2005



Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with "add-ons."

Chart 11.3
Offering Amounts for 10-Year Note Auctions, 2000 to 2005



Note: As explained in Appendix A, note and bond offerings after February 1, 2001, included amounts purchased by Foreign Investment and Monetary Authorities (FIMAs) in excess of specified individual and aggregate limits. All FIMA tenders for notes and bonds prior to that date were filled with "add-ons."

The fiscal picture continued to deteriorate in the spring,⁴ and in April the committee more assertively recommended conversion of the scheduled reopenings of 5-year notes to larger *de novo* offerings.⁵ Treasury adopted the recommendation, announcing a *de novo* offering of \$22 billion of 5-year notes and the conversion of all subsequent 5-year offerings to *de novo* offerings.⁶ The policy of alternating *de novo* offerings and scheduled reopenings for 10-year notes remained in effect.

Three months later, the budget situation was still deteriorating and the advisory committee recommended the third step outlined in February: conversion of the scheduled reopenings of 10-year notes to *de novo* offerings.⁷ Treasury adopted the recommendation, announcing a *de novo* offering of \$18 billion and the conversion of all subsequent 10-year offerings.⁸

In late October 2002, the advisory committee observed that few forecasters expected a quick return to surpluses and recommended “lengthening maturities and redistributing issuance” to alleviate a “concentration of risk in securities of less than two years.”⁹ It noted that Treasury could further expand its offerings of 5- and 10-year notes by increasing auction frequencies beyond four times a year, adding scheduled reopenings in the months following the mid-quarter *de novo* offerings.¹⁰ Moreover, the committee discussed maturity points that might be added “should the need arise,” including 52-weeks bills, 3-year notes, and 30-year bonds.

Reviving 3-Year Notes and Stepping Up Auctions of 5- and 10-Year Notes

Treasury financing requirements continued to grow in 2003. Nominal bills, notes, and bonds outstanding increased by \$340 billion during the year—the largest single-year increase to date—as debt managers scrambled to raise the required cash. With average maturity down to 5 years and 4 months, 2-year note offerings running at \$27 billion per month, and about \$900 billion of bills outstanding at the beginning of the year, officials were forced to expand issuance further out the curve.

⁴ Second-quarter 2002 TBAC minutes (noting that “another important development since January 30 has been a sharp deterioration in the short-term budget outlook and the Treasury’s financing requirements”).

⁵ Second-quarter 2002 TBAC minutes. The Committee indicated that “in light of likely increases in medium-term budget projections, probably extending into 2004, the Treasury should end the automatic reopenings policy for the 5-year note. This would allow for larger quarterly issuance in the sector without lumping maturities or creating reopening issues too large and cumbersome for the markets.”

⁶ Second-quarter 2002 Treasury policy statement.

⁷ Third-quarter 2002 TBAC report.

⁸ Third-quarter 2002 Treasury policy statement.

⁹ Fourth-quarter 2002 TBAC report.

¹⁰ Fourth-quarter 2002 TBAC minutes.

The Treasury announced in the February refunding statement that it would reintroduce quarterly offerings of 3-year notes, adding the new series to the 5- and 10-year note auctions in the mid-quarter refundings.¹¹ The first 3-year auction was set for May. Treasury officials also took the novel step of expanding issuance through scheduled reopenings, announcing that they would auction additional amounts of 5-year notes in scheduled reopenings in the middle of the third month of a quarter. The first reopening auction was set for June.

Three months later, pressing cash needs led Treasury to step up the expansion of the 5-year series even before it was under way, and to expand as well the 10-year series. Instead of quarterly *de novo* offerings of 5-year notes, each of which was to be followed by a single scheduled reopening, officials announced that *de novo* offerings of 5-year notes would be auctioned in the middle of *every* month, beginning in August. They further announced that they would offer additional amounts of 10-year notes in scheduled reopenings in the middle of the third month of a quarter, beginning in September.¹²

The February and May 2003 announcements added sixteen note auctions per year, including four 3-year auctions, eight 5-year auctions, and four 10-year auctions. By the fall of 2003, the auction calendar included monthly 2-year notes, quarterly 3-year notes, monthly 5-year notes, and eight offerings of 10-year notes per year—a total of thirty-six note auctions per year. The need was clear, and market participants did not complain that the rapid expansion violated principles of regular and predictable issuance.

Thereafter, the auction calendar remained unchanged to the end of 2005.

¹¹ First-quarter 2003 Treasury policy statement.

¹² Second-quarter 2003 Treasury policy statement.

Chapter 12

2004-07: Return of the Long Bond, End of the Three-Year Note

Treasury debt managers faced a conundrum in the mid-2000s. An improving fiscal environment suggested that the expansion of the auction calendar undertaken in 2002 and 2003 did not need to go any further, and perhaps could be reversed. At the same time, the average maturity of publicly held debt was running below five years—a low level by recent historical standards. The obvious solution, to reduce issuance of short- and intermediate-term debt and to issue not quite as much longer-term debt, was complicated by the fact that the Treasury had only recently stopped auctioning 30-year bonds. Nevertheless, between mid-2005 and mid-2007, Treasury officials terminated the 3-year note and restarted the 30-year bond. Taken together—which was not how they were orchestrated—the two actions resulted in the substitution of \$24 billion per annum of 30-year issuance for about \$56 billion per annum of 3-year issuance.

The Improving Fiscal Environment

As the economy gradually pulled out of the recession that had bottomed out in November 2001, annual increases in nominal debt began to recede from the high-water mark of \$340 billion recorded in 2003. Nominal marketable debt increased by \$300 billion in 2004, \$140 billion in 2005, and \$75 billion in 2006.

In May 2004, Treasury officials queried the Treasury Borrowing Advisory Committee about eliminating the scheduled reopenings of 10-year notes. Some committee members objected, not because the fiscal picture was not sufficiently rosy, but because “eliminating 10-year auctions may impede the risk transference utility that Treasury securities provide to the market.”¹ The response was surprising in view of Under Secretary Fisher’s efforts, in 2002, to banish capital market efficiency as an independent objective of Treasury debt management. Officials nevertheless accepted the committee’s recommendation and left the reopenings in place.

In August 2004, Treasury officials again raised the question of reducing issuance and the committee again responded with a “public good” argument, stating that “there was more interest in maintaining current issuance levels in the 5-year and 10-year maturities versus the 2-year and 3-year maturity sectors of the coupon curve. The longer sectors were considered to be more critical to the market at this juncture, whether used as investment vehicles or as hedging vehicles.”²

¹ Second-quarter 2004 TBAC report.

² Third-quarter 2004 TBAC minutes and report.

Following the August discussion, Treasury officials announced that they would continue to stick with the existing auction calendar:

We have examined the continuing need for large liquid issuance of our securities and believe that this need can best be met, given our projected borrowing requirements, with our existing issuance patterns. The current calendar meets our projected borrowing needs flexibly and in a manner that is consistent with low cost financing over time. If our financing needs decline in line with our central projections, we expect small reductions in the sizes of our coupon offerings.³

Consistent with the announcement, officials reduced issuance in 2004 by trimming coupon offerings across the curve, with the 10-year sector bearing a disproportionate share of the cutbacks:

- 2-year notes were reduced from \$27 billion per month at the end of 2003 to \$26 billion per month at the end of 2004 (\$3 billion per quarter),
- 3-year notes were reduced from \$24 billion in the fourth quarter of 2003 to \$22 billion in the fourth quarter of 2004 (\$2 billion per quarter),
- 5-year notes were reduced from \$16 billion per month at the end of 2003 to \$15 billion per month at the end of 2004 (\$3 billion per quarter), and
- 10-year notes were reduced from \$18 billion in the *de novo* offering and \$13 billion in the scheduled reopening in the fourth quarter of 2003 to \$14 billion in the *de novo* offering and \$9 billion in the scheduled reopening in the fourth quarter of 2004 (\$8 billion per quarter).

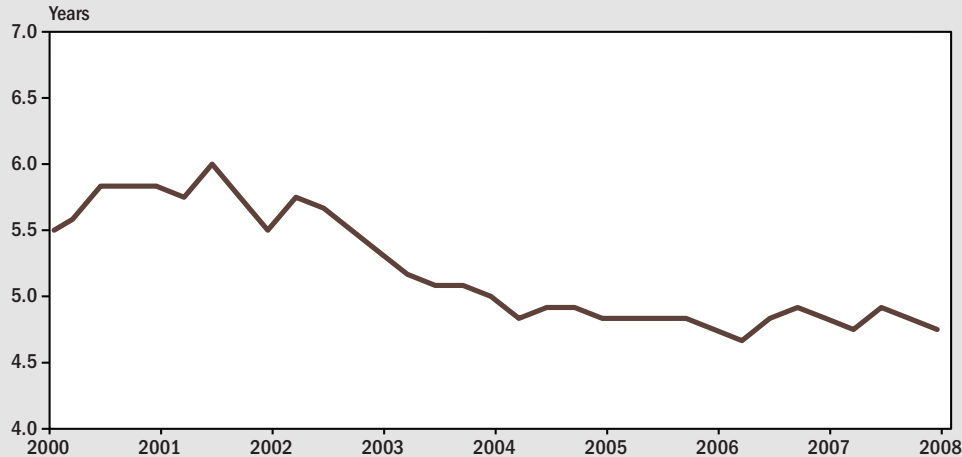
Debt Maturity

As a result of the termination of the long bond at the end of 2001 and the measured pace of the Treasury's expansion of 5- and 10-year note issuance (relative to bill issuance) in 2002 and 2003, the average maturity of publicly held debt dropped below five years in early 2004 and continued to hover near that level into 2005 (Chart 12.1).

In early 2005, the advisory committee began to express concern regarding the maturity structure of the debt. One member suggested that "Treasury should increase issuance of longer-term debt . . . given that the average length of maturity of Treasury debt

³ Third-quarter 2004 Treasury policy statement.

Chart 12.1
**Average Maturity of Privately Held Marketable Interest-Bearing Treasury Debt,
 2000 to 2007**



outstanding is projected to continue to decline.”⁴ The committee recommended “a focus on new issuance of longer-duration instruments.”⁵

Reintroducing 30-year bonds was the quickest way to effect an increase in average maturity. However, there was little appetite for a quick reversal of the 2001 termination. *Bloomberg News* reported that, in a conversation with reporters after a speech to the Bond Market Association in April 2005, Treasury Secretary John Snow had asserted that he “didn’t see the need for longer-term paper.”⁶

Return of the Long Bond

In spite of the improving fiscal environment, and in spite of Secretary Snow’s apparent opposition, in May 2005 Treasury officials asked the advisory committee whether the Department should “consider reintroducing regular 30-year bond issuance.”⁷ The query was not accompanied by a request for the committee’s thoughts on compensatory reductions in shorter-term issuance and marked an abrupt departure from the inquiries of 2004.

⁴ First-quarter 2005 TBAC minutes.

⁵ First-quarter 2005 TBAC report.

⁶ “Snow Says ‘No’ to 30-Year, Market Hears ‘Maybe’ (Update 4),” *Bloomberg News*, April 20, 2005, 21:46:09.520 GMT. The *Bloomberg* article further reported that Snow “has vowed not to reissue” the 30-year bond. See also “Treasury Says 30-Year Bond May be Revived,” *New York Times*, May 5, 2005, p. C1 (reporting Snow’s April 20 comment).

⁷ Second-quarter 2005 TBAC minutes.

The committee's response to the Treasury's query was ambiguous. The minutes of the May meeting, prepared by Treasury staffers, do not evidence any significant support for reintroducing the bond. One member noted that "rollover risk did not appear high compared to the last 25 years."⁸ Another pointed out "the recent strength in tax receipts and questioned . . . whether it made sense for Treasury to contemplate reintroduction when deficits appeared to have peaked." A third agreed that "given the expectation of continuing budget deficits, it made sense for Treasury to increase issuance further out the curve to reduce risk," but "questioned whether increased 5- and 10-year issuance might [not] be preferable to resumed 30-year issuance," noting "greater liquidity in [the 5- and 10-year] maturity points."

The report of the advisory committee, prepared under the supervision of the committee chairman, was more supportive:

Most Committee members felt that Treasury should reconsider 30-year bond issuance given a number of factors. Most members felt that given the decline in the average maturity of debt and the likelihood that it will decline further in coming years, a reintroduction would give the Treasury greater flexibility with modest associated costs. Additionally, reintroducing 30-year bonds would serve to mitigate rollover risk given large maturities in coming years.⁹

Treasury officials announced that they were "considering whether or not to reintroduce regular issuance of a 30-year nominal Treasury bond" and that a decision would be announced in August.¹⁰

Market participants were shocked that the long bond was back on the table. The *Wall Street Journal* observed that "Treasury officials had repeatedly squelched speculation about 30-year bond reissuance, . . . so yesterday's news surprised the market."¹¹ The *Journal* quoted one market participant as saying that the announcement "caught a lot of people by surprise. You could almost describe it as mass confusion." The price of the last-issued 30-year bond (the 5¾ percent bond of February 2031) dropped from near 112 to as low as 107 immediately following the announcement, producing a 39 basis point change in yield, from 4.50 to 4.89 percent. The *New York Times* cited one bond trader's remark that "an enormous amount of money was lost today."¹²

⁸ Second-quarter 2005 TBAC minutes.

⁹ Second-quarter 2005 TBAC report.

¹⁰ Second-quarter 2005 Treasury policy statement.

¹¹ "The 30-Year Treasury Bond Could Return," *Wall Street Journal*, May 5, 2005, p. C1. See also "Treasury Says 30-Year Bond May be Revived," *New York Times*, May 5, 2005, p. C1, and "Treasury Finance," *Money Market Observer*, May 9, 2005.

¹² "Treasury Says 30-Year Bond May be Revived," *New York Times*, May 5, 2005, p. C1.

Three months later, in August 2005, Treasury officials announced that they would indeed restart the 30-year series, beginning with semiannual offerings. However, they did not say how they would fit the new offerings into the auction calendar.¹³ The mid-quarter refundings already included offerings of 3-, 5-, and 10-year notes and most market participants thought four coupon offerings in a single week would impose a significant underwriting burden on the dealer community.

Explaining the Decision

The most interesting aspect of the August announcement was not the substance of the decision—the reintroduction of the long bond was a foregone conclusion by August—but rather the absence of any explanation of the decision.

Although they differed in their assessment of committee support for reintroducing the bond, the May 2005 minutes and the contemporaneous report of the advisory committee both stressed the importance of explaining a decision to restart the series. The minutes noted the opinion of one member that “if Treasury was to reintroduce the 30-year [it should] explain clearly why reintroduction made sense,” because “an abrupt change in policy would reflect poorly on Treasury’s credibility.”¹⁴ The report observed that “most members felt it important that Treasury clearly communicate its reasoning for issuance pattern changes in the context of its stated long-term objectives of achieving lowest-cost borrowing over time.”¹⁵

Despite the clear recommendation of the committee, Treasury officials did not explain, in the August 2005 policy statement, the basis for restarting the bond. They did, however, discuss the matter in the antecedent committee meeting.¹⁶ Assistant Secretary Timothy Bitsberger told the committee that “the 30-year bond is not necessary to meet expected financing needs,”¹⁷ and thereby removed the one unassailable reason to undertake virtually any debt management action. Bitsberger proceeded to identify two other reasons for acting: because reintroducing the bond would “halt the decline in average maturity of debt outstanding” and because reintroduction “diversifies funding and increases the investor base.”¹⁸ The former reason was well within the parameters of recent debt management decisions. Bitsberger did not, however, discuss whether the decline in average maturity might not be reversed by shifting more issuance into the 5- and 10-year

¹³ Third-quarter 2005 Treasury policy statement.

¹⁴ Second-quarter 2005 TBAC minutes.

¹⁵ Second-quarter 2005 TBAC report.

¹⁶ Third-quarter 2005 TBAC minutes.

¹⁷ Third-quarter 2005 TBAC minutes.

¹⁸ Similarly, the committee report to the Secretary of the Treasury observed that “Treasury felt that the incremental expense of issuing bonds would be *de minimis* in light of the flexibility gained with a stabilizing average maturity of debt, mitigation of rollover risk, and the attraction of new investors to their offerings” (third-quarter 2005 TBAC report).

sectors—sectors that were far more liquid (and therefore more attractive to market participants) than a new series of 30-year bonds limited to semiannual offerings was likely to be. Additionally, no evidence was adduced that the Treasury was having difficulty selling its offerings or was otherwise in need of diversifying its investor base.¹⁹

Adjusting the Calendar

In November 2005, the Treasury announced that it would integrate 30-year bonds into the auction calendar by offering *de novo* bonds in the February mid-quarter refunding. The first offering, in February 2006, was for \$14 billion of bonds; the scheduled reopening that followed in August was for another \$10 billion.

The Treasury further announced that, to make room for the new offerings, it would move the monthly offerings of 5-year notes to the end of the month, joining 2-year notes in a modest revival of the mini-refundings of the 1980s. The advisory committee supported the move, stating that “members generally felt that clustering of auctions would . . . be advantageous for market attention purposes.”²⁰

Quarterly Offerings of 30-Year Bonds

In August 2006, the Treasury sought the advice of the advisory committee on the matter of moving to a quarterly issuance cycle for 30-year bonds.²¹

Neither the minutes of the committee meeting nor the committee’s report evidence any enthusiasm for the move. The minutes state that committee members “generally felt that the market was not expecting quarterly issuance of 30-year bonds, and there was currently not overwhelming demand for 30-year bonds.”²² One member “suggested that having just brought the bond back in February, it may be too early to make the decision to go to quarterly issuance; that a decision so soon would perhaps run counter to Treasury’s policy of ‘regular and predictable’ changes in debt management.” Another suggested that “going to quarterly issuance, which would involve increasing issue amounts, while borrowing needs were falling . . . may be interpreted by some market participants as market timing by Treasury.” The committee report was not as negative, but it was hardly positive:

¹⁹ Offering an explanation different from that advanced by Bitsberger, several commentators claimed that restarting the bond was an appropriate way to prepare for anticipated future funding requirements. The *New York Times* reported the view of one analyst that “while this year’s deficit might not be a reason for bringing back the 30-year bond, the projections of continued deficits in the years ahead was a reason” (“Benchmark Long Bond Returning,” August 4, 2005, p. C1). The same article cited Lou Crandall’s observation that “preparing for a period when foreign demand will be less consistent is a reasonable thing to do.” Neither commentator explained why action could not be deferred until it was more evidently needed.

²⁰ Fourth-quarter 2005 TBAC report. One committee member noted that “clustering securities . . . allows Treasury to take advantage of Wall Street’s marketing skills and helps in the overall underwriting process” (fourth-quarter 2005 TBAC minutes).

²¹ Third-quarter 2006 TBAC minutes.

²² Third-quarter 2006 TBAC minutes.

Committee members' opinions varied with regard to the necessity of and the timing of transitioning to a quarterly auction cycle. Members generally agreed that for liquidity purposes an adequate supply per auction would need to be maintained by Treasury. Some members quantified minimum size constraints per CUSIP as \$10-12 billion in the current environment. One member suggested that insufficient demand and/or trading volume had been demonstrated to warrant any increased supply. Others, however, mentioned that liability based investing trends in the long end by pension plans were increasing at a reasonable pace that would likely continue.²³

The report noted that "some members found the proposition of shifting to a quarterly auction frequency with larger notional supply unnecessary or ill-timed."

Despite the tepid response of the advisory committee, Assistant Secretary Emil Henry announced that the Treasury would auction 30-year bonds on a quarterly basis in 2007,²⁴ bringing *de novo* offerings in the February and August refundings and scheduled reopenings in the May and November refundings. The first *de novo* offerings were for \$9 billion each; the first reopenings were for \$5 billion each.

Pressure to Reduce Issuance Builds

The fiscal picture continued to brighten even as Treasury debt managers were busy reintroducing and expanding bond issuance. In November 2006, the advisory committee agreed that "the economy's performance to date had been robust . . . despite numerous impediments including higher energy prices and a slowing housing market" and concluded that "receipts would remain fairly strong."²⁵ In every quarter between mid-2006 and mid-2007, nominal marketable debt increased less, or decreased more, than a year earlier. It expanded by only \$19 billion over the full twelve-month interval. The result was a growing inconsistency between Treasury cash needs and an auction calendar geared to raising several hundred billion dollars of new money annually.

The initial resolution of the inconsistency occurred in the front end of the curve. Outstanding bills declined by almost \$50 billion between mid-2006 and mid-2007; monthly offerings of 2-year notes fell from \$22 billion in August 2006 to \$18 billion in February 2007 (Chart 12.2), and quarterly offerings of 3-year notes fell from \$21 billion to \$16 billion over the same six-month interval (Chart 12.3). Monthly offerings of 5-year notes were cut much less, from \$14 billion through the November 2006 auction to \$13 billion thereafter (Chart 12.4). Quarterly offerings of 10-year notes

²³ Third-quarter 2006 TBAC report.

²⁴ Third-quarter 2006 Treasury policy statement.

²⁵ Fourth-quarter 2006 TBAC minutes.

Chart 12.2
Offering Amounts for 2-Year Note Auctions, 2003 to 2007

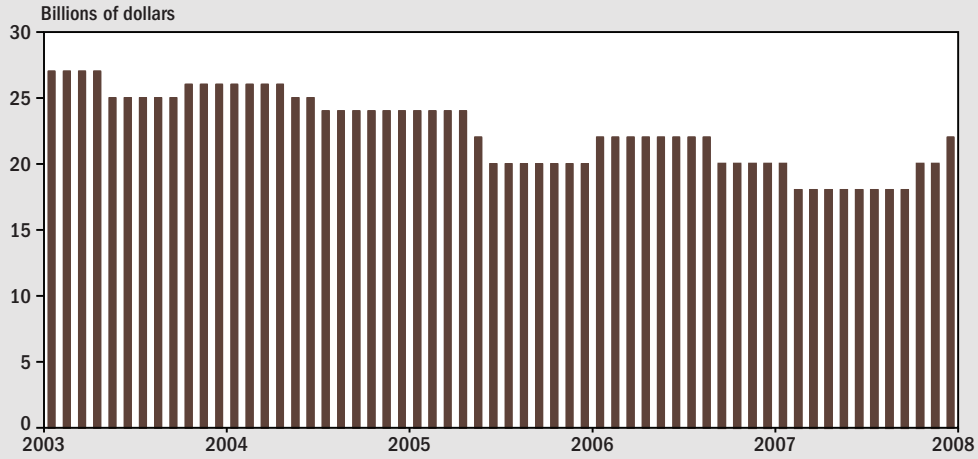
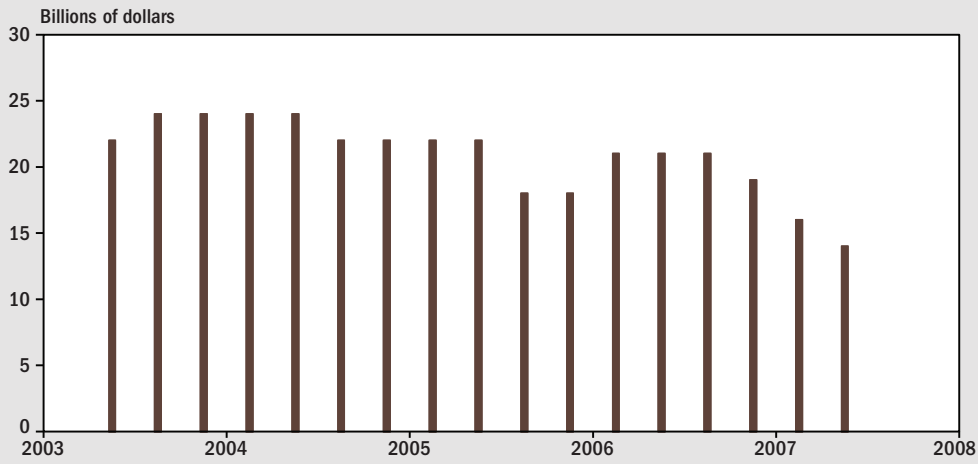


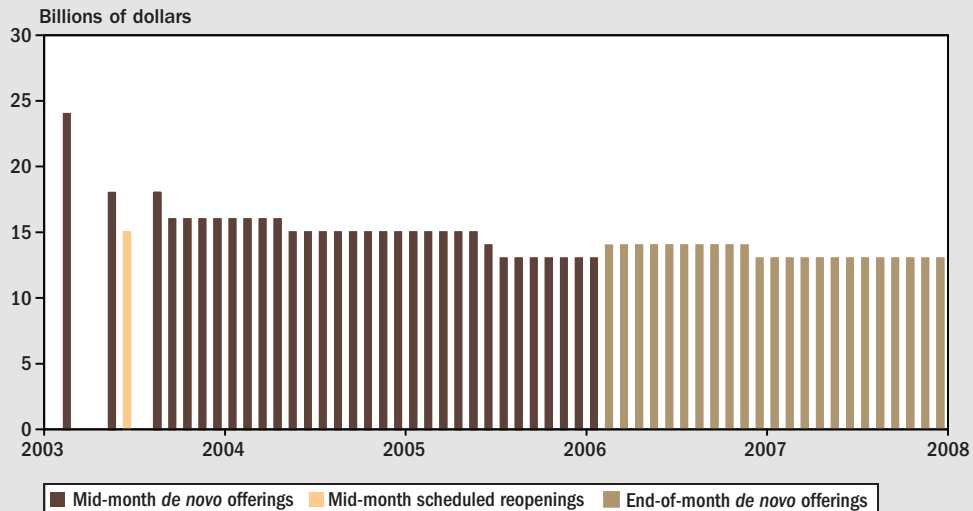
Chart 12.3
Offering Amounts for 3-Year Note Auctions, 2003 to 2007



remained at \$13 billion in the mid-quarter *de novo* offerings and \$8 billion in the scheduled reopenings (Chart 12.5).

The director of the Office of Debt Management, Jeff Huther, told the advisory committee in November 2006 that further reductions would be needed if the fiscal environment continued to improve. The minutes of the November meeting cautioned that “Treasury will need to be attentive to concerns of maintaining sufficiently liquid issuance

Chart 12.4
Offering Amounts for 5-Year Note Auctions, 2003 to 2007



sizes,”²⁶ and the committee’s report noted that “there appeared to be a consensus within the Committee that many coupon issues were already near their minimum size needed to ensure market liquidity in the current environment.”²⁷

How to reduce and rebalance issuance continued to be discussed in early 2007. Terminating the quarterly 3-year series, a series that lacked “sponsorship,”²⁸ quickly emerged as the favored course of action. Proponents argued that, given the usual budget uncertainties, it made more sense to terminate a short-term issue, noting that “reintroducing securities in the short end of the curve would be less costly than in the long-end.”²⁹ Treasury officials did not reach a decision on what to do, but they did announce that

continued strength in the fiscal outlook may necessitate additional adjustments to our marketable borrowing. Treasury may need to reduce auction sizes further or institute changes in the frequency or composition of the current auction cycle. Accordingly, Treasury is considering options related to the 3-year note, including changing the frequency of issuance or eliminating the

²⁶ Fourth-quarter 2006 TBAC minutes.

²⁷ Fourth-quarter 2006 TBAC report.

²⁸ First-quarter 2007 TBAC minutes (stating that “there is not as much sponsorship” for the 3-year note as for the 2-year note and the 5-year note”).

²⁹ First-quarter 2007 minutes.

fiscal outlook.”³² The action was widely expected and had virtually no price impact.³³ The last auction of 3-year debt was held on May 7.

Still More Fiscal Improvement

In late July 2007, Treasury officials reported further improvement in the fiscal landscape. Discussion at the August meeting of the advisory committee focused on what series should be the next to go.³⁴ The most likely candidates were the scheduled reopenings of 10-year notes and a 5-year TIPS series that was offered semiannually. (This is one of the few times that TIPS issuance was considered jointly with issuance of nominal securities. As noted in Chapter 1, Treasury officials more commonly set TIPS issuance first, and then adjusted nominal issuance to satisfy remaining needs.)

Retention of the scheduled reopenings of 10-year notes continued to command committee support, primarily for reasons related to the view of the series as a public good. The third-quarter 2007 meeting minutes relate the remark of one member that “the 5- to 10-year nominal sector of the curve was used extensively in financial markets and that Treasury should exercise caution about changing issuance in that sector.”³⁵ However, the committee did not reach a consensus recommendation on where to cut next.

Three months later, thoughts of further reductions in debt issuance began slipping away in the early stages of the worst meltdown of the U.S. financial system since the Great Contraction of 1929-33.

³² Second-quarter 2007 Treasury policy statement.

³³ “US Treasury Will Eliminate 3-Yr Note Auction After May Refunding,” *Dow Jones Newswires*, May 2, 2007, 9:53 a.m. (reporting that the decision was “widely expected”).

³⁴ Third-quarter 2007 TBAC minutes.

³⁵ Third-quarter 2007 TBAC minutes.

Chapter 13

2008-12: Debt Management during the Great Recession

The U.S. financial system all but collapsed between the summer of 2007 and the fall of 2008. The meltdown began with an announcement in mid-August 2007 that BNP Paribas was suspending redemption privileges on three bank-sponsored funds that invested in U.S. mortgage-related securities.¹ It more or less concluded fourteen months later with the announcement of federal capital injections into nine systemically important U.S. financial institutions.² In the interim,

- Bear-Stearns collapsed during the week of March 10-14, 2008, and avoided bankruptcy only because JPMorgan Chase agreed to acquire the failing firm;
- the U.S. Treasury assumed responsibility for the liabilities of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation on Sunday, September 7;
- Lehman Brothers filed for bankruptcy early in the morning on Monday, September 15;
- a \$63 billion money market mutual fund broke the buck during the afternoon of September 16 and precipitated a run on other prime money market funds; and
- AIG avoided bankruptcy only because of an extraordinary loan from the Federal Reserve Bank of New York on September 16.³

The near-paralysis of the financial system spread, inexorably, to the real economy. Economic activity peaked in December 2007 and did not hit bottom until June 2009—an unusually long eighteen-month contraction. Real GDP fell 4.3 percent, and the unemployment rate rose to 10 percent.

As a result of the meltdown and subsequent recession, Treasury borrowing needs rose to unprecedented heights. Between mid-2008 and mid-2009, nominal marketable debt increased by \$1.9 trillion. It increased another \$1.5 trillion the

¹ “Impact of Mortgage Crisis Spreads,” *Wall Street Journal*, August 10, 2007, p. A1.

² “Drama Behind a Banking Deal,” *New York Times*, October 15, 2008, p. A1, and “At the Moment of Truth, U.S. Forced Big Bankers to Blink,” *Wall Street Journal*, October 15, 2008, p. A1.

³ See Burrough (2008), Cohan (2009), Kelly (2009), Sorkin (2009), Paulson (2010), and Geithner (2014).

following year. By the end of 2012, nominal marketable debt amounted to \$10.2 trillion. This chapter describes how Treasury officials managed the expansion.

2008 before Lehman

In early 2008, Treasury debt managers knew that borrowings were going to expand but they believed their needs would be relatively modest. Tax receipts had not yet shown any significant weakness, and the anticipated increase in government expenditures was not extraordinary. Officials thought that they would be able to make do with bills and short coupons.⁴

The Treasury Borrowing Advisory Committee was more cautious, believing that “larger deficits could materialize” and that “it may be prudent to begin to plan for such deficits.”⁵ One member observed that “in a worse case scenario, deficits could double over the next few years” and suggested that the Treasury “should plan now for such scenarios to preserve its flexibility.” Several committee members pointed out that “a strategy of using bills and increasing issue sizes of shorter maturity coupons would only work if current deficit projections were realized and there were no surprises to the economy.”

The warnings notwithstanding, Treasury debt managers acted in accord with their projections. Outstanding bills increased by \$150 billion in the first quarter of 2008, monthly auctions of 2-year notes increased from \$22 billion in December 2007 to \$28 billion in March 2008 (Chart 13.1), and monthly auctions of 5-year notes increased from \$13 billion to \$18 billion over the same interval (Chart 13.2). In contrast, offerings of 10-year notes (Chart 13.3) and 30-year bonds (Chart 13.4) in the February refunding remained unchanged from the preceding November, and the auction of 10-year notes in the March scheduled reopening was only \$2 billion larger than three months earlier.

Second-Quarter 2008

When the advisory committee reconvened in late April, committee members found themselves in “strong agreement” that the Treasury could no longer view the fiscal deterioration as a transient phenomenon; they unanimously recommended re-introduction of the 52-week bill on a quad-weekly basis.⁶ Several members also expressed concern with the average maturity of marketable Treasury debt—average maturity had contracted to 4 years and 5 months at the end of March (Chart 13.5)—and recommended expansion of the 10-year note series.⁷

Treasury officials accepted the recommendation to restart the year bill and additionally announced a modest expansion of 10-year notes (from a *de novo* offering of \$13 billion in February to \$15 billion in May) and 30-year bonds (from \$5 billion in the

⁴ First-quarter 2008 TBAC minutes (stating that “Treasury will most likely rely on bills and shorter term nominal coupons”).

⁵ First-quarter 2008 TBAC minutes.

⁶ Second-quarter 2008 TBAC report.

⁷ Second-quarter 2008 TBAC minutes.

Chart 13.1
Offering Amounts for 2-Year Note Auctions, 2007 to 2012

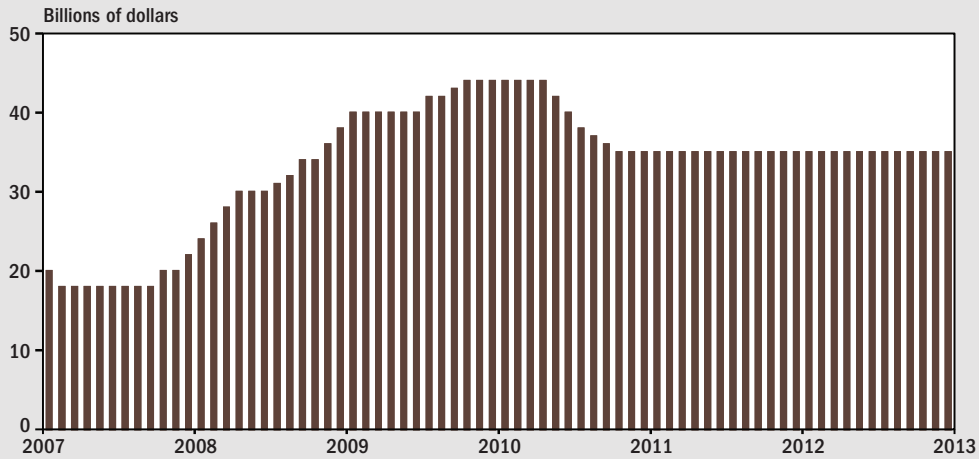
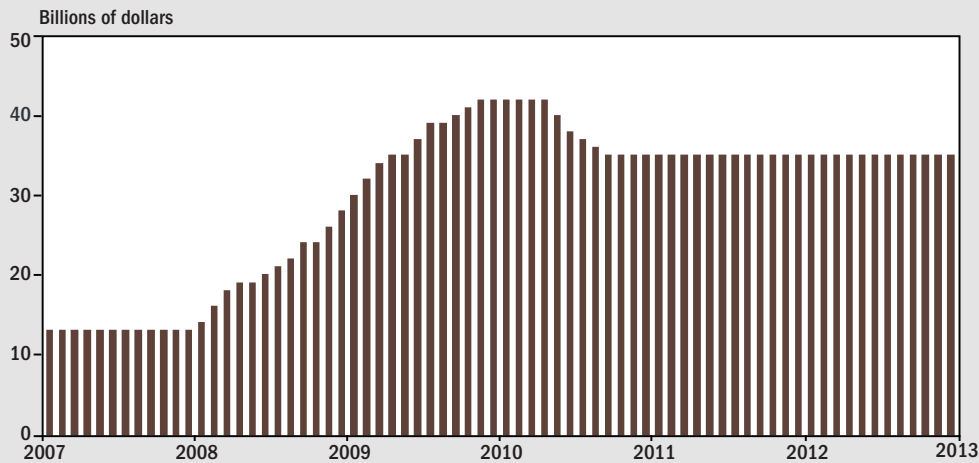


Chart 13.2
Offering Amounts for 5-Year Note Auctions, 2007 to 2012



November 2007 reopening to \$6 billion in the May reopening). They also signaled that they were prepared to do more:

Over the last several months, changes in economic conditions, financial markets, and monetary and fiscal policy have impacted Treasury’s marketable borrowing needs. Financial market strains have impacted the real economy, and the nation has experienced lower economic growth, lower receipts, and increased outlays.

Chart 13.3
Offering Amounts for 10-Year Note Auctions, 2007 to 2012

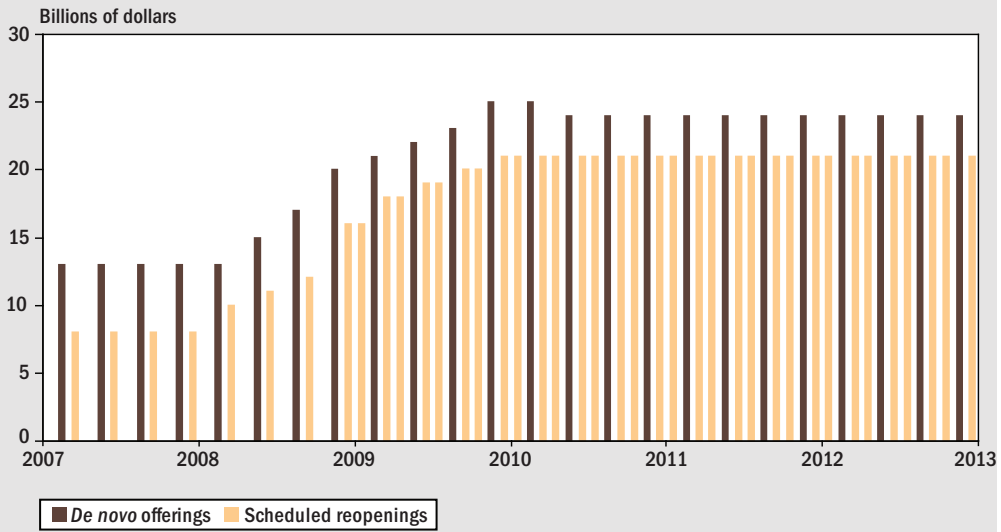


Chart 13.4
Offering Amounts for 30-Year Bond Auctions, 2007 to 2012

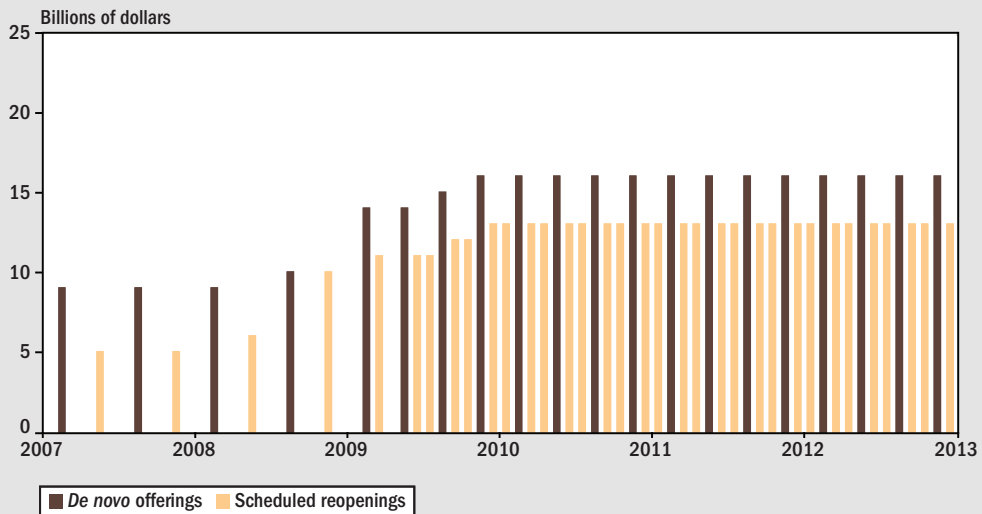
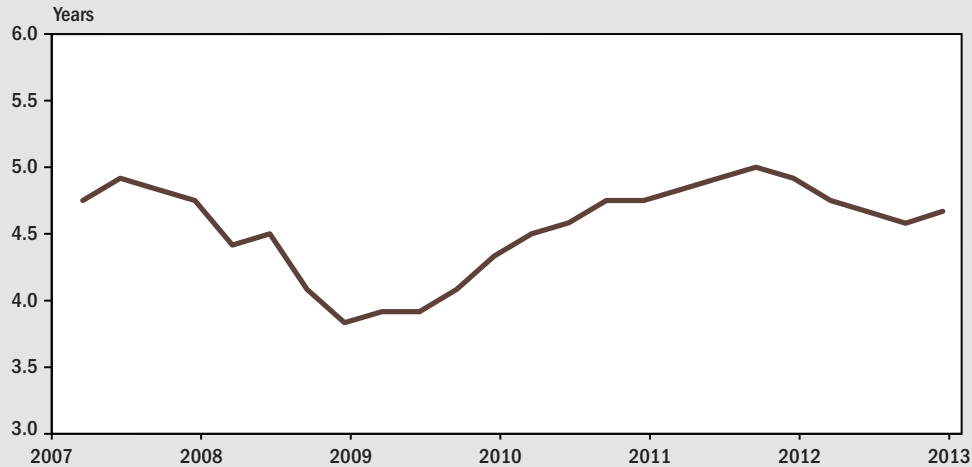


Chart 13.5
**Average Maturity of Privately Held Marketable Interest-Bearing Treasury Debt,
 2007 to 2012**



Treasury has responded to the increase in marketable borrowing requirements in its traditional manner. . . . Over the past several months, as borrowing needs have accelerated rapidly, the Treasury has significantly increased issuance sizes of regular bills [and] shorter and intermediate-term nominal note offerings.

Given issuance sizes of securities on our current offerings calendar, future borrowing needs for the remainder of fiscal year 2008, as well as deficit projections for fiscal year 2009, we believe it prudent to add an additional maturity point [that is, the 52-week bill] at this time. Treasury will continue to monitor our projected fiscal needs and make adjustments as necessary.⁸

Third-Quarter 2008

The advisory committee meeting in late July 2008 preceded the collapse of Lehman Brothers but it was already clear that Treasury debt issuance would have to expand more rapidly further out the curve. Officials defended their earlier reliance on bills and short coupons as a matter of “necessity” but noted that, going forward, “Treasury’s additional

⁸ Second-quarter 2008 Treasury policy statement.

funding needs may need to be focused on nominal coupon issuances beyond the short end of the curve.”⁹ In the late July meeting, Committee members were more aggressive than in the past about recommending a shift to longer-term debt. During a discussion of the best way for the Treasury to raise cash, one member suggested that the Treasury “first consider issuing 10-year notes monthly, either through a double reopening or through new initial offerings of 10-year notes each month.”¹⁰ The same member further suggested issuing *de novo* 30-year bonds on a quarterly basis (in contrast to the existing practice of alternating *de novo* offerings and scheduled reopenings).

Committee discussions revealed a wide diversity of opinion regarding the opening of a new maturity point. The leading candidates were the 3-, 4-, 7-, and 20-year points, all points at which the Treasury had issued in the past. One member argued that “previous issues of 4-year notes, 7-year notes, and 20-year bonds always traded at a discount [to the current coupon yield curve]”¹¹ and stated his belief that “it would be costly to issue at those points . . . at this time.” Another member preferred to expand 10-year and 30-year issuance, and a third suggested that, given projected borrowing needs, the Treasury should consider 50-year bonds.¹² The committee report stated that

there was a universal consensus on the Committee that given the marked change in net borrowing needs . . . and the prospects for further deterioration in the fiscal outlook, . . . the Treasury should increase the size and frequency of its current issuance calendar and consider adding additional issues over the near and intermediate term.

After much discussion, the Committee concluded that Treasury should consider moving to a monthly issuance of ten-year notes, to a quarterly issuance of thirty-year bonds and re-introduce a three-year note over the coming quarters to meet the growing financing needs of the U.S. government.

⁹ Third-quarter 2008 TBAC minutes (noting the statement of the director of the Office of Debt Management that “the potential weakness in receipts as a result of the challenges facing the economy as well as reduced non-marketable debt issuance [that is, savings bonds and State and Local Government Series (SLGS) securities], large redemptions by the Federal Reserve in conjunction with its various liquidity initiatives, and expedited payments related to the fiscal stimulus package—all within a compressed time period—necessitated the increased issuance of Treasury bills . . . and shorter dated nominal coupons”).

¹⁰ Third-quarter 2008 TBAC minutes.

¹¹ The statement was certainly true with respect to 20-year bonds and was the major reason for terminating 20-year bonds in 1986. Four-year notes were terminated in 1990 to shift sales to the more popular 5-year series. Seven-year notes were terminated in 1993 to effect a reduction in average maturity.

¹² Third-quarter 2008 TBAC minutes.

The Committee also discussed the merits of several alternative maturity issues but concluded that the Treasury should first focus on the above issues which have proven in the past to be well accepted by the marketplace.¹³

Treasury officials did not act on any of the committee's recommendations, stating only that they would "continue to monitor projected financing needs and make adjustments as necessary."¹⁴

After Lehman

The floodgates opened after the fall of Lehman Brothers. Nominal marketable debt increased by \$560 billion in the fourth quarter of 2008, by \$1.4 trillion in calendar year 2009, and by \$1.5 trillion in 2010. The critical decisions on how to manage the increases were made in the fourth quarter of 2008 and the first half of 2009.

Fourth-Quarter 2008

By the time the advisory committee met in early November 2008, there was no doubting that the Treasury would be expanding the auction calendar. The committee report noted a "universal consensus . . . that the Treasury should announce major changes to its issuance calendar as soon as possible to insure that it can fund its obligations across the maturity spectrum."¹⁵ The committee recommended an unprecedented package, including

- re-introducing 3-year notes in a program of monthly auctions;
- adding a second scheduled reopening of 10-year notes, to take place in the middle of the month following the first scheduled reopening; and
- converting the semiannual scheduled reopenings of 30-year bonds to *de novo* offerings and adding either one or two scheduled reopenings after each quarterly *de novo* offering.

The committee acknowledged that "these are significant changes," but went on to assert that "the need for auctions is great and a specific path needs to be articulated to the market to ensure that the Treasury is able to achieve the lowest borrowing costs possible."

¹³ Third-quarter 2008 TBAC report. The third-quarter 2008 TBAC minutes shed additional light on the committee's recommendations: "A general consensus developed that Treasury should consider issuing 10-year notes with two reopenings instead of one reopening, and also move to issue quarterly 30-year bonds. In addition, the Committee generally agreed that there was additional room in the front end of the curve to make modest increases in 2-year and 5-year notes, and that further deterioration in the fiscal outlook could be met by reintroducing the 3-year note."

¹⁴ Third-quarter 2008 Treasury policy statement.

¹⁵ Fourth-quarter 2008 TBAC report.

The committee suggested that offering sizes could be increased substantially, including

- expanding 2-year notes to \$45 billion per month, from \$40 billion in January 2009;
- expanding 3-year notes to \$35 billion per month, from \$30 billion in January 2009;
- expanding 5-year notes to \$40 billion per month, from \$30 billion in January 2009;
- expanding *de novo* offerings of 10-year notes to \$25 billion, from \$20 billion in November 2008;
- expanding scheduled reopenings of 10-year notes to \$20 billion, from \$16 billion in December 2008 and January 2009; and
- expanding *de novo* offerings of 30-year bonds to \$15 billion, from \$10 billion in November 2008.

The committee also recommended reopening 30-year bonds twice following each *de novo* offering, in the amount of \$10 billion per reopening.

The advisory committee further concluded that even such an extensive list of changes was “not sufficient to meet [the Treasury’s] borrowing needs” and that “the Treasury must introduce new coupon issues to its calendar.”¹⁸ It again discussed restarting 7-year notes (last offered in 1993) and 20-year bonds (last offered in 1986), as well as introducing a new series of 50-year bonds. The committee ultimately recommended monthly offerings of 7-year notes—the maturity that would be “best accepted by the marketplace”—in the form of quarterly *de novo* offerings of \$15 billion each and scheduled reopenings of \$10 billion in each of the two following months.

Treasury officials did not adopt all of the committee’s recommendations, but they did announce, in the February policy statement, that they would begin to offer 7-year notes monthly and would reopen 30-year bonds in the third month of each quarter. The first 7-year auction came in February (Chart 13.7), and the first auction of a scheduled reopening of a 30-year bond took place in March (Chart 13.4). Seven-year notes were offered concurrently with 2- and 5-year notes, thus recreating a full mini-refunding at the end of each month.

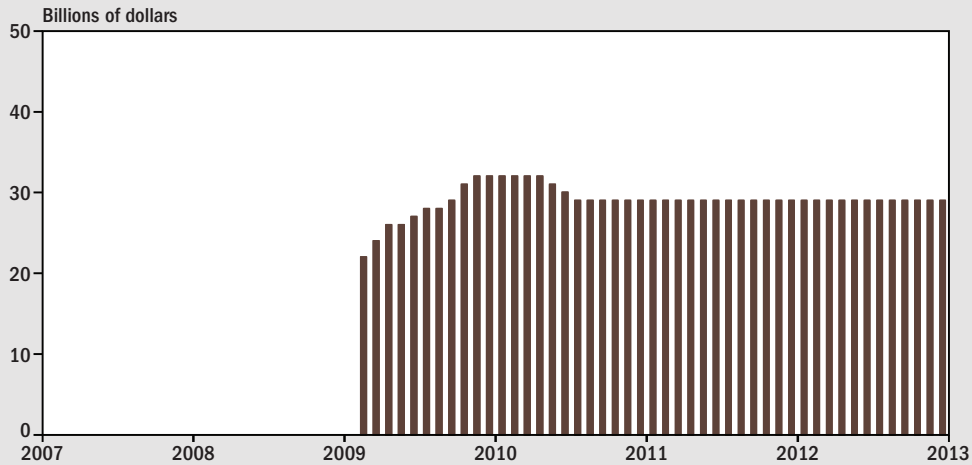
Second-Quarter 2009

Financing requirements continued to grow in the spring of 2009. Following discussions in late April, the advisory committee again recommended that the Treasury both increase offering sizes and step up the frequency of 30-year offerings to a monthly basis.¹⁹ It suggested that auction sizes could be increased substantially:

¹⁸ First-quarter 2009 TBAC report.

¹⁹ Second-quarter 2009 TBAC minutes.

Chart 13.7
Offering Amounts for 7-Year Note Auctions, 2007 to 2012



- 2-year notes to \$50 billion per month,
- 3-year notes to \$40 billion per month,
- 5-year notes to \$40 billion per month,
- 7-year notes to \$28 billion per month,
- 10-year notes to \$75 billion per quarter, and
- 30-year bonds to \$45 billion per quarter (with the addition of a second scheduled reopening).²⁰

The committee also discussed the costs and benefits of adding another maturity point, including a 4-year note, a 20-year bond, or a 50-year bond, but concluded that “none of these additional issues would be helpful to the Treasury at this time.”²¹

Treasury officials stated that they would, as suggested, initiate a second scheduled reopening of 30-year bonds.²² The first such auction came in July (Chart 13.4).

Stasis

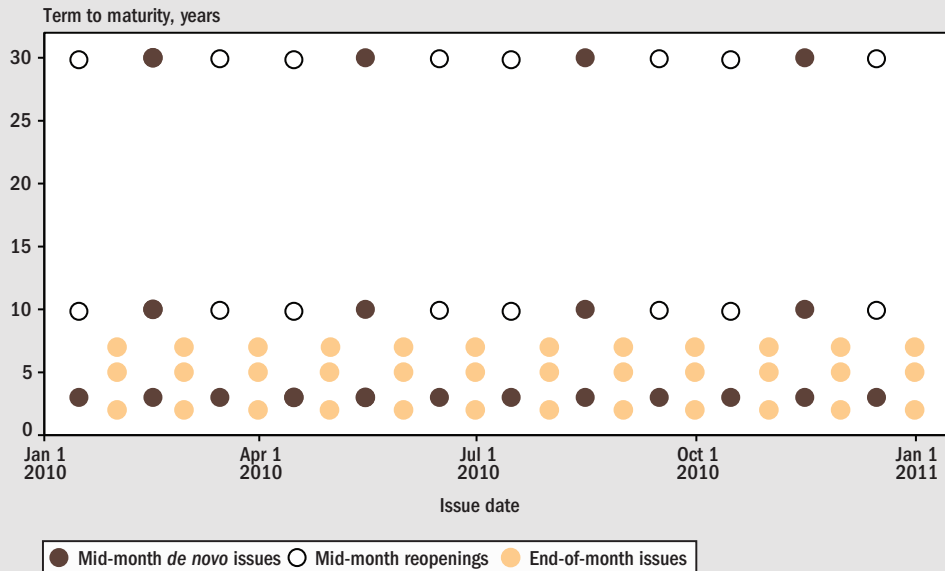
The May 2009 enlargement of the auction calendar was the last during the period examined in this study. As a result of the expansions announced in November 2008 and in February and May 2009, after mid-2009 the Treasury was offering 3- and 10-year notes

²⁰ Second-quarter 2009 TBAC report.

²¹ Second-quarter 2009 TBAC report. There was also some discussion of twice-monthly issuance of 2-year notes.

²² Second-quarter 2009 Treasury policy statement.

Chart 13.8
Tenors of Notes and Bonds Auctioned in 2010



and 30-year bonds in the middle of every month, and 2-, 5-, and 7-year notes at the end of every month. (Chart 13.8 shows the note and bond auction calendar in 2010, the first full year of offerings.) The expansion returned the structure of the calendar to the refundings and mini-refundings of the early 1980s, except that offerings were now at a monthly, rather than quarterly, frequency, and in vastly larger sizes.

Note offerings peaked in early 2010, tapered off a bit, and then remained steady through the end of 2012. Bonds continued to be offered at historically high levels from 2010 to the end of 2012. As a result of the expanded issuance of 10-year notes and 30-year bonds, the average maturity of marketable debt returned to about five years at the end of 2011—a level that was on the low side by the standards of the 1980s and 1990s, particularly in light of the dramatically higher ratio of debt to GDP.

The most remarkable feature of the expansion of the auction calendar in late 2008 and early 2009 was the absence of any complaint that the astounding speed and magnitude of the expansion violated the principles of regular and predictable issuance. Market participants were fully aware, by the end of the week of September 15-19, 2008, that the Treasury was going to be issuing much more debt, so the expansion was readily explicable and understandable in light of contemporaneous economic conditions. Subsequent debt management actions were a predictable consequence of the meltdown and recession.

Chapter 14

The Supplementary Financing Program

The initial wave of Treasury issuance following the fall of Lehman Brothers was a tsunami of bill offerings. In addition to expanding its regular bill issuance, the Treasury auctioned \$440 billion of short-term bills in September 2008 as part of a temporary Supplementary Financing Program (SFP). The Treasury auctioned another \$315 billion of SFP bills in October. Sales of SFP bills were in addition to the regular auctions of 4-, 13-, 26-, and 52-week bills.

SFP bills were unusual because the proceeds of each offering were left on deposit with the Federal Reserve until the bills matured, at which time the funds were withdrawn and the bills repaid. We first look more closely at the motivation for the SFP program, and then describe why the program further illustrates the value of regular and predictable issuance.

The Fed's Problem

Within a matter of days following the bankruptcy of Lehman Brothers, it was clear that stemming the rapidly expanding crisis would require an unprecedented volume of central bank lending. By the close of business on Wednesday, September 17, borrowings from the Fed's Primary Dealer Credit Facility¹ stood at \$60 billion and AIG had drawn down \$28 billion of an \$85 billion line of credit.² The following day, foreign central banks drew down \$64 billion of swap lines.³ Even at that early stage, Federal Reserve credit had expanded by more than \$150 billion.

Under normal circumstances, the Fed offsets, or “sterilizes,” the expansion of an asset on its balance sheet by contracting somewhere else in order to maintain the federal funds rate at the target level specified by the Federal Open Market Committee (FOMC). For example, the Fed allowed \$52 billion of maturing bills held in the System Open Market Account to run off without replacement when it began to auction Term Auction Facility (TAF)⁴ credit in December 2007. It acted similarly in the spring of 2008 when it expanded the TAF program from \$60 billion in January and February⁵ to \$150 billion in May and June,⁶ introduced the single-tranche repo program⁷ (which ultimately provided \$80 billion of credit by early May), and lent \$29 billion to facilitate the acquisition of Bear Stearns by JPMorgan Chase.⁸ To offset

¹ Adrian, Burke, and McAndrews (2009) describe the Primary Dealer Credit Facility.

² Board of Governors of the Federal Reserve System, Statistical Release H.4.1, September 18, 2008.

³ Goldberg, Kennedy, and Miu (2011) discuss foreign central bank swap lines.

⁴ Armantier, Krieger, and McAndrews (2008) describe the Term Auction Facility.

⁵ Board of Governors of the Federal Reserve System, press release, January 4, 2008.

⁶ Board of Governors of the Federal Reserve System, press release, May 2, 2008.

⁷ Board of Governors of the Federal Reserve System, press release, March 7, 2008.

⁸ Federal Reserve Bank of New York, press release, March 24, 2008.

Table 14.1
**Treasury Announcements of Supplementary Financing Program Bill Offerings
 on September 17 and September 18, 2008**

Auction	Issue	Maturity	Term (Days)	Amount (\$Billions)
<u>Announced Wednesday, September 17</u>				
Wed, Sep 17	Thu, Sep 18	Thu, Oct 23	35	40
Thu, Sep 18	Fri, Sep 19	Thu, Oct 9	20	30
Thu, Sep 18	Fri, Sep 19	Thu, Dec 4	76	30
<u>Announced Thursday, September 18</u>				
Fri, Sep 19	Mon, Sep 22	Thu, Nov 6	45	30
Fri, Sep 19	Mon, Sep 22	Thu, Nov 20	59	30
Wed, Sep 24	Thu, Sep 25	Thu, Oct 2	7	40

that credit expansion, the Fed reduced the size of its Treasury portfolio by \$236 billion, running off maturing bills and selling bills, notes, and bonds on an outright basis.

In mid-September 2008, the Fed faced an unusual problem: it might not be able to sterilize the post-Lehman credit expansion even if it sold *all* of the Treasury securities that it could sell. Federal Reserve holdings of Treasury securities were down to \$480 billion. Of these holdings, \$117 billion were on loan to primary dealers through the Term Securities Lending Facility (TSLF, a facility that, over the course of a four-week cycle, offered to lend up to \$200 billion of Treasury securities to primary dealers) and another \$50 billion had been set aside for the TSLF Option Program.⁹ At best, the Fed could sell no more than about \$230 billion of Treasury securities. If the post-Lehman credit expansion amounted to much more than that, banks would be left with reserves substantially in excess of what was required and the federal funds rate would be driven down to zero.

A Cooperative Solution

Working together, the Fed and the Treasury fashioned a solution to the Fed's problem: the Treasury would sell bills to the public and deposit the proceeds with the Fed in a Special Financing Account.¹⁰ Sales of bills by the Treasury, coupled with immobilization of the proceeds at the Fed, was, for purposes of reserves management, functionally equivalent to the Fed selling bills: the public got bills and the Fed got cash.

⁹ Fleming, Hrug, and Keane (2009) describe the Term Securities Lending Facility.

¹⁰ This solution was anticipated as early as the spring of 2008. See "Fed Weighs Its Options in Easing Crunch," *Wall Street Journal*, April 9, 2008, p. A3, and "Fed Liquidity Options," Wrightson ICAP, *Fed Policy*, April 10, 2008.

On Wednesday, September 17, the Treasury launched the Supplementary Financing Program “at the request of the Federal Reserve,” stating that the program would consist of “a series of Treasury bills, apart from Treasury’s current borrowing program, which will provide cash for use in . . . Federal Reserve [lending and liquidity] initiatives.”¹¹ The Treasury promptly announced, on that day and the day following, six offerings of SFP bills for a total of \$200 billion (Table 14.1). Further sales were arranged “as needed.” As shown in Chart 14.1, the timing, tenors, and amounts of the offerings were far from regular and predictable.

On October 6, the Federal Reserve announced that, pursuant to authority conferred by the Emergency Economic Stabilization Act of October 3, 2008, it would begin to pay interest on reserves, effective Thursday, October 9.¹² Paying interest on reserves was expected to provide an alternative way to keep the federal funds rate at the level targeted by the FOMC, allowing the Fed to create reserves far in excess of what depository institutions were required to hold without driving the funds rate to zero.¹³ The upshot was a gradual substitution of reserve deposits for Treasury Special Financing Account balances.

The SFP program topped out at \$560 billion between late October and mid-November (Chart 14.2). The last SFP bill offered in 2008, \$30 billion of 77-day bills, was issued on November 6, and outstanding SFP bills thereafter ran down, to \$260 billion at year-end. The last SFP bill was due to mature on January 22, 2009, and the program appeared to be headed for extinction.

Rejuvenation

Even before the last SFP bill matured, the Treasury restarted the program, this time on a more regular basis.¹⁴ As shown in Chart 14.3, the first five offerings in 2009 were either

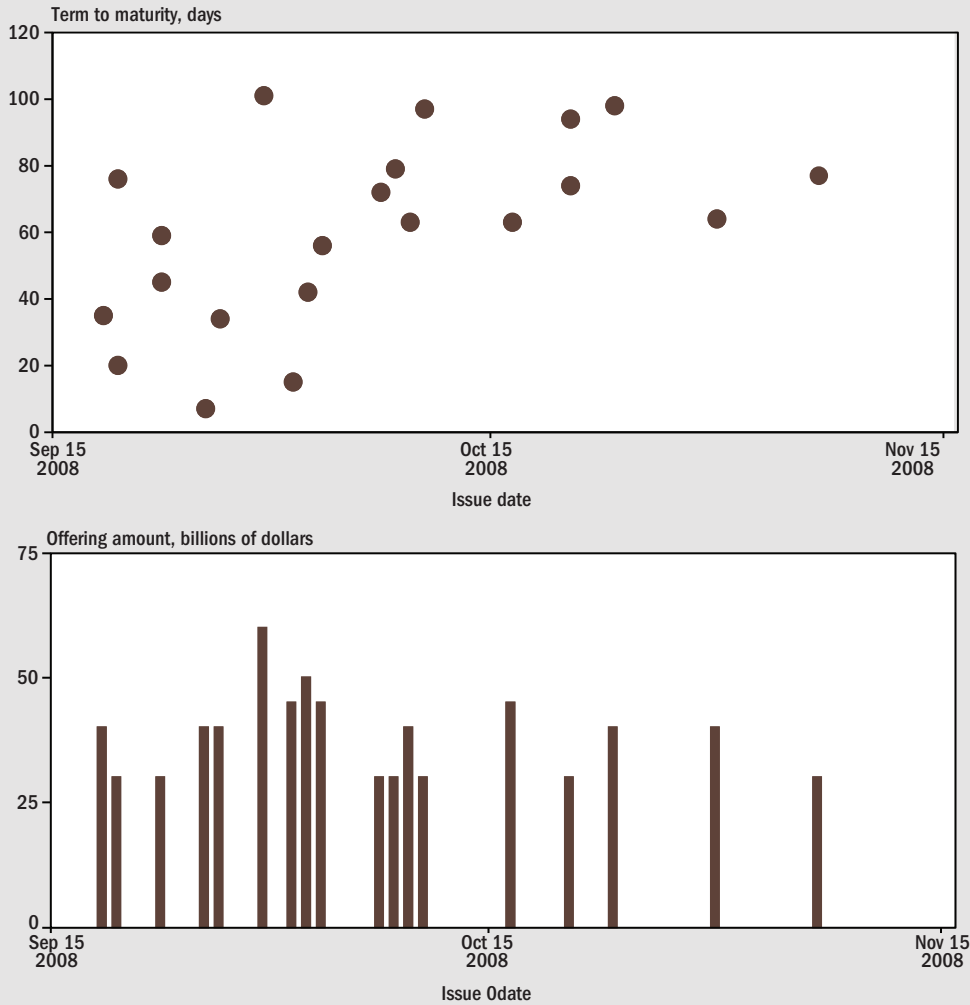
¹¹ Treasury press release, “Treasury Announces Supplementary Financing Program,” September 17, 2008. See also Santoro (2012). The novelty of the SFP program led to some confusion in describing the program. The *New York Times*, for example, reported the first sale of SFP bills by stating, “In a sign of how short the Fed’s available reserves had become, the Treasury Department sold tens of billions of dollars of special ‘supplementary’ Treasury bills on September 17 to provide the Fed with extra cash” (“A New Role for the Fed: Investor of Last Resort,” *New York Times*, September 18, 2008, p. A1). See also “Federal Reserve and Treasury Offer Congress A Plan for a Vast Bailout,” *New York Times*, September 19, 2008, p. A1 (“With the Fed running short of unencumbered reserves, the Treasury Department has begun raising fresh cash for the central bank by selling new Treasury bills . . . and parking [the proceeds] at the Fed for whatever use it wanted”). In fact, the Fed did not need any “extra cash.” As a central bank of issue and deposit, the Fed can print currency and create bank reserves at will. What the Fed could not fashion from its existing authorities was a way to *drain* massive quantities of reserves from the banking system. The *Wall Street Journal* got it right when it stated that the Treasury was “carrying out [a reserve] draining function in place of the Fed” (“U.S. Moves to Bolster Fed Balance Sheet,” *Wall Street Journal*, September 18, 2008, p. A3).

¹² Board of Governors of the Federal Reserve System, press release, October 6, 2008.

¹³ Bech and Klee (2009).

¹⁴ The Treasury did not provide an explanation of its decision to restart the SFP program. However, interest on reserves did not set a floor on the federal funds rate as originally anticipated (Bech and Klee 2009). The Fed may have welcomed the Treasury’s continued assistance in keeping the funds rate near the target level.

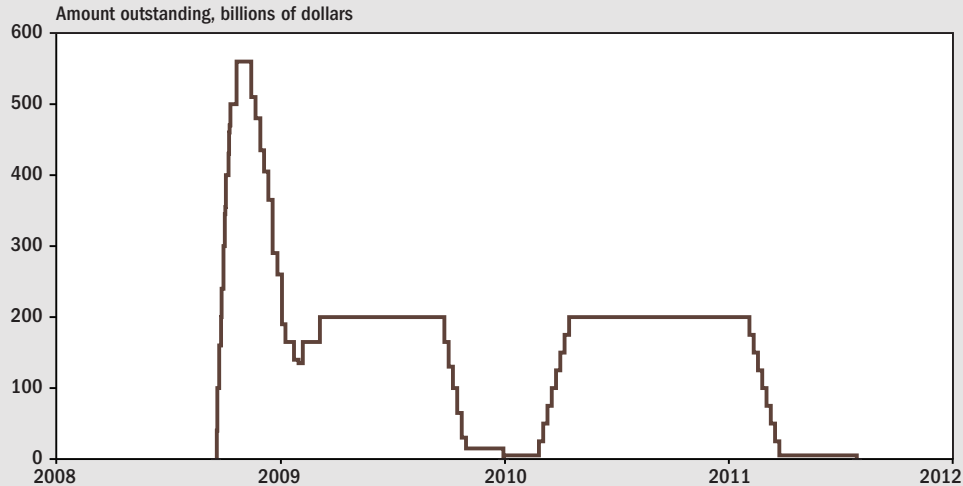
Chart 14.1
Tenors and Offering Amounts of Supplementary Financing Program Bills Issued in 2008



\$30 billion or \$35 billion and tenors were limited to 7, 8, or 10 weeks. After the fifth offering settled on February 5, \$165 billion of SFP bills were outstanding and set to mature at weekly intervals between March 12 and April 9.

In advance of the March 12 maturity date of the earliest maturing SFP bill, the Treasury issued another \$35 billion of the bills, for settlement on March 5 and maturity on May 7, thereby bringing total SFP issuance to \$200 billion. Over the course of the next five weeks, it rolled over the SFP bills issued in January and early February to regularly spaced

Chart 14.2
Total Supplementary Financing Program Bills Outstanding, September 2008 to July 2011



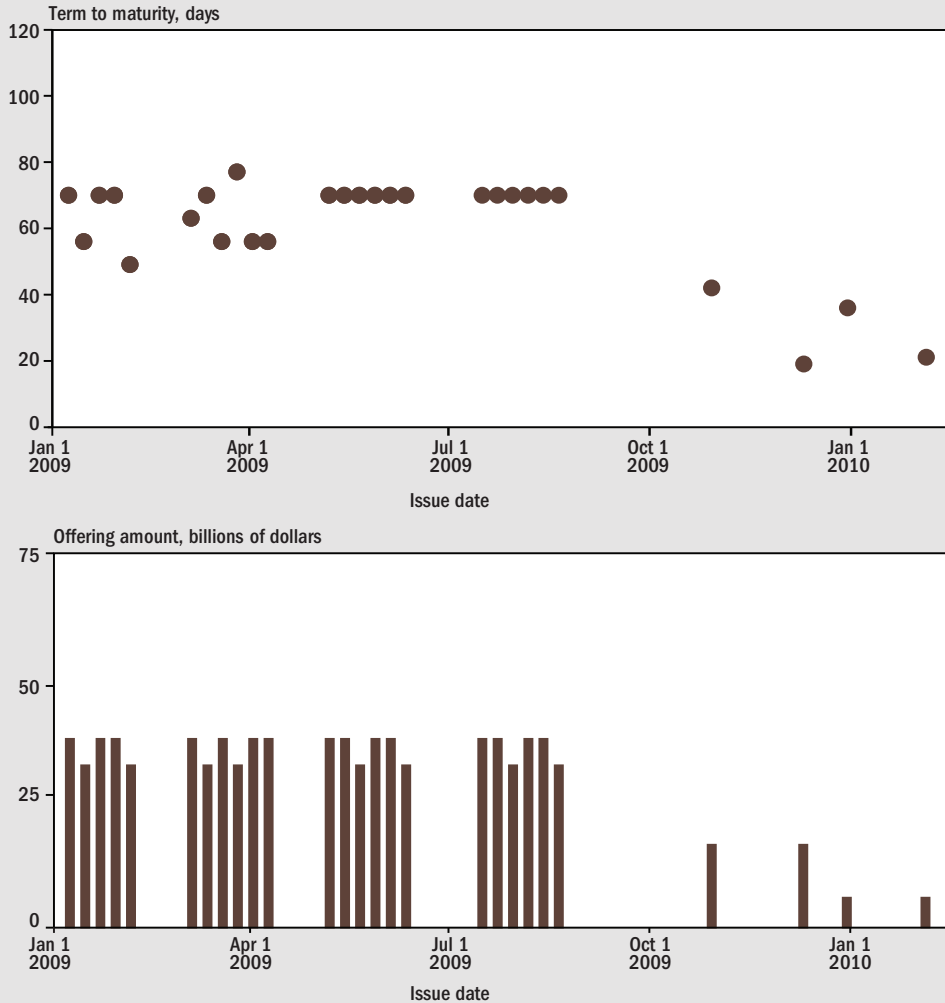
maturities ranging from May 14 to June 11, resulting in a set of six SFP bills maturing weekly from May 7 to June 11. Four of the bills had face amounts of \$35 billion, and two had face amounts of \$30 billion. The Treasury rolled over this set of six bills twice. All of the bills in both sets of rollovers had 10-week tenors.

The last set of six SFP bills were issued between July 16 and August 30 and matured between September 24 and October 29. Shortly before the bills began to mature, the Treasury announced that, in anticipation of a looming debt ceiling constraint, it would shrink the SFP program to \$15 billion.¹⁵ It rolled over part of the \$30 billion October 29 bill with a 6-week, \$15 billion bill maturing on December 10 and paid down the other five bills as they matured. The Treasury rolled over the December 10 bill with a 19-day, \$15 billion bill maturing on December 29.

On Monday, December 28, Congress passed, and President Obama signed into law, an increase in the debt ceiling, but the Treasury was unable to schedule an auction in time to roll over the maturing SFP bill. At the close of business on December 29, the Special Financing Account was extinguished. However, the account was restored the very next day when the Treasury auctioned, for same-day settlement, \$5 billion of a 36-day SFP bill maturing on February 4, 2010. That bill was itself rolled over into a 21-day bill maturing on February 25.

¹⁵ Treasury press release, "Treasury Issues Debt Management Guidance on the Supplementary Financing Program," September 16, 2009. See also "Treasury to Shrink Financing Program," *Wall Street Journal*, September 16, 2009, p. A3, and "U.S. Treasury to Scale Back Fed Program to Avoid Debt Ceiling," *Bloomberg.com*, September 16, 2009, 7:23 EDT.

Chart 14.3
**Tenors and Offering Amounts of Supplementary Financing Program
 Bills Issued in 2009 and Early 2010**



Third Life

The Treasury renewed the SFP program one final time. On February 23, 2010, officials announced that over the course of the next two months, they would restore the program to \$200 billion through a series of eight weekly auctions of 8-week bills,

8-week bills (Chart 14.4). This last incarnation of the SFP program vividly illustrates the almost gravitational attraction of regular and predictable issuance.

The last full rollover of an 8-week SFP bill was announced on January 24, 2011. The bill was auctioned on January 26 for settlement on January 27 and set to mature on March 24. Anticipating another debt ceiling constraint,¹⁷ the Treasury paid down the next seven SFP bills. It rolled over \$5 billion of the March 24 bill three times, twice with an 8-week bill and once with a 2-week bill. The latter bill matured on July 28, 2011, at which time the SFP program passed into the history books.

¹⁷ See "Treasury Will Likely Cut Fed Bill Program as Debt Limit Nears," *Bloomberg.com*, January 25, 2011, 8:45 EST. See also Wrightson ICAI, *Treasury Finance*, January 18, 2011, and January 28, 2011.

Chapter 15

Concluding Remarks

Treasury debt management actions from 1983 to 2012 show that Treasury officials repeatedly found value in regular and predictable operations. Officials initially contemplated limiting 4-week bill offerings to times when short-term funding needs were high, but ultimately acceded to the advice of the Treasury Borrowing Advisory Committee and offered the bills on a regular weekly basis. Similarly, after a brief period of experimentation, they settled on a buyback program of twice-monthly operations that rotated through four panels of eligible bonds and sought to repurchase bonds in amounts that (after giving due regard to the smaller outstanding amounts of older bonds) did not vary materially from operation to operation. The evolution of bill issuance under the Supplementary Financing Program between 2008 and 2011 evidences a comparable preference for regular and predictable operations.

The converse has also been true: officials have been reluctant to embrace opportunistic debt management programs. When some members of the advisory committee proposed, in the fall of 1998, that the Treasury should repurchase relatively cheap off-the-run bonds and issue additional amounts of relatively expensive on-the-run bonds, officials took the advice of other committee members who argued that such an opportunistic program would create uncertainty regarding the relative supply of different bonds and possibly lead to higher Treasury borrowing costs.

The principal objectives of this study were (1) to examine how Treasury officials managed the nation's nominal marketable coupon-bearing debt under the rubric of regular and predictable issuance put in place in the second half of the 1970s, and (2) to understand how the Treasury was able to retain a reputation for being a regular and predictable issuer even while varying the auction calendar and offering amounts.

Managing Treasury Debt to Minimize Long-Run Financing Costs

The starting point for understanding how Treasury debt managers adhered to the principle of regular and predictable issuance is recalling the objective of debt management: meeting the financing needs of the government at the lowest cost over time.¹

A review of debt management actions undertaken between 1983 and 2012, summarized in Appendix C, shows that, in most cases, maturity points were introduced or terminated, or offered more or less frequently, primarily in response to changes in financing

¹ This formulation of the objective originated with Under Secretary of the Treasury Peter Fisher (Treasury press release, "Remarks of Under Secretary of the Treasury Peter R. Fisher to the Futures Industry Association, Boca Raton, Florida," March 14, 2002).

requirements. In three cases, however, the Treasury acted for reasons unrelated to financing requirements: the 1986 termination of the 20-year bond (discussed in Chapter 4), the 1993 termination of 7-year notes and reduction in the frequency of 30-year bond auctions (discussed in Chapter 5), and the introduction of 4-week bills (discussed in Chapter 10).

The clear benefit of replacing 20-year bonds with cheaper, more liquid, 10-year notes and 30-year bonds made termination of the 20-year bond an uncontroversial decision.

The introduction of 4-week bills in 2001 was similar. Debt managers wanted to limit “as needed” offerings of relatively expensive cash management bills without shifting the full burden of short-term finance to 13-week bills. The solution was a 4-week bill offered on a regular weekly schedule in amounts that varied widely from week to week—an auction arrangement that essentially split the difference between issuing regularly and predictably and issuing as needed.

The 1993 initiative, aimed at shortening the maturity structure of the debt, was more controversial but established the principle of active control of maturity as a means of balancing the cost of longer-term debt against the rollover risk of shorter-term debt. Maturity had been a matter of intense concern since the mid-1960s, when the 4¼ percent ceiling on bond coupon rates first began to limit bond issuance, but prior to 1993 the objective had always been to extend maturity to reduce risk. The 1993 initiative established that debt managers might also be concerned with shortening maturity to reduce expected financing costs.

After 1993, debt management initiatives carried out to meet funding requirements were often influenced by maturity considerations. The buyback program—arguably the most innovative debt management action undertaken in the past three decades—was shaped by official concern with limiting the growth of average maturity. Similarly, the unprecedented expansion of the auction calendar following the collapse of Lehman Brothers was guided by a desire to reverse an ongoing contraction in average maturity.

Liquidity considerations entered into debt management decisions in a similar way. Although no debt management action in the period from 1983 to 2012 was undertaken solely to enhance liquidity,² the details of many actions were shaped by liquidity concerns. Consider, for example,

- the decision in 1990 to replace quarterly auctions of 4- and 5-year notes with monthly auctions of relatively more liquid 5-year notes,
- the decision in 1998 to replace quarterly auctions of 3-year notes and monthly auctions of 5-year notes with quarterly auctions of relatively more liquid 5-year notes, and

² However, the resetting of 52-week bill offerings in 1979 and 1980—from quad-weekly offerings that settled and matured on Tuesdays to quad-weekly offerings that settled and matured on Thursdays—was undertaken solely to enhance bill liquidity. See Box 7.2 above.

- the decision in 2000 to introduce scheduled reopenings of 5- and 10-year notes and 30-year bonds (rather than to reduce the auction frequency of one of the series).

Similarly, the elimination of 52-week bills in 2000-01, the reintroduction of 3-year notes in 2003 and their subsequent termination in 2007, and the reintroduction of 52-week bills and 3-year notes in 2008 were all actions prompted by financing requirements but influenced by the liquidity of those instruments relative to the liquidity of other candidates for termination or reintroduction. In particular, the Treasury did not terminate the highly liquid 13- or 26-week bills or 5- or 10-year notes, and it did not back away from monthly auctions of the highly liquid 2-year notes, in 1998 or 2000-01, and it did not reintroduce the much less liquid 4- or 7-year notes or 20-year bonds in 2008. (The Treasury did reintroduce 7-year notes in 2009, following further deterioration in the fiscal environment.)

Broadly stated, official cognizance of maturity and liquidity considerations in deciding on the details of debt management actions undertaken primarily to accommodate changes in federal financing requirements reflected the efforts of debt managers to minimize long-run financing costs while meeting the funding needs of the federal government.

Maintaining a Reputation for Regular and Predictable Issuance

Given that the Treasury varied—sometimes quite rapidly—its menu of maturity points, auction frequencies, and offering amounts, how did it manage to be seen as a regular and predictable issuer?

The historical record suggests that the Treasury can alter the auction calendar and/or offering amounts without being criticized for breaching the principle of regular and predictable issuance if (a) the action is necessary to accommodate a change in financing requirements and does not otherwise appear to be capricious, or (b) the action reduces Treasury borrowing costs but does not affect the maturity structure of the debt or impair market liquidity.

The first part of the proposition is generally supported by the bulk of Treasury debt management actions between 1983 and 2012, and more particularly by the adverse market reaction to two actions that were not required by a change in financing requirements: the termination of the 30-year bond in 2001 and the reintroduction of the long bond in 2005-06.³ Market participants complained bitterly when they were caught off-guard by both actions. This response suggests that Treasury officials are less likely to be criticized for breaching the principle of regular and predictable issuance when changing the auction calendar and/or offering amounts if market participants anticipated the actions on the basis of the Treasury's objectives and the contemporaneous economic environment.

³ There was, additionally, an adverse reaction by some market participants to the announcement of the buyback program and the restructuring of the auction calendar in early 2000. However, the response in this case may have been more a matter of regret when they "missed the boat" on initiatives that had been discussed publicly for months.

In a perfect world, the Treasury's objectives would be so well-known that its actions would be fully anticipated from the economic data.

The second part of the proposition is supported by the ready acceptance by market participants of the termination of the 20-year bond in 1986 and its replacement with expanded offerings of 10-year notes and 30-year bonds. The substitution reduced borrowing costs and enhanced overall liquidity—market participants had frequently observed that 20-year bonds traded “by appointment”—without materially altering the maturity structure of the debt. The second part of the proposition is also supported by the ready acceptance of 4-week bills in 2001, another action that lowered Treasury borrowing costs and enhanced liquidity without materially changing the maturity structure of the debt.

Appendix A

SOMA and FIMA Auction Tenders

Over the thirty-year period examined in this monograph, the U.S. Treasury frequently issued significantly more securities than it offered to the public in its bill, note, and bond auctions. The additional issuance came about because the Treasury regularly filled tenders for the Federal Reserve’s System Open Market Account (SOMA) and sometimes for Foreign Investment and Monetary Authorities (FIMAs) with “add-ons” to its public offerings. This appendix describes the treatment of SOMA and FIMA tenders between 1983 and 2012. The topic is important because on two occasions, in March 1997 and February 2001, the Treasury changed how it satisfied those tenders and compensated by resetting the level of announced offerings. We begin by reviewing a stylized auction that does not include such tenders.

A Stylized Treasury Auction without SOMA and FIMA Tenders

The first step in a Treasury auction is an announcement of what is to be sold and the amount offered. Following the announcement, each auction participant submits *either*

- one or more competitive tenders, each of which specifies a quantity of securities sought and an interest rate—a discount rate (in the case of bills¹) or a yield (in the case of notes and bonds²),³ *or*
- a single non-competitive tender, which specifies a quantity of securities sought (subject to a maximum prescribed by the Treasury).

Following the close of bidding, the Treasury sorts the competitive tenders in order of increasing rate and identifies the “stop”—the lowest rate at which the sum of (a) the aggregate quantity of competitive tenders specifying the same or lower rate and (b) the aggregate amount of non-competitive tenders is at least as large as the amount offered.

¹ Treasury bills have been auctioned on a discount rate basis since April 1983. See *Treasury News*, “Treasury Bill Auctions to Use New Bidding Method Effective April 18, 1983,” March 15, 1983.

² *De novo* Treasury note and bond offerings have been auctioned on a yield basis since September 1974. See Garbade (2004a, p. 38); Federal Reserve Bank of New York Circular no. 7456, “Treasury Financing to Use New Bidding Method,” September 16, 1974; and Baker (1976, p. 148; 1979, p. 206). Reopenings of notes and bonds have been auctioned on a yield basis since early 1983. Compare Federal Reserve Bank of New York Circular no. 9330, “Treasury Announces August Quarterly Financing,” July 29, 1982, with Circular no. 9446, “Treasury Announces February Quarterly Financing,” January 27, 1983.

³ For expositional simplicity, we ignore limitations on the aggregate quantity of competitive tenders that can be submitted by an auction participant at any given rate. For details, see Garbade and Ingber (2005).

Non-competitive tenders and competitive tenders specifying rates below the stop are filled in full. Competitive tenders specifying a rate equal to the stop are rationed on a *pro rata* basis such that the total amount issued is equal to the amount offered.⁴

Each accepted competitive tender is invoiced at the price computed from the rate specified on the tender (in a multiple-price auction), or the price computed from the stop (in a single-price auction).⁵ Non-competitive tenders are invoiced at the average accepted competitive price.

Alternative Methods of Filling Non-Competitive Tenders

The Treasury auction process gives a “preference” to non-competitive tenders in the sense that it guarantees that those tenders will be filled at the average accepted competitive price. For a given offering, a larger volume of non-competitive tenders means a smaller quantity of securities available to competitive bidders, and vice versa. Competitive bidders are, therefore, at risk with respect to non-competitive tenders being more or less than expected.

The Treasury could make competitive bidding simpler and less risky, without sacrificing the preference accorded non-competitive bidders, if it reduced the stated offering amount by the expected volume of non-competitive tenders and filled non-competitive tenders with an “add-on”—that is, with an additional issuance, over and above the amount offered (which would then be issued entirely to competitive bidders). However, since the actual volume of non-competitive tenders may be more or less than expected, this would create uncertainty about the proceeds to be derived from a given auction. Historically, the Treasury has chosen to satisfy non-competitive tenders within the offering amount and to leave the risk of unexpected variation with competitive bidders.

SOMA Tenders and FIMA Tenders

Treasury auctions are more complicated than the stylized model outlined above because the Treasury also gives a preference to tenders submitted by SOMA and FIMAs.⁶ SOMA

⁴ For expositional simplicity, we also ignore limitations on the quantity of securities that can be awarded to a given auction participant in a given auction. For details, see Garbade and Ingber (2005).

⁵ Prior to September 1992, all bill and note auctions were conducted on a multiple-price basis. Between September 1992 and September 1998, 2-year notes and 5-year notes were auctioned on a single-price basis (“New Process for Auctions to be Tested,” *New York Times*, September 4, 1992, p. D1, and “Treasury to Try ‘Dutch’ System at Its Auctions,” *Wall Street Journal*, September 4, 1992, p. C1). Bond auctions were conducted on a single-price basis from 1973 to mid-1974 (Garbade 2004a, Table 4 and p. 38) and on a multiple-price basis from mid-1974 to September 1998. All Treasury auctions have been conducted on a single-price basis since October 1998 (“Dutch-Auction Format to be Adopted by the Treasury in More Sales of Issues,” *Wall Street Journal*, October 27, 1998, p. A24, and fourth-quarter 1998 Treasury policy statement). In the case of a *de novo* note or bond auction, the Treasury assigns the highest coupon rate, in increments of $\frac{1}{8}$ percent, such that the average accepted competitive price, exclusive of accrued interest, is not in excess of par.

⁶ SOMA auction participation is limited to rolling over maturing securities because the Banking Act of August 22, 1935, prohibits Federal Reserve Banks from buying securities directly from the Treasury. A FIMA tender may be either a rollover of a maturing security or an investment of new cash.

Table A.1
How SOMA Tenders and FIMA Tenders Were Filled, 1983 to 2012

	Prior to March 26, 1997	March 26, 1997, to January 31, 2001	Since February 1, 2001
Bills			
SOMA tenders	From offered amount	With add-ons	With add-ons
FIMA tenders	Rollovers from offered amount, new cash with add-ons	Rollovers from offered amount, new cash with add-ons	From offered amount, preferential treatment subject to individual and aggregate limits
Notes and Bonds			
SOMA tenders	With add-ons	With add-ons	With add-ons
FIMA tenders	With add-ons	With add-ons	From offered amount, preferential treatment subject to individual and aggregate limits

tenders and FIMA tenders are, like non-competitive tenders, guaranteed to be filled at the average accepted competitive price. However, between 1983 and 2012, they were sometimes filled from the offered amount and sometimes filled with add-ons (Table A.1). The method by which the tenders were filled affected not only what the Treasury announced as the offered amount but also who bore the risk of unexpected variation in the tenders.

Offerings of Notes and Bonds before February 1, 2001

As illustrated in Box A.1, prior to February 2001, the Treasury filled SOMA and FIMA tenders for notes and bonds with add-ons. This simplified bidding for competitive bidders: they were not liable to be displaced by unexpectedly large SOMA or FIMA tenders, or awarded an unexpectedly large quantity of securities because of unexpectedly small tenders.

Filling SOMA and FIMA tenders for notes and bonds with add-ons exacerbated the Treasury's cash flow uncertainty, but the added uncertainty was not material. The Treasury knew, when it set the offered amount for an auction, which SOMA securities were maturing and likely to be rolled over, and it had at least some information on prospective FIMA tenders; with this knowledge, it could adjust its cash management decisions accordingly.

Box A.1

Example of a Note Offering before February 1, 2001

On Wednesday, February 9, 1983, the Treasury announced an offering of \$7.5 billion of 2-year notes to refinance \$4.939 billion of maturing 2-year notes and to raise \$2.561 billion of new cash.^a The new notes would be auctioned on Wednesday, February 16, for settlement on Monday, February 28, and were due to mature on February 28, 1985. The \$4.939 billion of maturing notes included \$499 million of notes owned by SOMA and \$768 million of notes held by Federal Reserve Banks as agents for FIMAs.

Prior to the close of bidding, the Treasury received \$13.479 billion of competitive tenders, \$1.455 billion of non-competitive tenders, \$499 million of SOMA tenders, and \$340 million of FIMA tenders. It awarded \$6.046 billion of notes to competitive bidders and filled all of the non-competitive tenders in full, for a total of \$7.501 billion of notes. In addition, the Treasury awarded \$499 million of notes to SOMA and \$340 million of notes to FIMAs. The total issue size was, therefore, \$8.340 billion.^b

^a Federal Reserve Bank of New York Circular no. 9453, "Treasury to Auction \$7,500 Million of 2-Year Notes," February 10, 1983.

^b *Treasury News*, "Results of Auction of 2-Year Notes," February 16, 1983.

Offerings of Regular (13-, 26-, and 52-Week) Bills before March 26, 1997⁷

As illustrated in Box A.2, prior to March 26, 1997, the Treasury filled SOMA bill tenders and FIMA bill tenders, up to the aggregate amount of maturing bills held by the FIMAs, from the offered amount. It filled FIMA tenders in excess of the aggregate amount of maturing bills held by the FIMAs with add-ons.

The Treasury may have treated FIMA bill rollovers differently from FIMA note and bond tenders because it had greater difficulty anticipating FIMA bill rollovers and/or because it was reluctant to accept the risk of unexpected variation in FIMA bill rollovers—an issue more important for bills, which were used for cash management as well as for debt management, than for notes and bonds.⁸ Filling FIMA cash tenders with add-ons at

⁷ FIMA tenders for cash management bills were rare, probably because the bills came at irregular times and sometimes with little warning. Prior to February 1, 2001, the Treasury filled them with add-ons when they appeared. SOMA could not buy cash management bills because the bills were not issued to refinance maturing bills.

⁸ See the *Money Market Observer*, November 27, 2000: "In the bill sector, . . . the week-to-week fluctuations in foreign official tenders are *large* and *difficult to predict*. The Treasury would surrender too much control over its cash balance in the short run if it were to fill all foreign official bill tenders as add-ons" (p. 2). The *Observer* also notes, "Foreign official tenders are *smaller* and *more predictable* in

Box A.2

Example of a Regular Bill Offering before March 26, 1997

On Tuesday, June 19, 1984, the Treasury announced an offering of \$5.2 billion of 13-week bills and \$5.2 billion of 26-week bills to refinance \$10.4 billion of \$12.680 billion of maturing bills.^a The remaining \$2.280 billion of maturing bills would be paid down. The new bills would be auctioned on Monday, June 25, for settlement on Thursday, June 28, and were due to mature on Thursday, September 27, and Thursday, December 27, 1984, respectively. The \$12.280 billion of maturing bills included \$2.510 billion of bills owned by SOMA and \$1.110 billion of bills held by Federal Reserve Banks as agents for FIMAs.

For the 13-week bills, the Treasury received \$13.072 billion of competitive tenders, \$1.044 billion of non-competitive tenders, \$1.310 million of SOMA tenders, and \$467 million of FIMA tenders, including \$411 million attributable to rollovers of maturing bills and \$56 million of new money. It awarded \$2.440 billion of bills to competitive bidders and filled all of the non-competitive, SOMA, and FIMA rollover tenders in full, for a total of \$5.206 billion of bills.^b In addition, the Treasury awarded \$56 million of bills to FIMAs for new money. The total issue size was, therefore, \$5.261 billion.^c

For the 26-week bills, the Treasury received \$12.120 billion of competitive tenders, \$776 million of non-competitive tenders, \$1.200 billion of SOMA tenders, and \$782 million of FIMA tenders, including \$699 million attributable to rollovers of maturing bills^d and \$83 million of new money. It awarded \$2.526 billion of bills to competitive bidders and filled all of the non-competitive, SOMA, and FIMA rollover tenders in full, for a total of \$5.201 billion of bills. In addition, the Treasury awarded \$83 million of bills to FIMAs for new money. The total issue size was, therefore, \$5.284 billion.^e

^a Federal Reserve Bank of New York Circular no. 9692, "Offering of Two Series of Treasury Bills," June 20, 1984.

^b Owing to a clerical error at a Federal Reserve Bank, a competitive bid was overstated. When corrected, the amount awarded to competitive, non-competitive, SOMA, and FIMA rollover tenders was reduced to \$4.947 billion (see the notice attached to Federal Reserve Bank of New York Circular no. 9696, "Offering of Two Series of Treasury Bills," June 27, 1984).

^c Federal Reserve Bank of New York Circular no. 9696, "Offering of Two Series of Treasury Bills," June 27, 1984.

^d FIMA rollover tenders of \$411 million for 13-week bills and \$699 million for 26-week bills equaled the total of \$1.110 billion of maturing bills held by FIMAs.

^e Federal Reserve Bank of New York Circular no. 9696, "Offering of Two Series of Treasury Bills," June 27, 1984.

least insulated competitive bidders from the risk that an unexpectedly large cash tender would result in an unexpected reduction in their auction awards.

Whether SOMA bill tenders were filled with add-ons or from the amount offered probably did not matter much. SOMA maturities were known to the Treasury, were disclosed to the public in bill offering announcements, and (prior to the financial crisis of 2007-08) were regularly rolled over.⁹

Offerings of Regular Bills from March 26, 1997, to January 31, 2001

As illustrated in Box A.3, between March 26, 1997, and January 31, 2001, the Treasury filled SOMA bill tenders with add-ons. FIMA bill tenders, up to the aggregate amount of maturing bills held by the FIMAs, were (as before) filled from the offered amount, and FIMA bill tenders in excess of the aggregate amount of maturing bills held by the FIMAs were (also as before) filled with add-ons.

In announcing the change, Treasury officials said that they wanted “to provide more complete information to market participants” on the amount of bills that would be available to the public.¹⁰ The Treasury Borrowing Advisory Committee welcomed the change, but observed that it “does not . . . address the issue of [FIMA tenders] which would remain in the awards to the public.” The committee noted that “because bills are offered on a weekly basis, the committee appreciates the difficulty it would entail in forecasting cash balances if foreign official awards were to be treated as add-ons. It was the consensus of the committee that the Treasury consider the idea of obtaining more timely information from foreign institutions with respect to their plans for participation in T-bill auctions.”¹¹

Because the announced size of a bill offering did not have to accommodate SOMA bill rollovers after March 25, 1997, the Treasury sharply reduced bill offering amounts. The last auction of regular bills under the old regime was for a total of \$23 billion of 13- and 26-week bills that accommodated \$6.304 billion of maturing bills to be rolled over by SOMA.¹² The first auction of regular 13- and 26-week bills under the new regime was for a total of \$14 billion of bills that did not have to accommodate \$6.751 billion of maturing

coupon auctions than in bill sales, which means the Treasury takes on less cash-flow risk by handling foreign official note tenders as add-ons” (p. 5). Emphasis is added in both quotations.

⁹ At various times between August 2007 and June 2008, the Federal Reserve redeemed some or all of its maturing bills as they came due. Beginning in July 2008, and continuing until June 2012, the Federal Reserve rolled over all of its maturing bills into 4-week bills (Federal Reserve Bank of New York operating policy release, “Statement Regarding System Open Market Account Activity,” July 3, 2008). Beginning in July 2012, the Federal Reserve redeemed all maturing Treasury securities as they came due (Federal Reserve Bank of New York operating policy release, “Statement Regarding Continuation of the Maturity Extension Program,” June 20, 2012).

¹⁰ Treasury press release, “Treasury Announces Bill Auction Change,” March 18, 1997. See also fourth-quarter 1996 Treasury policy statement.

¹¹ Fourth-quarter 1996 TBAC minutes.

¹² Treasury press release, “Treasury’s Weekly Bill Offering,” March 18, 1997.

Box A.3

**Example of a Regular Bill Offering between March 26, 1997,
and January 31, 2001**

On Tuesday, July 21, 1998, the Treasury announced an offering of \$5.75 billion of 13-week bills and \$7.25 billion of 26-week bills to refinance \$13 billion of \$13.082 billion of maturing bills.^a The remaining \$82 million of maturing bills would be paid down. The new bills would be auctioned on Monday, July 27, for settlement on Thursday, July 30, and were due to mature on Thursday, October 29, 1998, and Thursday, January 28, 1999, respectively. The \$13.082 billion of maturing bills included \$6.793 billion of bills owned by SOMA and \$2.805 billion of bills held by Federal Reserve Banks as agents for FIMAs.

For the 13-week bills, the Treasury received \$27.002 billion of competitive tenders, \$1.260 billion of non-competitive tenders, \$3.013 billion of SOMA tenders, and \$452 million of FIMA tenders, including \$382 million attributable to rollovers of maturing bills and \$70 million of new money. It awarded \$4.155 billion of bills to competitive bidders and filled all of the non-competitive and FIMA rollover tenders in full, for a total of \$5.796 billion of bills. In addition, the Treasury awarded \$3.013 billion of bills to SOMA and \$70 million of bills to FIMAs in exchange for new money. The total issue size was, therefore, \$8.879 billion.^b

For the 26-week bills, the Treasury received \$28.020 billion of competitive tenders, \$1.297 billion of non-competitive tenders, \$3.780 billion of SOMA tenders, and \$2.866 billion of FIMA tenders, including \$2.423 billion attributable to rollovers of maturing bills^c and \$443 million of new money. It awarded \$3.597 billion of bills to competitive bidders and filled all of the non-competitive and FIMA rollover tenders in full, for a total of \$7.317 billion of bills. In addition, the Treasury awarded \$3.780 billion of bills to SOMA and \$443 million of bills to FIMAs in exchange for new money. The total issue size was, therefore, \$11.540 billion.^d

^a *Treasury News*, "Treasury's Weekly Bill Offering," July 21, 1998.

^b *Public Debt News*, "Results of Treasury's Auction of 13-Week Bills," July 27, 1998.

^c FIMA rollover tenders of \$382 million for 13-week bills and \$2.423 billion for 26-week bills equaled the total of \$2.805 billion of maturing bills held by FIMAs.

^d *Public Debt News*, "Results of Treasury's Auction of 26-Week Bills," July 27, 1998.

Box A.4

Example of a Note Offering after February 1, 2001

On Wednesday, January 16, 2002, the Treasury announced an offering of \$25 billion of 2-year notes to refinance \$25 billion of \$27.068 billion of maturing notes.^a The remaining \$2.068 billion of maturing notes would be paid down. The new notes would be auctioned on Wednesday, January 23, for settlement on Thursday, January 31, and were due to mature on January 31, 2004. The \$27.068 billion of maturing notes included \$5.766 billion of notes owned by SOMA.

The Treasury received \$37.307 billion of competitive tenders, \$1.072 billion of non-competitive tenders, \$5.766 billion of SOMA tenders, and \$100 million of eligible FIMA tenders. It awarded \$23.828 billion of notes to competitive bidders and filled all of the non-competitive and eligible FIMA tenders in full, for a total of \$25.000 billion of notes. In addition, the Treasury awarded \$5.766 billion of notes to SOMA. The total issue size was, therefore, \$30.766 billion.^b

^a *Treasury News*, "Treasury Offers 2-Year Notes," January 16, 2002.

^b *Public Debt News*, "Results of Treasury's Auction of 2-Year Notes," January 23, 2002.

bills to be rolled over by SOMA.¹³ The shift in offering amounts is evident in Charts 1.3, 10.1, 10.2, and 10.3 in the text.

Offerings since February 1, 2001

As illustrated in Box A.4, since February 1, 2001, FIMA tenders have been treated the same in all auctions and are filled from the offered amount;¹⁴ SOMA tenders continue to be filled with add-ons. However, FIMA tenders in excess of a specified size (\$200 million prior to January 1, 2002, and \$100 million subsequently) are not eligible for preferential treatment and must be submitted as conventional competitive tenders.¹⁵ Additionally, no more than \$1 billion of eligible FIMA tenders are accorded preferential treatment in any given auction. (Eligible tenders are given preferential treatment in order of increasing size, up to the \$1 billion limit.)

¹³ Treasury press release, "Treasury's Weekly Bill Offering," March 25, 1997.

¹⁴ Treasury press release, "Treasury Announcement of Revised Auction Participation Rules for Foreign and International Monetary Authority Accounts," November 14, 2000.

¹⁵ In announcing the change, the Treasury stated, "We anticipate that larger FIMA accounts will participate in the competitive auction, where they will be subject to the same rules as all other competitive bidders" (Treasury press release, "Treasury Announcement of Revised Auction Participation Rules for Foreign and International Monetary Authority Accounts," November 14, 2000).

Note offering amounts increased following the change, because FIMA note and bond tenders had previously been filled with add-ons. During the thirteen months prior to the change (January 1, 2000, to January 31, 2001), FIMA tenders averaged \$1.546 billion in 2-year note auctions, \$1.175 billion in 5-year auctions, \$875 million in 10-year note auctions, and \$75 million in 30-year bond auctions. The *Money Market Observer* conjectured that “the Treasury is likely to increase the 2-, 5-, and 10-year offerings by anywhere from \$1 billion to \$2 billion apiece to compensate for the lost add-ons.”¹⁶ In fact, the Treasury increased 2-year offerings by \$1 billion beginning in February 2001 (Chart 8.7) and increased 5- and 10-year *de novo* offerings and reopenings by \$1 billion each beginning in February and May 2001 (Charts 8.8 and 8.9). Offerings of 30-year bonds remained unchanged (Chart 8.10).

The change in the treatment of FIMA tenders did not have material consequences for regular bill offering amounts. Almost all FIMA 13-week bill tenders, as well as the bulk of FIMA 26-week bill tenders, were rollovers of maturing bills that were previously filled from announced offering amounts.¹⁷

¹⁶ *Money Market Observer*, November 27, 2000, p. 6.

¹⁷ During the thirteen months prior to the change (January 1, 2000, to January 31, 2001), FIMA rollover tenders for 13-week bills averaged \$275 million per auction; new cash tenders averaged \$5 million per auction. Over the same interval, FIMA rollover tenders for 26-week bills averaged \$2.979 billion per week; new cash tenders averaged \$825 million per auction.

Appendix B

A Brief History of Unscheduled Reopenings of Treasury Notes and Bonds

The U.S. Treasury introduced regular and predictable reopenings of notes and bonds in 2000.¹ However, note and bond reopenings were not a new instrument of Treasury debt management and have a history that stretches back to before the beginning of the twentieth century. This chapter provides a brief history of other types of reopenings, including discretionary, emergency, and fortuitous reopenings.

Discretionary Reopenings

Prior to September 1974, Treasury officials seeking to sell a note or bond would specify the coupon rate as well as the maturity date of the security and either auction the security or offer it for sale at a fixed price. In every offering, officials had the option to reopen an existing security in lieu of bringing a new issue.

For example, in February 1894, the Treasury auctioned \$50 million of a 5 percent bond redeemable any time after March 1904. It reopened the issue the following November with an auction offering of an additional \$50 million, stating that the decision to reopen was taken “in order to make the proposed issue uniform . . . with the existing issue.”² Similarly, in July 1906, the Treasury auctioned \$30 million of a 30-year, 2 percent bond to help finance construction of the Panama Canal. It reopened the issue, “for the sake of uniformity,” in November 1907 with an auction offering of an additional \$50 million.³

¹ First-quarter 2000 Treasury policy statement.

² Garbade (2012, pp. 34-6). The offering circulars are reprinted in “A Call for Bids for Bonds,” *New York Times*, January 18, 1894, p. 1, and “Fifty Millions of Bonds,” *New York Times*, November 14, 1894, p. 1. The quotation is from “Fifty Millions of Bonds.”

³ Garbade (2012, pp. 45-6). The offering circulars are reprinted in “The Panama Canal Bonds,” *Wall Street Journal*, July 3, 1906, p. 5, and “Federal Aid up to \$150,000,000,” *New York Times*, November 18, 1907, p. 1. The quotation is from “Federal Aid up to \$150,000,000.”

The 1907 offering, undertaken to provide collateral for expanding the circulating stock of national bank notes during the Panic of 1907, was oversubscribed, but only about \$25 million of bids were accepted. The offering circular specified that “the [Treasury] department . . . reserves the right to reject any or all bids, if deemed to be to the interests of the United States so to do” (“Federal Aid up to \$150,000,000,” *New York Times*, November 18, 1907, p. 1). The *New York Times* reported that “the offering of bonds was largely oversubscribed, but the improvement in business conditions is regarded by the Secretary [of the Treasury] as warranting him in limiting the issue” (“Allots \$25,000,000 Bonds,” *New York Times*, December 7, 1907, p. 1). See also “Panama Loan Bids Closed,” *New York Times*, December 1, 1907, p. 1.

The Treasury did not reopen any of the four bonds issued to finance World War I,⁴ reopened only one of the five *de novo* bonds that it sold in the 1920s,⁵ and did not reopen any of the three bonds issued during the Great Contraction. It made greater use of reopenings during the New Deal and the run-up to World War II—eleven of the thirty-seven bond offerings between mid-1933 and the end of 1941 were discretionary reopenings—and sporadically reopened outstanding issues during the war.

Discretionary Reopenings in the Modern Era

By 1983, the Treasury was selling all of its marketable securities (other than cash management bills) through regular and predictable auction offerings. Bidding for notes and bonds was on a yield basis, with the coupon rate usually determined in the auction process. However, the Treasury sometimes stipulated that an offering would reopen the previous offering in the same series—that is, the “on-the-run” issue—in which case officials specified the coupon rate as well as the maturity date.⁶ Charts B.1 and B.2 show discretionary reopenings of 10-year notes and 30-year bonds in the 1980s and 1990s. (Nothing shorter than a 10-year note was reopened as a matter of discretion.) Discretionary reopenings were usually undertaken to enhance the liquidity of an on-the-run issue or because an on-the-run issue was unusually expensive compared with other issues of a similar maturity (Box B.1).

Limitations on Discretionary Reopenings

If a reopening enhanced the liquidity of an issue—and possibly made it more valuable⁷—why didn’t the Treasury reopen a security two, three, or more times?

There were three reasons: taxation of original issue discount (discussed in Box 7.3), somewhat limited marketability of high coupon issues, and fear of congestion in refinancing at maturity.

Market reception of high coupon issues. It was a common observation among market participants in the 1980s that bonds with coupon rates well above contemporaneous yields on par bonds traded “cheap” relative to bonds with more current coupons—that is, they traded at relatively higher yields. The higher yields were

⁴ Garbade (2012, p. 70).

⁵ Garbade (2012, p. 181).

⁶ There was one exception to the general rule that the Treasury reopened only on-the-run notes and bonds as a matter of discretion. In February 1988, the on-the-run 30-year bond was the 8 $\frac{7}{8}$ percent bond of August 15, 2017, first issued in August 1987 and reopened three months later. The first-off-the-run bond was the 8 $\frac{3}{4}$ percent bond of May 15, 2017, originally issued in May 1987 and not yet reopened. Rather than reopen the August 2017 bond a second time, the Treasury reopened the May 2017 bond.

⁷ Amihud and Mendelson (1991), Boudoukh and Whitelaw (1991), Silber (1991), Warga (1992), Kamara (1994), Elton and Green (1998), and Longstaff (2004) examine how liquidity affects the value of a security. See also Bennett, Garbade, and Kambhu (2000) and Fleming (2002, 2003).

Chart B.1
De Novo Offerings and Discretionary Reopenings of 10-Year Notes, 1983 to Mid-1999

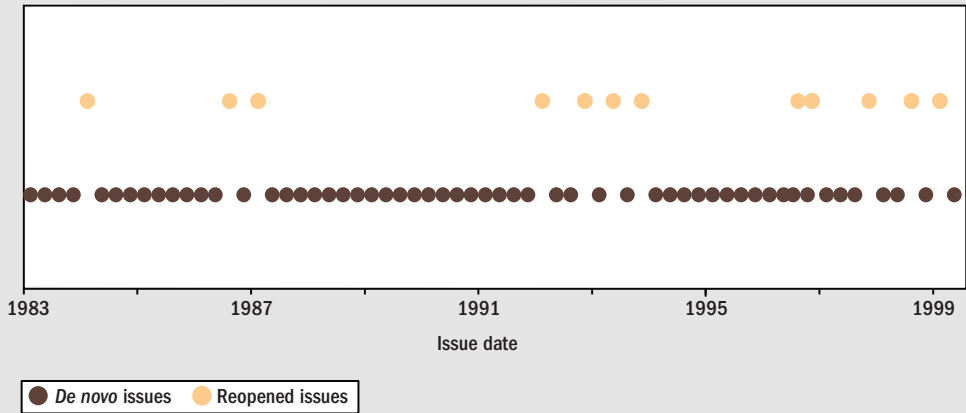
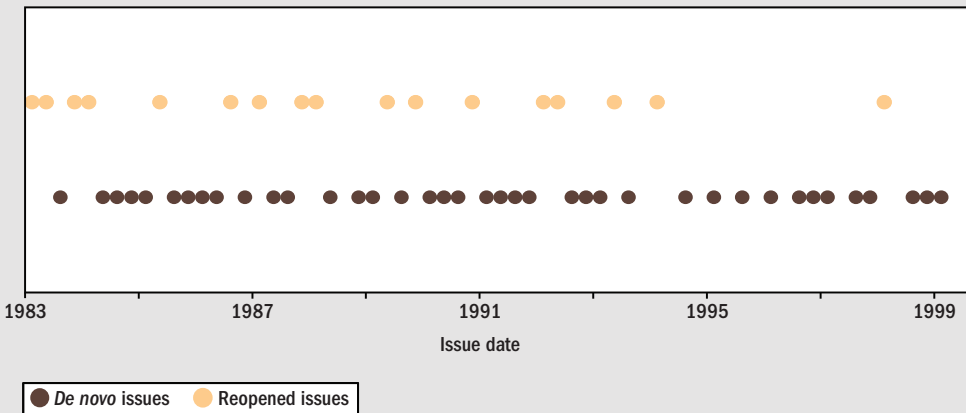


Chart B.2
De Novo Offerings and Discretionary Reopenings of 30-Year Bonds, 1983 to Mid-1999



believed to stem from poorer liquidity, and ultimately from the reluctance of many investors to buy high premium issues.

Treasury officials had no incentive to issue less marketable debt at yields greater than necessary and avoided reopening issues trading at high premiums. Recommendations of the Treasury Borrowing Advisory Committee followed suit. In January 1986, the committee recommended reopening both the on-the-run 10-year note and the on-the-run 30-year bond but noted “the high premiums associated with the outstanding issues” and

Box B.1

Treasury Borrowing Advisory Committee Recommendations for Discretionary Reopenings

During the 1980s and 1990s, the Treasury Borrowing Advisory Committee regularly made recommendations regarding reopenings of 10-year notes and 30-year bonds. The reasons given by the committee for its recommendations suggest that Treasury officials found liquidity and relative value important in thinking about whether to reopen an issue. For example:

- In August 1988, the committee recommended reopening the on-the-run 10-year note, observing that “the outstanding [10-year] notes are currently in short supply and it will help the liquidity of the market to have one larger issue in the 10-year maturity area rather than two smaller ones.”^a
- In October 1990, the committee recommended reopening both the on-the-run 10-year note and the on-the-run 30-year bond because “market liquidity and efficiency are promoted by fewer and larger issues.”^b
- In February 1994, the committee recommended reopening the on-the-run 30-year bond, citing “its relative expensiveness compared to surrounding issues.”^c
- In October 1997, the committee recommended reopening the on-the-run 10-year note, pointing out “the relative expensiveness of [the] issue on the yield curve.”^d

^a Third-quarter 1988 TBAC report.

^b Fourth-quarter 1990 TBAC report.

^c First-quarter 1994 TBAC report.

^d Fourth-quarter 1997 TBAC report.

“the possibility that this would discourage buyers.”⁸ The Treasury decided on *de novo* offerings at both maturities. In November 1988, the committee recommended against reopening the on-the-run 30-year bond because “the current premium of about 4 points was considered to be too large for some investors.”⁹ The Treasury again decided on a *de novo* offering.

Congestion. Officials were also reluctant to reopen an issue more than once because doing so could concentrate an excessive volume of redemptions on a single date.¹⁰ In late

⁸ First-quarter 1986 TBAC report.

⁹ Fourth-quarter 1988 TBAC report.

¹⁰ Treasury officials had had to devote substantial efforts to minimizing congestion when they paid down and refinanced the five large Liberty Loans of World War I (Garbade 2012, Chap. 12 and pp. 283-6).

October 1986, the advisory committee recommended against reopening for a second time both the 10-year note and the 30-year bond that had first been issued in May 1986 and reopened three months later. In explaining its action, the committee noted that “the benefit of market liquidity in larger issues was outweighed by the possible future debt management problems of extremely large maturities.”¹¹ (However, as noted in Box B.2, on three occasions during the 1980s and 1990s, the Treasury reopened the on-the-run 30-year bond a second time.)

Emergency Reopenings

An emergency reopening is a close cousin of a discretionary reopening because it is also a matter of choice. However, it differs in that it may not be a regular cycle offering and/or may not reopen an on-the-run security. There have been five emergency reopenings since 2000 (none before), all undertaken to mitigate chronic settlement fails.¹²

On October 4, 2001, in the midst of the strained market conditions following the 9/11 attacks, the Treasury announced that it would reopen, in an auction to be held later the same day, the on-the-run 10-year note for settlement on the next day. Peter Fisher, the Under Secretary of the Treasury for Domestic Finance, stated that the note was being reopened outside of the normal auction calendar (which did not provide for an issue of 10-year notes until November) “to reduce the risk that . . . settlement problems turn into a much bigger problem for the Treasury market.”¹³

Following the 2001 emergency reopening, however, Treasury officials expressed their reluctance to reopen issues on an emergency basis. Fisher cautioned market participants not to think that emergency reopenings had become a conventional instrument of Treasury debt management: “Never is a long time, so it would be imprudent of me to say that the Treasury will never again hold such an auction. But you should not count on it, you should not expect it.”¹⁴ Fisher observed that emergency reopenings could hurt the Treasury’s credibility as a regular and predictable issuer, noting that “the [supply] uncertainty . . . engendered [by the post-9/11 reopening] may have added to our borrowing costs.”¹⁵

¹¹ Fourth-quarter 1986 TBAC report.

¹² For more information on this topic, see Fleming and Garbade (2002, 2004, 2005) and Garbade et al. (2010).

¹³ “U.S. Acts on Shortage of Treasuries,” *New York Times*, October 5, 2001, p. C1.

¹⁴ Treasury press release, “Remarks by Peter R. Fisher, Under Secretary of the Treasury for Domestic Finance, Before the Bond Market Association Legal and Compliance Conference,” January 8, 2002.

¹⁵ Treasury press release, “Remarks by Peter R. Fisher, Under Secretary of the Treasury,” March 14, 2002. Similarly, Under Secretary Randal Quarles in a May 2006 statement noted that “reopenings are a blunt instrument in that they raise the supply of an outstanding security for a lengthy period and therefore represent a significant departure from the Treasury’s regular and predictable issuance policy” (Treasury press release, “Statement of Under Secretary for Domestic Finance Randal K. Quarles to Bond Market Association Annual Meeting,” May 19, 2006). In the same statement, Quarles remarked that “Treasury does not opportunistically reopen securities that are highly sought after in the secondary market.”

Box B.2

Second Reopenings of 30-Year Bonds in the 1980s and 1990s

Treasury officials opted to reopen an on-the-run 30-year bond a second time on three occasions in the 1980s and 1990s.

The 10 $\frac{3}{8}$ percent bond of November 2012 was first auctioned in November 1982, reopened in February 1983, and reopened a second time in May 1983. The Treasury Borrowing Advisory Committee recommended the second reopening, stating without further explanation that “the Committee is not concerned about the resultant size of the [issue] created by . . . the reopening of the long bond.”^a

The 12 percent bond of August 2013 was first auctioned in August 1983, reopened in November 1983 and reopened a second time three months later. The first-quarter 1984 Treasury policy statement did not explain the decision, which ran counter to the recommendation of the advisory committee.^b

The 8 percent bond of November 2021 was first auctioned in November 1991, reopened in February 1992, and reopened a second time three months later. The reopenings came after a memorable squeeze in 2-year notes in May and June 1991^c and followed closely upon the release of the *Joint Report on the Government Securities Market* that promoted the use of reopenings to alleviate squeezes.^d The advisory committee recommended the second reopening, noting that “it remains the Committee’s view that large consolidated issues are desirable. Such issues are generally the least disruptive, help reduce the potential for squeezes and possibly afford the Treasury some of the scarcity value extant in the market.”^e

^a Second-quarter 1983 TBAC report.

^b First-quarter 1984 TBAC report.

^c Senate Committee on Banking, Housing, and Urban Affairs (1991); U.S. Department of the Treasury, Securities and Exchange Commission, and Board of Governors of the Federal Reserve System (1992); Jegadeesh (1993); and Jordan and Jordan (1996).

^d U.S. Department of the Treasury, Securities and Exchange Commission, and Board of Governors of the Federal Reserve System (1992).

^e Second-quarter 1992 TBAC report.

Nevertheless, on October 8, 2008, in the midst of the financial crisis that mushroomed after the mid-September failure of Lehman Brothers, the Treasury announced the reopening of four old 10-year notes that had been subject to “acute, protracted

Table B.1
Fortuitous Reopenings between 1983 and 2012

Auction Date	Issue	Action
May 10, 1988	8 $\frac{1}{8}$ s of May 15, 1991	Old 5-yr reopened as 3-yr
Oct 25, 1994	6 $\frac{7}{8}$ s of Oct 31, 1996	Old 5-yr reopened as 2-yr
Feb 27, 1996	5 $\frac{1}{8}$ s of Feb 28, 1998	Old 5-yr reopened as 2-yr
Nov 23, 1999	5 $\frac{7}{8}$ s of Nov 30, 2001	Old 5-yr reopened as 2-yr
Dec 22, 1999	6 $\frac{1}{8}$ s of Dec 31, 2001	Old 5-yr reopened as 2-yr
Oct 25, 2000	5 $\frac{3}{4}$ s of Oct 31, 2002	Old 5-yr reopened as 2-yr
Nov 8, 2004	3s of Nov 15, 2007	Old 5-yr reopened as 3-yr

shortages.”¹⁶ Two of the notes were auctioned later the same day and the other two notes were auctioned the following day, all for settlement on October 15.¹⁷

Fortuitous Reopenings

A fortuitous reopening is best defined through an example. On November 5, 2002, the Treasury auctioned \$22 billion of 5-year notes that were set to mature on November 15, 2007. The highest accepted bid was 3.030 percent and Treasury officials set the coupon rate on the notes at 3 percent.¹⁸ Two years later, on November 8, 2004, the Treasury auctioned \$22 billion of 3-year notes, also set to mature on November 15, 2007. The highest accepted bid was 3.090 percent and the coupon rate on the new notes was also set at 3 percent.

The outcome of the second auction—a coupon rate that matched the coupon rate on an earlier issue with the same maturity date—was a fortuitous event. To avoid the confusion and the fragmented liquidity of having two different issues with the same coupon rate and the same maturity date trading simultaneously, the Treasury “reopened,” or added to, the outstanding note, rather than issuing an entirely new note.¹⁹ Table B.1 shows the seven fortuitous reopenings between 1983 and 2012.

¹⁶ Treasury press release, “Statement on Treasury Market Conditions and Debt Management Actions,” October 8, 2008.

¹⁷ The unwelcome resort to emergency reopenings contributed to an important change in Treasury settlement conventions (Garbade et al. 2010).

¹⁸ The Treasury sets the coupon rate on a new note or bond at the highest rate, in increments of $\frac{1}{8}$ percent, that results in an average accepted competitive price, exclusive of accrued interest, less than or equal to par.

¹⁹ The note auctioned in 2002 was assigned the CUSIP number 912828AN0. The note auctioned in 2004 was initially assigned the CUSIP number 912828DA5, but that was revised to 912828AN0 following the decision to reopen the older note.

Appendix C

A Chronology of Treasury Debt Management Actions from 1983 to 2012

October 10, 1984

The Treasury announces the first foreign-targeted Treasury note.¹

- Note is auctioned October 24, 1984, and settled October 31, 1984.

January 15, 1985

The Treasury announces the STRIPS program.²

- First securities eligible for stripping are the 10-year note and the 30-year bond offered in the February 1985 mid-quarter refunding.

June 14, 1985

The Treasury announces generic interest STRIPS.³

- The new interest STRIPS are introduced July 29, 1985.

April 30, 1986

The Treasury announces the termination of 20-year bonds.⁴

- Last 20-year bond is auctioned January 8, 1986, and settled January 15, 1986.⁵

¹ Treasury Circular no. 31-84, "Foreign-Targeted Treasury Notes of September 30, 1988, Series P-1988," October 10, 1984.

² *Treasury News*, "Treasury Announces New STRIPS Program," January 15, 1985.

³ *Treasury News*, "Treasury Announces Change to Generic CUSIPs for STRIPS," June 14, 1985.

⁴ Second-quarter 1986 Treasury policy statement.

⁵ The offering of 20-year bonds tentatively scheduled for December 1985 was delayed until January 1986 by a debt-ceiling impasse ("Treasury Plans Securities Sales of \$31.7 Billion," *Wall Street Journal*, December 12, 1985, p. 47). According to the *Journal* report, "[the Treasury Department] said that sometime in early January it will sell seven-year notes and twenty-year, one-month bonds, but it didn't give any details. An end-of-quarter mini-refunding package of four-year, seven-year, and 20-year issues has usually been held in late December, but the Treasury financing calendar has become snarled by the debt-limit impasse." Twenty-year bonds were not offered in March 1986 because of the 4¼ ceiling ("Treasury Bond Prices Climb," *New York Times*, March 19, 1986, p. D21, and "Bond Prices Rally After Treasury Says It Won't Sell 20-Year Issue Next Week," *Wall Street Journal*, March 19, 1986, p. 46).

July 30, 1986

The Treasury announces that 2-year notes offered at the end of the third month of a quarter will be added to the offerings of 4- and 7-year notes in end-of-quarter mini-refundings.⁶

- First such offering of 2-year notes is auctioned September 23, 1986, and settled September 30, 1986.

March 31, 1987

The Treasury announces a facility for reconstituting notes and bonds from STRIPS.⁷

- Facility is implemented May 1, 1987.

December 29, 1987

The Treasury changes the settlement date for 7-year notes to the fifteenth of the first month of a quarter, making the notes full-cycle notes and leaving only 2- and 4-year notes in the end-of-quarter mini-refundings.

- First such offering of 7-year notes is auctioned January 6, 1988, and settled January 15, 1988.

December 11, 1990

The Treasury announces the termination of 4-year notes and a change in the frequency of 5-year note auctions from quarterly to monthly (at the end of the month).⁸

- Last 4-year note is auctioned December 27, 1990, and settled December 31, 1990.
- Last quarterly 5-year note is auctioned November 28, 1990, and settled December 3, 1990.
- First monthly 5-year note is auctioned January 24, 1991, and settled January 31, 1991.

May 5, 1993

The Treasury announces the termination of 7-year notes and a change in the

⁶ Third-quarter 1986 Treasury policy statement.

⁷ *Treasury News*, "Treasury Announces Date for Reconstitution of Securities in STRIPS Program," March 31, 1987.

⁸ *Treasury News*, "Treasury Announces Change in Regular Quarterly Auction Cycles Beginning in January 1991," December 11, 1990.

frequency of 30-year bond auctions from quarterly to semiannual (in the February and August mid-quarter refundings).⁹

- Last 7-year note is auctioned April 13, 1993, and settled April 15, 1993.
- Last May/November 30-year bond is auctioned May 13, 1993, and settled May 17, 1993.
- First February/August 30-year bond is auctioned August 12, 1993, and settled August 16, 1993.

May 1, 1996

The Treasury announces a change in the frequency of 10-year note auctions to six times a year (by adding offerings in mid-July and mid-October) and a change in the frequency of 30-year bond auctions to three times a year (by adding an offering in the November mid-quarter refunding).¹⁰

- First of the two new 10-year note offerings is auctioned July 9, 1996, and settled July 15, 1996.
- First November 30-year bond is auctioned November 7, 1996, and settled November 15, 1996.

June 9, 1997

The Treasury announces the termination of the July and October auctions of 10-year notes.¹¹

- Last July/October 10-year note offering is auctioned October 8, 1996, and settled October 15, 1996.

May 6, 1998

The Treasury announces the termination of 3-year notes and a change in the frequency of 5-year note auctions from monthly to quarterly (in mid-quarter refundings).¹²

- Last 3-year note is auctioned May 12, 1998, and settled May 15, 1998.
- Last monthly 5-year note is auctioned June 24, 1998, and settled June 30, 1998.

⁹ *Treasury News*, "Treasury Announces Shift in Borrowing Maturity Mix," May 5, 1993.

¹⁰ Second-quarter 1996 Treasury policy statement.

¹¹ Treasury press release, "Lawrence H. Summers, Deputy Secretary of the Treasury: Remarks on Inflation Indexed Securities," June 9, 1997.

¹² Second-quarter 1998 Treasury policy statement.

- First quarterly 5-year note is auctioned August 11, 1998, and settled August 17, 1998.

August 4, 1999

The Treasury announces the termination of the November auctions of 30-year bonds.¹³

- Last November 30-year bond is auctioned November 5, 1998, and settled November 16, 1998.

January 13, 2000

The Treasury announces the buyback program.¹⁴

February 2, 2000

The Treasury announces:

- (a) a change in the frequency of 52-week bill auctions from once every four weeks to once every thirteen weeks;
 - Last quad-weekly bill is auctioned February 29, 2000, and settled March 2, 2000.
 - First bill with thirteen-week auction frequency is auctioned May 31, 2000, and settled June 1, 2000.
- (b) the limitation of *de novo* offerings of 5-year notes to the May and November mid-quarter refundings, to be followed by scheduled reopenings in the August and February refundings;
 - First scheduled reopening is auctioned February 8, 2000, and settled February 15, 2000.
- (c) the limitation of *de novo* offerings of 10-year notes to the February and August mid-quarter refundings, to be followed by scheduled reopenings in the May and November refundings;
 - First scheduled reopening is auctioned May 10, 2000, and settled May 15, 2000.
- (d) the limitation of *de novo* offerings of 30-year bonds to the February mid-quarter refunding, to be followed by a scheduled reopening in the August refunding.¹⁵

¹³ Third-quarter 1999 Treasury policy statement.

¹⁴ Treasury press release, "Statement of Treasury Secretary Lawrence Summers," January 13, 2000.

¹⁵ First-quarter 2000 Treasury policy statement.

- First scheduled reopening is auctioned August 10, 2000, and settled August 15, 2000.

January 31, 2001

The Treasury announces the termination of 52-week bills.¹⁶

- Last 52-week bill is auctioned February 27, 2001, and settled March 1, 2001.

July 23, 2001

The Treasury announces the introduction of 4-week bills.¹⁷

- First 4-week bill is auctioned July 31, 2001, and settled August 2, 2001.

October 31, 2001

The Treasury announces the termination of 30-year bonds.¹⁸

- Last 30-year bond is auctioned August 9, 2001, and settled August 15, 2001.

May 1, 2002

The Treasury announces the expansion of 5-year note offerings to *de novo* offerings in every mid-quarter refunding.¹⁹

- Last scheduled reopening is auctioned February 5, 2002, and settled February 15, 2002.

July 31, 2002

The Treasury announces the expansion of 10-year note offerings to *de novo* offerings in every mid-quarter refunding.²⁰

- Last scheduled reopening is auctioned May 8, 2002, and settled May 15, 2002.

¹⁶ First-quarter 2001 Treasury policy statement.

¹⁷ Treasury press release, "Treasury to Issue 4-Week Bills," July 23, 2001.

¹⁸ Fourth-quarter 2001 Treasury policy statement.

¹⁹ Second-quarter 2002 Treasury policy statement.

²⁰ Third-quarter 2002 Treasury policy statement.

February 5, 2003

The Treasury announces:

(a) the reintroduction of quarterly 3-year notes, in mid-quarter refundings;

- First 3-year note is auctioned May 6, 2003, and settled May 15, 2003.

(b) the addition of a scheduled reopening of 5-year notes, in the middle of the month following a *de novo* offering in a mid-quarter refunding.²¹

- First scheduled reopening is auctioned June 11, 2003, and settled June 16, 2003.

April 30, 2003

The Treasury announces:

(a) a change in the frequency of 5-year note offerings from eight times a year to monthly auctions of *de novo* notes;

- First *de novo* 5-year offering in other than a mid-quarter refunding is auctioned September 10, 2003, and settled September 15, 2003.

(b) the addition of a scheduled reopening of 10-year notes, in the middle of the month following a *de novo* offering in a mid-quarter refunding.²²

- First scheduled reopening is auctioned September 11, 2003, and settled September 15, 2003.

August 3, 2005

The Treasury announces the reintroduction of 30-year bond offerings on a semi-annual basis in mid-quarter refundings beginning in February 2006.²³

- First 30-year bond is auctioned February 9, 2006, and settled February 15, 2006.

²¹ First-quarter 2003 Treasury policy statement.

²² Second-quarter 2003 Treasury policy statement.

²³ Third-quarter 2005 Treasury policy statement. The announcement did not indicate how the bonds would be fit into the auction calendar.

November 2, 2005

The Treasury announces a change in the timing of monthly offerings of 5-year notes, from mid-month to the end of the month. The 5-year notes are to be offered in conjunction with 2-year notes.²⁴

- Last mid-month 5-year note is auctioned January 11, 2006, and settled January 17, 2006.
- First end-of-month 5-year note is auctioned February 23, 2006, and settled February 28, 2006.

August 2, 2006

The Treasury announces the expansion of 30-year bond offerings to a quarterly basis, with alternating *de novo* offerings and reopenings. It will offer a *de novo* 30-year bond in February and reopen it in May, and it will offer a *de novo* 29¾-year bond in August and reopen it in November.²⁵

- The *de novo* 30-year bond auctioned on February 8, 2007, and settled February 15 would have been a *de novo* offering even under the previous calendar. The first scheduled reopening under the new calendar is auctioned on May 10, 2007, and settled May 15, 2007. The first *de novo* August offering under the new calendar is auctioned August 9, 2007, and settled August 15, 2007.

May 2, 2007

The Treasury announces the termination of 3-year notes.²⁶

- Last 3-year note is auctioned May 7, 2007, and settled May 15, 2007.

April 30, 2008

The Treasury announces the reintroduction of 52-week bills on a quad-weekly basis.²⁷

- First 52-week bill is auctioned June 3, 2008, and settled June 5, 2008.

November 5, 2008

The Treasury announces:

²⁴ Fourth-quarter 2005 Treasury policy statement.

²⁵ Third-quarter 2006 Treasury policy statement.

²⁶ Second-quarter 2007 Treasury policy statement.

²⁷ Second-quarter 2008 Treasury policy statement.

(a) the reintroduction of 3-year notes on a mid-month monthly basis;

- First 3-year note is auctioned November 10, 2008, and settled November 17, 2008.

(b) the addition of a second scheduled reopening of 10-year notes, in the middle of the month following the first scheduled reopening;

- First offering of a second reopening is auctioned January 8, 2009, and settled January 15, 2009.

(c) an expansion to *de novo* offerings of 30-year bonds in every mid-quarter refunding.²⁸

- The November 2008 offering is left as a reopening of the bond first sold three months earlier. Because the February 2009 30-year offering would have been a *de novo* offering in any event, the *de novo* offering of a 30-year bond in May 2009 (auctioned May 7, settled May 9) is the first to reflect the changed policy regarding 30-year issuance.

February 4, 2009

The Treasury announces:

(a) the reintroduction of 7-year notes, on an end-of-month basis;

- First 7-year note is auctioned February 26, 2009, and settled March 2, 2009.

(b) the addition of a scheduled reopening of 30-year bonds, in the middle of the month following a *de novo* offering in a mid-quarter refunding.²⁹

- First scheduled reopening is auctioned March 12, 2009, and settled March 16, 2009.

April 29, 2009

The Treasury announces the addition of a second scheduled reopening of 30-year bonds, to take place in the middle of the month following the first scheduled reopening.³⁰

- First offering of a second scheduled reopening is auctioned July 9, 2009, and settled July 15, 2009.

²⁸ Fourth-quarter 2008 Treasury policy statement.

²⁹ First-quarter 2009 Treasury policy statement.

³⁰ Second-quarter 2009 Treasury policy statement.

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