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How Treasury Issues Debt

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Summary

The U.S. Department of the Treasury (Treasury), among other roles, manages the country's debt. The primary objective of Treasury's debt management strategy is to finance the government's borrowing needs at the lowest cost over time. To accomplish this Treasury adheres to three principles: (1) to issue debt in a regular and predictable pattern, (2) to provide transparency in the decisionmaking process, and (3) to seek continuous improvements in the auction process.

Within the Treasury, the Office of Debt Management (ODM) makes all decisions related to debt issuance and the management of the United States debt portfolio. When federal spending exceeds revenues, the ODM directs the Bureau of the Fiscal Service to borrow the funds needed to finance government operations by selling securities to the public and government agencies through an auction process. The Bureau of the Fiscal Service manages the operational aspects of the issuance of Treasury securities, including the systems related to and the monitoring of security auctions.

During the mid-1970s, Treasury faced a period of rising nominal federal budget deficits and debt requiring unanticipated increases in issuances of securities. Up to that point, debt management was characterized by an ad-hoc, offering-by-offering survey of market participants. At that time, Treasury implemented a new debt management strategy that provided greater transparency and reduced the potential for market volatility. The resulting debt management process modernized the market for Treasury securities, realizing the benefits of predictability in an environment of large deficits. A reliance on auctions became a central part of the strategy's increased focus on regular and predictable debt management.

Most of the debt sold by the federal government is marketable, meaning that it can be resold on the secondary market. Currently, Treasury offers five types of marketable securities: Treasury bills, notes, bonds, inflation protected securities (TIPS), and floating rate notes (FRNs), sold in about 270 auctions per year. A small portion of debt held by the public and nearly all intragovernmental debt (debt held by government trust funds) is nonmarketable.

Investors examine several key factors when deciding whether they should purchase Treasury securities, including price, expected return, and risk. Treasury securities provide a known stream of income and offer greater liquidity than other types of fixed-income securities. Because they are also backed by the full faith and credit of the United States, they are often seen as one of the safest investments available, though investors are not totally immune from losses. Security prices are determined by investors according to the value of such characteristics in the context of the financial marketplace.

Legislative activity can affect Treasury's ability to issue debt and can impact the budget process. Congress sets a statutory limit on the permissible amount of federal debt to assert its constitutional prerogatives to control spending and impose a form of fiscal accountability. The statutory limit on the debt can constrain debt operations, and, in the past, has hampered traditional practices when the limit was approached. The accounting of asset purchases in the federal budget has created differences between how much debt Treasury has to borrow to make those purchases and how much the same purchases will impact the budget deficit. If budget deficits continue to rise, thereby causing more resources to be devoted to paying interest on the debt, there will be fewer funds available to spend on other federal programs, all else equal. This report will be updated as events warrant.

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Introduction

The U.S. Department of the Treasury (Treasury) is responsible for issuing federal government debt. Debt issuance is a core component of Treasury's role as the manager of government operations, as it is needed when tax revenue collections are insufficient to meet the demand of federal obligations.[1] The primary objective of Treasury's debt management strategy is to finance the government's borrowing needs at the lowest cost over time. To accomplish this Treasury adheres to three principles: (1) to issue debt in a regular and predictable pattern, (2) to provide transparency in the decisionmaking process, and (3) to seek continuous improvements in the auction process.

Within the Treasury, the Office of Debt Management (ODM) makes all decisions related to debt issuance and the management of the United States debt portfolio. When federal spending exceeds revenues, the ODM directs the Bureau of the Fiscal Service to borrow the funds needed to finance government operations by selling securities to the public and government agencies through an auction process. The Bureau of the Fiscal Service manages the operational aspects of the issuance of Treasury securities, including the systems related to and the monitoring of security auctions.

The ongoing economic recovery and concerns over the long-term fiscal outlook of the United States illustrate the importance of Treasury's role in financing the obligations of the country. In addition, long-term obligations resulting from the retirement and rising health care costs of the Baby Boomer generation, in the absence of policy changes, are projected to cause large increases in future federal debt. Given these challenges, the ability to maintain efficient and stable debt markets to ensure confidence and liquidity will remain an issue going forward.

Treasury's debt management strategy can be complicated by challenges associated with approaches of total federal debt levels to the statutory debt limit. When the total amount of federal debt approaches the statutory debt limit, Congress may authorize the Treasury Secretary to invoke "extraordinary measures" to prevent the limit from binding. Those measures may compromise Treasury's ability to reach its borrowing objectives as it seeks to avoid the potential adverse effects associated with a binding debt limit. As the amount of money owed by the United States to holders of Treasury securities rises, interest payments can become a greater burden on taxpayers. If investors choose to purchase Treasury securities, less money is available to fund private sector investments and other financial instruments. To the extent that these securities are held by foreign governments or individuals abroad, those investors will be the beneficiaries of the interest payments.

This report examines Treasury's debt management practices, focusing on the auction process, how prices and interest rates of securities are determined, and the role of market participants in the process. It also addresses the role of debt in influencing present and future budget outcomes.

An Overview of Debt Management Practices

Congress holds the authority to issue debt on behalf of the United States through power granted in Article I, Section 8 of the Constitution. While this power was delegated to the Secretary of the Treasury in 1789, Congress retains ultimate control over spending through the budget and appropriations process, and revenue levels through tax legislation. If spending exceeds revenues,

[1] U.S. Department of the Treasury, *Duties & Functions of the U.S. Department of the Treasury*, available at http://www.treasury.ogv/about/role-of-treasury/.

Treasury determines what type of debt instruments are used to finance the borrowing necessary to fulfill all obligations.

The primary objective of Treasury's debt management strategy is to fulfill the government's borrowing needs at the lowest cost over time. Beyond financing the federal government, the success of Treasury's debt management strategy also affects global markets due to the influential role of the United States in the world economy. As noted earlier, Treasury adheres to three debt management principles: (1) to issue debt in a regular and predictable pattern, (2) to provide transparency in the decisionmaking process, and (3) to seek continuous improvements in the auction process.[2] Adoption of this strategy helps to maximize government contributions to growth and efficiency in both the domestic and global capital markets.

Development of modern debt management dates to the passage of the Second Liberty Bond Act of 1917. As amended, that legislation designated the Treasury Secretary as the principal authority to determine the types of issues, terms, and techniques most appropriate to manage public debt. Before this measure, interest rates and maturity periods of bonds were set by legislation and congressional authority.[3] Further refinements in debt management policy came when Treasury established the Bureau of Public Debt within the Office of Fiscal Service in June 1940. In the late 1980s, ODM, formerly known as the Office of Market Finance, became the central office responsible for the decision making behind Treasury's borrowings. The Bureau of the Public Debt and the Financial Management Service (FMS) merged in 2012 to form the Bureau of the Fiscal Service. The Bureau of the Fiscal Service now oversees the operational aspects of the federal government borrowing process, accounts for and services federal debt, and provides reimbursable support services to federal agencies under the authority of the Treasury Franchise Fund.[4] It also conducts auctions of Treasury securities to allow individuals, institutions, and financial professionals to invest in Treasury bills, notes, bonds, inflation-protected securities (TIPS), and floating rate notes (FRNs).

The Federal Reserve (Fed) works alongside the Treasury in the debt management process, acting as Treasury's fiscal agent. The Fed was created in 1913 to institute stability in the banking sector following a time of financial panic. Initially, the Fed's role was primarily to oversee the money supply and supervise the banks during a time of increased borrowing needs as the United States sought ways to finance World War I expenses.[5] For the first several decades of its existence, the Fed worked closely with Treasury to implement fiscal policy goals. Since the early 1950s, however, the Fed has operated independently from Treasury and uses its open market operations to manage the amount of money and credit in the economy via monetary policy. The Fed also provides banking services to the federal government by maintaining deposit accounts for

[2] U.S. Department of the Treasury, Office of Domestic Finance, Overview of U.S. Treasury Debt Management, available at http://www.treasury.gov/about/organizational-structure/offices/Pages/-Debt-Management.aspx.

[3] Tilford C. Gaines, *Techniques of Treasury Debt Management* (New York: The Free Press of Glencoe, 1962), pp. 19, 21, 154.

[4] The Treasury Franchise Fund provides common administrative support services to other parts of Treasury as well as other government agencies on a competitive and fully cost-reimbursable basis. The collection of delinquent debt owed to the U.S. government is collected by the Financial Management Service. Department of the Treasury, Bureau of the Fiscal Service, *Treasury Franchise Fund, Fy2016 President's Budget,* available at http://www.treasury.gov/about/budget-performance/CJ16/22.%20TFF%20FY%202016%20CJ.pdf.

[5] The Federal Reserve Bank of Minneapolis, *Born of a Panic: Forming the Fed System*, August 1988, http://www.minneapolisfed.org/publications/the-region/born-of-a-panic-forming-the-fed-system.

Treasury, paying U.S. government checks drawn on the Treasury, and issuing and redeeming savings bonds and other government securities.[6]

How Treasury Sells Debt

During the mid-1970s, the economy experienced a period of rising nominal federal budget deficits, which increased debt issuance and disrupted financial markets. At that time, Treasury decided that it needed a new strategy to provide greater transparency and regularity in debt management.[7] The resulting debt management process modernized the market for Treasury securities, realizing the benefits of predictability in an environment of large deficits. The modernization also induced policymakers to improve institutional practices.[8] As a result, Treasury was able to raise large amounts of money with a minimal impact on the financial markets. These policies also extended the average maturity of the national debt and produced a better defined yield curve.[9]

Auction Process

Auctions are the cornerstone of Treasury's debt management strategy.[10] Auctions and their offering amounts are scheduled and announced in advance of the auction date. Bidders in Treasury auctions may be either foreign or domestic and individual or institutional investors, or federal, state, or local government entities. Treasury securities can be purchased via a web-based account using the department's Treasury Direct system. Purchases of Treasury bills, notes, bonds, TIPS, floating rate notes, and savings bonds can be made through this system.

The yield-to-maturity, interest coupon rate, and the discount (or premium) on a Treasury security are key to understanding the auction process. The yield-to-maturity rate is the rate of return anticipated on a security if it is held until the maturity date and is what is specified by a competitive bidder at the auction. The interest coupon rate is set at the highest yield level, in increments of one-eighth of one percent, which does not result in a price greater than 100% of principal.[11] If the price of a Treasury security, as determined at auction, is less than the face value of the security, then the security may be described as purchased at a discount—if the price exceeded the value of the security, it is described as purchased at a premium.

Auction bids for Treasury securities may be submitted as noncompetitive or competitive. With a noncompetitive bid, a bidder agrees to accept the discount rate (or yield) determined at auction and is guaranteed to receive the full amount of the bid. With a competitive bid, a bidder specifies

[6] History of the Federal Reserve, available at http://www.federalreserveeducation.org/about-the-fed/history/. For more information, see CRS Report RS20826, *Structure and Functions of the Federal Reserve System*, by Marc Labonte.

[7] Previously, debt was issued on an offering-by-offering survey of the market, whereby Treasury officials made decisions on what type of maturities to offer and when they should be offered based on anticipated needs. Auctions were used during this time for certain types of securities and some predictability did exist.

[8] Treasury bills had been issued on a regular basis for decades. With the new strategy, Treasury began issuing notes and bonds on a schedule as well. Garbade, Kenneth D., *The Emergence of "Regular and Predictable" as a Treasury Debt Management Strategy*, FRBNY Economic Policy Review, March 2007, pp. 54-55.

[9] Garbade, Kenneth D., *The Emergence of "Regular and Predictable" as a Treasury Debt Management Strategy*, FRBNY Economic Policy Review, March 2007, pp. 54-55.

[10] Though auctions were the main component of the new strategy, Treasury had tried to institute an auction-based system in 1935 and 1963. Both of these earlier attempts failed.

[11] There are no coupon rates for Treasury bills – bills are sold on a discount basis.

the yield that is acceptable.[12] A bid may be accepted in a full or partial amount if the rate specified is less than or equal to, respectively, the discount rate set by the auction.

Once the auction closes, all noncompetitive bids are accepted and competitive bids are ranked based on yield, from lowest to highest. Competitive bids are accepted, starting at the lowest yield, until the offering amount has been exhausted. The highest accepted yield becomes the "stop." A competitive bid will not be accepted if the rate specified in the bid is higher than the yield set at the auction. Though interest payments received by successful bidders may vary based on the yield specified in their auction bids, all securities in an auction are sold for a single price, computed based on the "stop" yield.[13]

Marketable Securities

Most of the debt sold by the federal government is marketable, meaning that securities are sold via the auction process and can be resold on the secondary market. Currently, Treasury offers five types of marketable securities: Treasury bills, notes, bonds, inflation protected securities (TIPS), and floating rate notes (FRNs). Treasury sold their securities in 272 public auctions in 2015.[14] If Treasury borrowing requirements or financing policy decisions change, the types of securities, the length of maturity periods, and offering amounts could be altered.

Treasury Bills

Treasury bills (T-bills) are short-term securities that mature in one year or less. T-bills are sold at a discount from their face value. The interest rate determines the discount from face value and the price paid at auction. When the bill reaches maturity, the investor receives the face value. T-bills are currently being offered with maturities of 4, 13, 26, and 52 weeks. Auctions for T-bills take place weekly on Tuesdays (4-week bills) and Mondays (13- and 26-week bills). Every 4 weeks, 52-week bills are auctioned on Tuesdays as well. The timing from the announcement of the auction, to its execution, to issuance of the purchased security is generally between 7 and 10 days.[15]

Treasury Notes

Treasury notes are interest-bearing securities, offered in multiples of $100, currently being offered in 2-, 3-, 5-, 7-, and 10-year fixed maturities. The relationship between yield to maturity and the interest rate determines the price at auction. If the yield-to-maturity is greater than/equal to/less than the interest rate, the price will be less than/equal to/greater than par (face) value. Treasury notes pay interest on a semi-annual basis and the investor receives the face value when

[12] For bills and TIPS auctions, the bids are offered in terms of a discount rate rather than a yield.

[13] Garbade, Kenneth D. and Jeffrey F. Ingber, *The Treasury Auction Process: Objectives, Structure, and Recent Adaptations*, FRBNY Current Issues in Economics and Finance, February 2005, pp. 2-3.

[14] Cash management bills are occasionally offered in order to meet short- and medium-term cash needs as determined by Treasury. These bills mature on dates determined by Treasury based on need, generally a few days from issue. Occasionally, Treasury also offers reopenings of previous auctions where additional amounts of a previously issued security are sold at the same coupon interest rate and maturity, but with a different issue date and price.

[15] U.S. Department of the Treasury, Treasury Bills, available at http://www.treasurydirect.gov/instit/marketables/tbills/tbills.htm.

the note matures. Treasury notes are currently being auctioned on a monthly basis (2-, 3-, 5-, and 7-year notes) and quarterly (10-year notes).[16]

Treasury Bonds

Treasury bonds are interest-bearing securities, offered in multiples of $100, with maturities of 30 years. The price, yield, and interest rate of a Treasury bond are determined at auction in the same way as a Treasury note. Treasury bonds pay interest on a semi-annual basis and investors receive face value when the bond matures. Treasury bonds are currently auctioned quarterly.[17]

Treasury Inflation-Protected Securities (TIPS)

TIPS are interest-bearing securities that protect investors from inflation. TIPS are offered in multiples of $100, with maturity periods of 5, 10, and 30 years. The TIPS principal adjusts based on the movements in the consumer price index (CPI-urban, non-seasonally-adjusted) with a three-month lag. The adjustments in the principal of the security form the basis for the interest payments, paid semiannually at a fixed rate. If inflation/deflation occurs, the interest payment increases/decreases. However, when a TIPS matures, the investor is paid the inflation-adjusted principal or original principal, whichever is greater. TIPS are currently being offered in April (5-year), January and July (10-year), and February (30-year).[18]

Treasury Floating Rate Notes (FRNs)

Treasury began issuing Floating Rate Notes (FRNs) in January 2014. FRNs are sold in increments of $100, and have a 2-year maturity period. The interest rate on FRNs is tied to the discount rate for 13-week Treasury bills. This relationship protects investors from the effects of a rise in interest rates, in exchange for offerings at lower yields than fixed-rate debt instruments with equivalent maturity periods. Auctions for FRNs take place at the end of each month.[19]

Nonmarketable Securities

Nonmarketable debt is composed of approximately 2% of publicly held debt and nearly all intragovernmental debt. Publicly held debt that is nonmarketable is primarily the state and local government series and savings bonds.[20] Intragovernmental debt is largely composed of debt owed

[16] Initial offerings of 10-year notes are currently auctioned in February, May, August and November. Each initial offer is followed by two reopenings of the same issue in January, March, April, June, July, September, October, and December. In a security reopening, the U.S. Treasury issues additional amounts of a previously issued security. The reopened security has the same maturity date and interest payment date as the original security, but has a different issue date and usually a different price. U.S. Department of the Treasury, Treasury Notes, available at http://www.treasurydirect.gov/instit/marketables/tnotes/tnotes.htm.

[17] Initial offerings of 30-year bonds are currently auctioned in February, May, August, and November. Each initial offer is followed by two reopenings in the two months following the initial auction. U.S. Department of the Treasury, Treasury Bonds, available at http://www.treasurydirect.gov/instit/marketables/tbonds/tbonds.htm.

[18] U.S. Department of the Treasury, Treasury Inflation-Protected Securities, available at http://www.treasurydirect.gov/instit/marketables/tips/tips.htm.

[19] U.S. Department of the Treasury, Floating Rate Notes (FRNs) In Depth, available at https://www.treasurydirect.gov/indiv/research/indepth/frns/res_frn.htm.

[20] U.S. Department of the Treasury, Bureau of the Fiscal Service, *Monthly Statement of Public Debt*, July 2016, Tables I, available at https://www.treasurydirect.gov/govt/reports/pd/mspd/2016/opds072016.pdf.

by Treasury to the Social Security, Civil Service Retirement and Disability, Military Retirement, and Medicare trust funds.[21]

The main purpose of publicly held nonmarketable debt is to protect the bearers from market risk. The state and local government series was created in 1972 to restrict state and local governments from earning arbitrage profits by investing any tax-exempt bond proceeds in investments that may generate higher yields, thereby risking the returns. This program sells Treasury securities to state and local governments to help them comply with this requirement. Savings bonds provide a means for the small investor to participate in government financing. Savings bonds have been sold continuously since 1935 when they were introduced to encourage broad public participation in government financing by making federal bonds available in small denominations.[22]

U.S. government trust funds, which compose intragovernmental debt, contain revenues designated by law for a specific purpose. When revenues in the trust funds exceed benefit payments, the unspent monies must remain in the trust fund for future use. However, this excess cash is transferred to the Treasury's General Fund and is used to finance other activities which fall outside the specific purpose of the trust fund. In exchange, the trust fund is issued a Treasury "special issue" security to be redeemed at face value at any time in the future when the funds are needed.[23] Special issue securities are available only to trust funds and are designated as nonmarketable, earning interest on a semi-annual basis. The interest rate is determined by formula, based on the average yield of certain marketable securities.[24] Securities of this type protect the trust fund investments from market fluctuations.

Role of Federal Reserve and Primary Dealers

The Federal Reserve serves as Treasury's fiscal agent. In this role, it is responsible for the primary dealer relationships which are used not only for Treasury auctions but other open market operations to conduct monetary policy. In addition, the Federal Reserve plays an important role in the operational aspects of the auction process and payments mechanism. The Federal Reserve is not responsible for making debt issuance decisions—this responsibility rests solely within Treasury's ODM to ensure the independence of the two institutions.

In addition, the Fed is a holder of Treasury securities. It is involved in the purchase and resale of these securities to the secondary market through its open market operations. These operations help keep the federal funds rate close to a target rate that is set by the Federal Open Market Committee. Its holdings of Treasury securities amounted to nearly $2.5 trillion as of August 2016.[25] Any profits earned by the Fed through the sale of Treasury securities and other activities are remitted to Treasury and recorded as revenues in the federal budget.[26] The Federal Reserve

[21] U.S. Department of the Treasury, Bureau of the Fiscal Service, *Monthly Treasury Statement*, July 2016, Table 6 – Schedule D, available at https://www.fiscal.treasury.gov/fsreports/rpt/mthTreasStmt/mts0716.pdf.

[22] Such offerings of Treasury securities dated back to 1776. Between 1776 and 1935, these securities were marketable and subjected the investor to market fluctuation. Particularly during World War I, small investors incurred significant losses if they were forced to sell their bonds prior to maturity.

[23] The trust funds now hold only special issues, but they have held public issues in the past.

[24] The specifications for securities issued to each type of trust fund are listed in separate places in the U.S. Code. Specifications for the Social Security Trust Fund can be found in 42 USC §401. Specifications for the Civil Service Retirement and Disability Fund can be found in 5 USC §8348.

[25] Federal Reserve, St. Louis Branch, U.S. Treasury securities held by the Federal Reserve: All Maturities, available at https://research.stlouisfed.org/fred2/series/TREAST. Currency, not Treasury securities, is the Fed's primary liability. Treasury securities are assets to the Fed.

[26] For more information on the Fed's activities, see CRS Report RL34427, *Financial Turmoil: Federal Reserve Policy*

banks also act as fiscal agents and depositories for Treasury accounts by accepting deposits of federal taxes and other federal agency receipts and processing checks and electronic payments drawn on the account.

The Fed's monetary policy actions can affect interest rates on Treasury securities in the short run. The Fed conducts its monetary policy by setting a federal funds rate, the price at which banks buy and sell reserves on an overnight basis, based on the supply and demand for bank reserves. Monetary actions by the Fed generally affect short-term nominal interest rates. If the Fed lowers the federal funds rate, resulting in a lower short-term interest rate, long-term interest rates are likely to fall also, though they may not fall as much or as quickly.[27]

Primary dealers are securities brokers and dealers who are registered to operate in the government securities market and have a trading relationship with the Federal Reserve Bank of New York.[28] Primary dealers are the largest purchasers of Treasury securities sold to the public at auction.[29] In many cases, auction purchases by primary dealers are later sold on the secondary or "when-issued" markets (see discussion in the next section).

In addition to their role in the auction process, the primary dealers also work closely with the Fed to execute its monetary policy. These primary dealers are large financial institutions who the Fed relies on to act as intermediaries through which Treasury securities are bought and sold and then resold on the secondary market to increase or decrease the money supply. They are expected to maintain trading relationships with the Fed's trading desk and provide the trading desk with market information and analysis that may be useful to the Fed in the formulation and implementation of monetary policy. The primary dealers also use this system to help them meet their liquidity needs by swapping securities with the Fed on an overnight basis. This type of securities lending has no effect on general interest rates or the money supply since it does not involve cash, but can affect the liquidity premium of the securities traded.

Other Purchasers of Treasury Securities

Along with the primary dealers and the Fed, individual investors, other dealers and brokers, private pension and retirement funds, insurance companies, investment funds, and foreign investors (private citizens and government entities) also purchase Treasury securities through the auction process and on the secondary market. Treasury releases a variety of data on purchasers of Treasury securities following each auction. The data are arranged into two categories, bidder category data and investor class data. The bidder category data show purchases by primary dealers, direct bidders, indirect bidders, and noncompetitive bidders by bill type. The investor class data describes the type of individual or institution bidding for the bill.[30]

Responses, by Marc Labonte.

[27] The federal funds rate is linked to the interest rates that banks and other financial institutions charge for loans – or the provision of credit. Thus, while the Fed may directly influence only a very short-term interest rate, this rate influences other longer-term rates. However, this relationship is far from being on a one-to-one basis since the longer-term market rates are influenced not only by what the Fed is doing today, but what it is expected to do in the future and what inflation is expected to be in the future. For more information, see CRS Report RL30354, *Monetary Policy and the Federal Reserve: Current Policy and Conditions*, by Marc Labonte.

[28] A list of current primary dealers can be found at http://www.newyorkfed.org/markets/pridealers_listing.html.

[29] Purchases by primary dealers can be found at http://www.treasurydirect.gov/instit/annceresult/auctdata/auctdata_stat.htm.

[30] Auction results are available at http://www.treasurysecurities.gov/RI/OFGateway and http://www.treas.gov/offices/domestic-finance/debt-management/investor_class_auction.shtml. For an analysis of bidder category and investor class

Limitations exist on the data available for treasury security purchases. For example, ownership of a marketable security can change until it matures, meaning that the data (which lists ownership at the time of the auction) may not reflect the updated ownership composition. This is particularly true of primary dealers who purchase large amounts of securities and then resell them on the secondary market.

Secondary and Repurchase Markets

Participants in the secondary market play an indirect role in determining the price of Treasury securities. Once an auction is announced by Treasury, dealers and market participants start trading securities on a "when-issued" basis, meaning that once a security is purchased and issued, it will be immediately resold to the secondary market purchaser. Because trading starts in the secondary market before the actual auction takes place, "when-issued" market participants effectively determine the yield or discount rate of Treasury securities based on what they are willing to pay.[31]

Transactions of Treasury securities between investors and companies or dealers on the repurchase (repo) market play a role in the effective functioning of the credit markets. In the repo market, transactions take place between two parties who exchange Treasury securities, often on a very short-term basis, for cash. The company or dealer pays the investor an agreed upon rate of interest for use of the funds with the expectation that the Treasury security will be repurchased at the mutually agreed upon future date. This process provides the company or dealer with the liquidity needed to meet immediate obligations.

The inability or unwillingness of some investors to return Treasury securities during recent economic recession led to volatility in the repo market that affected market liquidity. In the fall of 2008, failures in this market spiked to nearly $2.7 trillion, half of the market's total value, due to the general market panic caused by the bankruptcy of Lehman Brothers. These settlement fails were the highest ever recorded. Treasury took the unprecedented response of reopening four securities in October 2008 to renew market functioning.[32] In addition, the Treasury Market Practice Group, a private sector group sponsored by the Federal Reserve Bank of New York, suggested new guidelines to lower the level of future failures. Their recommendations resulted in the implementation of a three percentage point fee on failed repo transactions. Activity in the secondary and repurchase markets increased as the economy improved.[33]

data, see Fleming, Michael J., *Who Buys Treasury Securities at Auction?*, FRBNY Current Issues in Economics and Finance, January 2007.

[31] Garbade, Kenneth D. and Jeffrey F. Ingber, *The Treasury Auction Process: Objectives, Structure, and Recent Adaptations*, FRBNY Current Issues in Economics and Finance, February 2005, p. 2.

[32] Data on Treasury fails back to July 1990 are available on the FRBNY's website at http://www.newyorkfed.org/markets/pridealers_failsdata.html. Settlement fails are reported on a cumulative basis. For example, if a dealer fails to deliver $50 million in securities on the agreed upon date, but makes the delivery one day late, the fail is recorded at $50 million. However, if the $50 million is delivered 4 days late, the fail is valued at $200 million ($50m x 4). For more information, see Fleming, Michael J. and Kenneth D. Garbade, *Explaining Settlement Fails*, FRBNY Current Issues in Economics and Finance, September 2005.

[33] James Clark and Tom Katzenbach, "Examining Changes in the Treasury Repo Market after the Finanical Crisis," Department of Treasury, *Treasury Notes*, August 12, 2016.

Managing Federal Financial Flows

The Treasury Secretary manages revenue, works to improve public credit, and provides for on-time revenue collection and payment of debts.[34] If federal government finances are not well managed, financial stability and economic growth could be at risk. Throughout the year, the balance held by Treasury can fluctuate significantly as a result of higher or lower revenue collections or issuance of more or less debt during certain periods. As a result, Treasury must ensure that adequate funds are available, either via revenue streams or borrowing, to finance obligations. In order to finance the government's obligations while minimizing borrowing costs, Treasury must accurately project what cash requirements will be needed on a daily basis to cover government payments especially given these variations.[35]

The total amount of debt issued over the fiscal year depends in large part on the decisions made by Congress and the priorities it chooses in its annual budget and appropriations process. Recently, Treasury has issued increasing amounts of debt as a result of the government response to the most recent economic downturn, along with other budgetary initiatives. Over the longer term, these priorities could change as the economy recovers and decisions on how to finance the promises to retirees for healthcare and other benefits may increase the demands on Treasury's debt issuance. Treasury's financing needs generally follow a predictable seasonal pattern in response to changes in the level of public debt. Growth in public debt is typically lowest in April, due to the filing of personal income tax returns paid during that month, and highest in September, as a result of the need to meet obligations due at the end of the fiscal year.

In addition to funding the needs of the government, Treasury manages the accounts of government agencies through the Bureau of the Fiscal Service. Loans are provided to Departments or Agencies in order to meet obligations, such as payments owed to eligible beneficiaries of social service programs. FMS disburses payments to individuals and businesses, collects federal revenue, and issues government-wide financial reports.

How Much Debt is Outstanding?

Gross federal debt is composed of debt held by the public and intragovernmental debt. Debt held by the public, issued through the Bureau of the Fiscal Service, is the total amount the federal government has borrowed from the public and remains outstanding. This measure is generally considered to be the most relevant in macro-economic terms because it is the amount of debt sold in credit markets. Intragovernmental debt is the amount owed by the federal government to other federal agencies, primarily in the Social Security, Medicare, and Civil Service Retirement and Disability trust funds, to be paid by Treasury.[36]

The Bureau of the Fiscal Service provides various breakdowns of debt figures. The most up-to-date data on federal debt can be found on the "Debt to the Penny" section of the Bureau's Treasury Direct website.[37] The Daily Treasury Statement (DTS) and Monthly Treasury Statement (MTS) provide greater detail on the composition of federal debt, including the operating cash

[34] U.S. Department of the Treasury, available at http://www.treasury.gov/about/role-of-treasury/Pages/default.aspx.

[35] U.S. Department of the Treasury, *Strategic Plan: Department of the Treasury, Fiscal Years 2014-2017*.

[36] For additional analysis of federal debt levels, see CRS Report R44383, *Deficits and Debt: Economic Effects and Other Issues*, by Grant A. Driessen.

[37] See http://www.treasurydirect.gov/. Debt information typically lags the current business day by one to two business days.

balance, the types of debt sold, the amount of debt subject to the debt limit, and federal tax deposits.[38] The Monthly Statement of the Public Debt (MSPD) includes figures from the DTS as well as more detailed information on the types of Treasury securities outstanding.[39] The Office of International Affairs provides figures on the amount of debt held by foreigners through the Treasury International Capital System (TIC).[40] The TIC data reflect estimates of who holds Treasury securities at a given period of time, which may be different from who purchased these securities at auction.

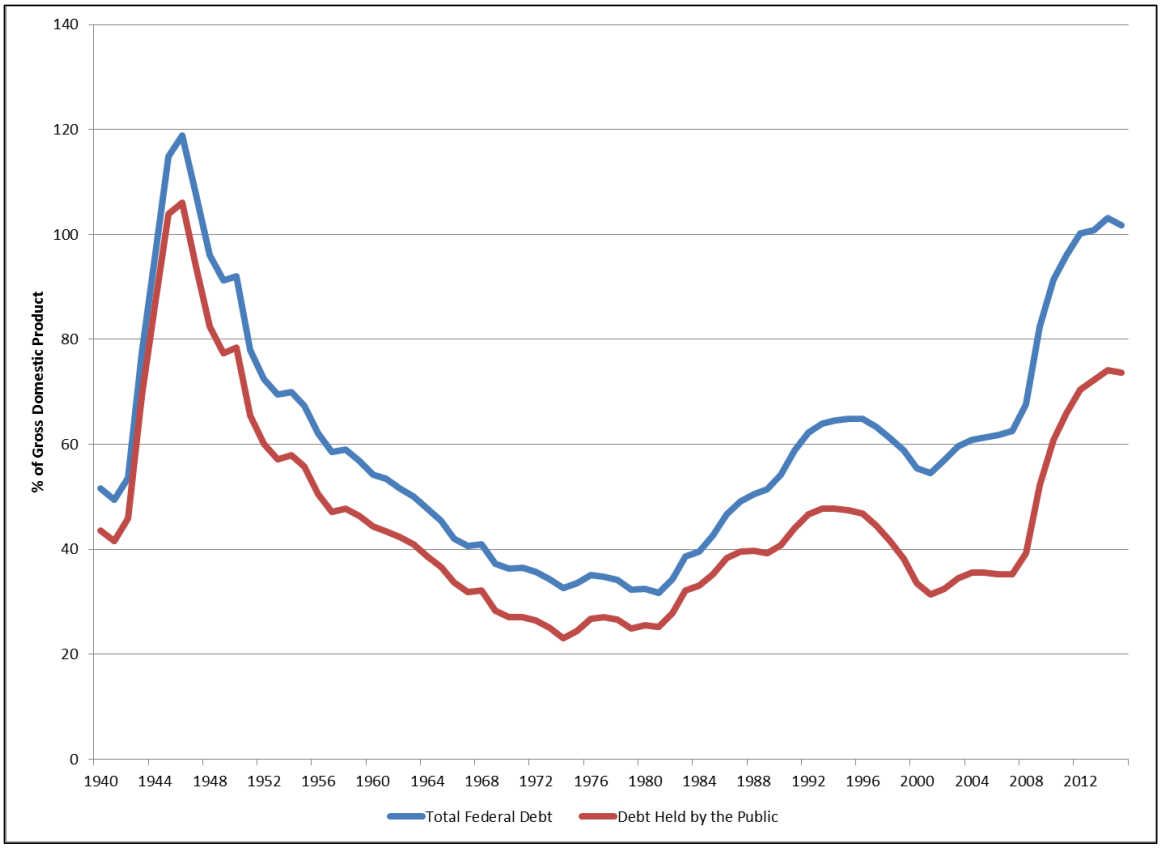
Figure 1 shows changes in debt levels as a percentage of GDP from 1940 to 2015. Although nominal debt levels have steadily risen in the post-war period, debt measured as a percentage of GDP declined precipitously for several decades following its peak at 118% in 1946 until it reached 32% by 1981. Real debt levels have subsequently undergone significant increases in the past few decades. At the end of fiscal year 2014, total debt was 103.2% of GDP and publicly held debt equaled 74.1% of GDP. These totals represented the highest values recorded since 1947 and 1950, respectively. Total federal debt and federal debt held by the public declined from FY2014 and FY2015, to 103.2% of GDP and 73.7% of GDP respectively. Prior to FY2015, total federal debt had not experienced an annual decline since FY2001, and debt held by the public had not declined since FY2007.

[38] Current issues of the DTS and MTS, respectively, can be found at http://fms.treas.gov/dts/index.html and http://fms.treas.gov/mts/index.html.

[39] The current issue of the MSPD can be found at http://www.treasurydirect.gov/govt/reports/pd/mspd/mspd.htm.

[40] Data on major foreign holders of Treasury securities by country is available at http://www.treas.gov/tic/ticsec2.shtml#ussecs.

Figure 1. Total Federal Debt and Debt Held by the Public as a Percentage of GDP, FY1940-FY2015



Source: Office of Management and Budget, *FY2017 Historical Tables*, Table 7.1. Figure created by CRS.

Notes: Values from the end of each fiscal year.

Levels of federal debt change on a daily basis. On August 12, 2016, for example, gross federal debt totaled $19.403 trillion, intragovernmental debt totaled $5.390 trillion, and debt held by the public totaled $14.013 trillion. By the next business day, August 15, 2016, gross federal debt rose to $19.420 trillion, as intragovernmental debt rose to $5.396 trillion while debt held by the public rose to $14.024 trillion.[41]

Treasury also estimates who owns federal securities. Because marketable Treasury securities can be and are often sold on the secondary market, ownership will change over time. As of March 2016, the latest period for which such estimates are available, gross debt totaled $19.265 trillion, of which, $7.801 trillion was owned by the Federal Reserve and Intragovernmental Holdings. U.S. savings bonds accounted for $0.170 trillion and foreign and international holdings accounted for $6.148 trillion. The remainder of the debt was held in depository institutions (i.e., commercial banks), pension funds, insurance companies, mutual funds, state and local governments, and other investors (i.e., individuals and corporations).[42]

[41] Bureau of the Fiscal Service, "DTS Archive," available at https://fms.treas.gov/fmsweb/DTSFilesArchiveAction.do.

[42] U.S. Department of the Treasury, Bureau of the Fiscal Service, *Treasury Bulletin*, June 2016, Table OFS-2, available at https://www.fiscal.treasury.gov/fsreports/rpt/treasBulletin/current.htm. For more information about foreign ownership of Treasury securities, see CRS Report RS22331, *Foreign Holdings of Federal Debt*, by Marc Labonte and Jared C. Nagel.

Factors Affecting Supply and Demand for Treasury Securities

Investors examine several key factors when deciding whether they should purchase Treasury securities. As with all types of investments, price, expected return, and risk play a role in this process. Treasury securities provide a known stream of income and offer greater liquidity than other types of fixed-income securities. Prices are determined by investors who place a value on Treasury securities based on the characteristics of safety and liquidity afforded by this investment option.[43] Because they are also backed by the full faith and credit of the United States, they are often seen as one of the safest investments available, though investors are not totally immune from losses. The behavior of the market can lead to price changes, changes in interest rates, or inflation, which does create some investment risk. Despite the current economic conditions and financial market volatility, Treasury securities have remained attractive to investors.

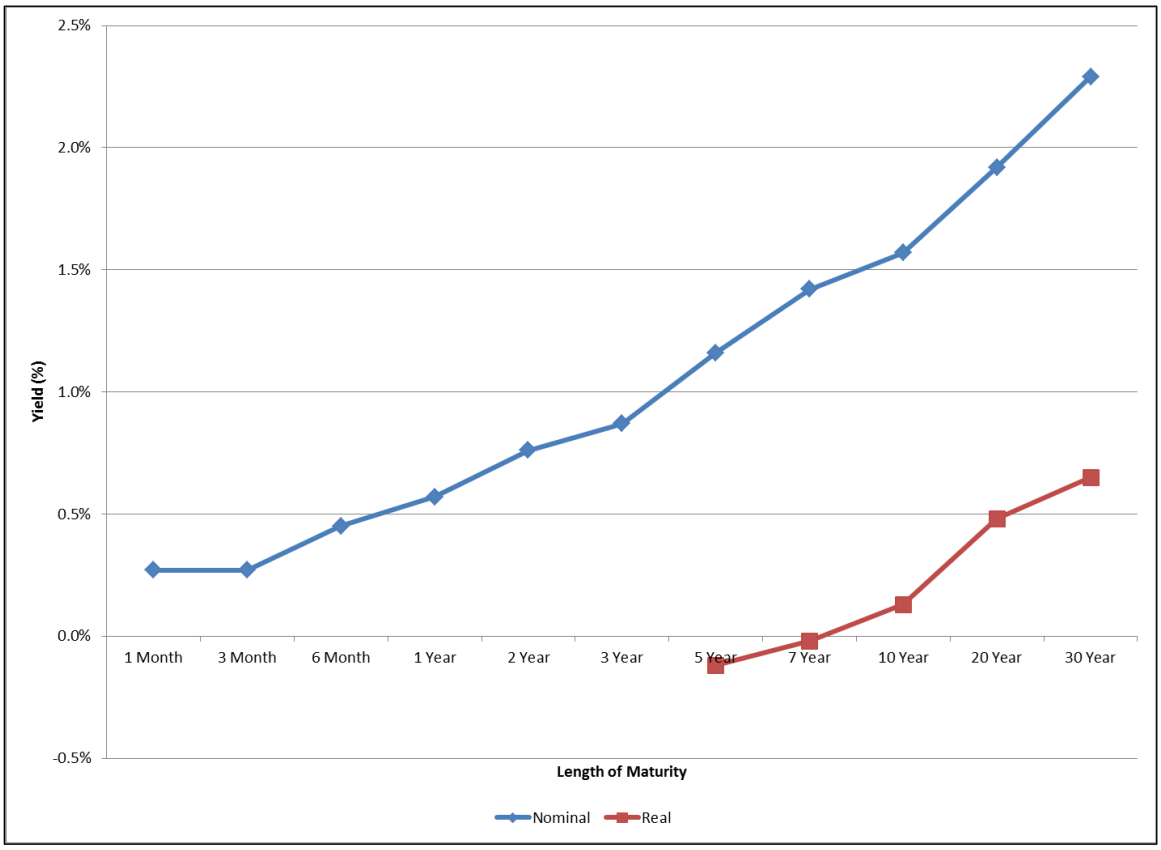
Yield Curve

The yield curve shows the relationship between the interest rate (cost of borrowing) and the maturity of debt (i.e., U.S. Treasury securities) at a given time. In other words, the yield represents the rate of return an investor would earn if a security was held to maturity. The yield curve typically changes on a daily basis as interest rates move. Generally, yield curves are upward sloping (i.e., the longer the maturity, the higher the yield), with diminishing rates of increase over time. **Figure 2** shows the nominal and real yield rates for Treasury securities as of August 16, 2016. Yield rates increased on both a nominal and real basis with the maturity length of the security, ranging on a nominal basis from 0.27% for a 1-month security to 2.29% for a 30-year security.

[43] Dupont, Dominique and Brian Sack, *The Treasury Securities Market: Overview and Recent Developments*, Federal Reserve Board, Federal Reserve Bulletin, December 1999, pp. 792-793, available at http://www.federalreserve.gov/pubs/bulletin/1999/1299lead.pdf.

Figure 2. Nominal and Real Yield Rates of Selected Treasury Securities

As of August 16, 2016



Source: U.S. Department of the Treasury, Historic Yield Data. Available at https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/Historic-Yield-Data-Visualization.aspx. Figure created by CRS.

Notes: Real yield data not available for maturities of lengths shorter than 5 years. Horizontal axis not to scale.

Two opposing forces affect the slope and shape of the yield curve. First, investors must be compensated for choosing to invest now even though they may be able to achieve higher interest rates if they invested at a future point in time. This pushes interest rates up. Opposing this increase in interest rates is the fact that the longer the period to maturity, the greater the likelihood that interest rates will fall. This increases the risk to the lender (i.e., Treasury), as they could save on interest costs if they decided to wait before borrowing money. Generally speaking, the first effect will outweigh the second, leading to an upward sloping yield curve. An upward sloping yield curve also illustrates expectations for future economic growth and rising short-term interest rates. A downward-sloping curve implies that investors expect short-term interest rates to rise above long-term rates.[44] These yield curves have frequently occurred before recessions.[45]

Yields can change for the same maturities from auction to auction and can vary on a daily (business day) basis. Treasury's Office of Debt Management generates the official daily yield

[44] Federal Reserve Bank of San Francisco, *What is a yield curve, and how do you read them? How has the yield curve moved over the past 25 years?*, July 2004, available at http://www.frbsf.org/education/activities/drecon/answerxml.cfm?selectedurl=/2004/0407.html.

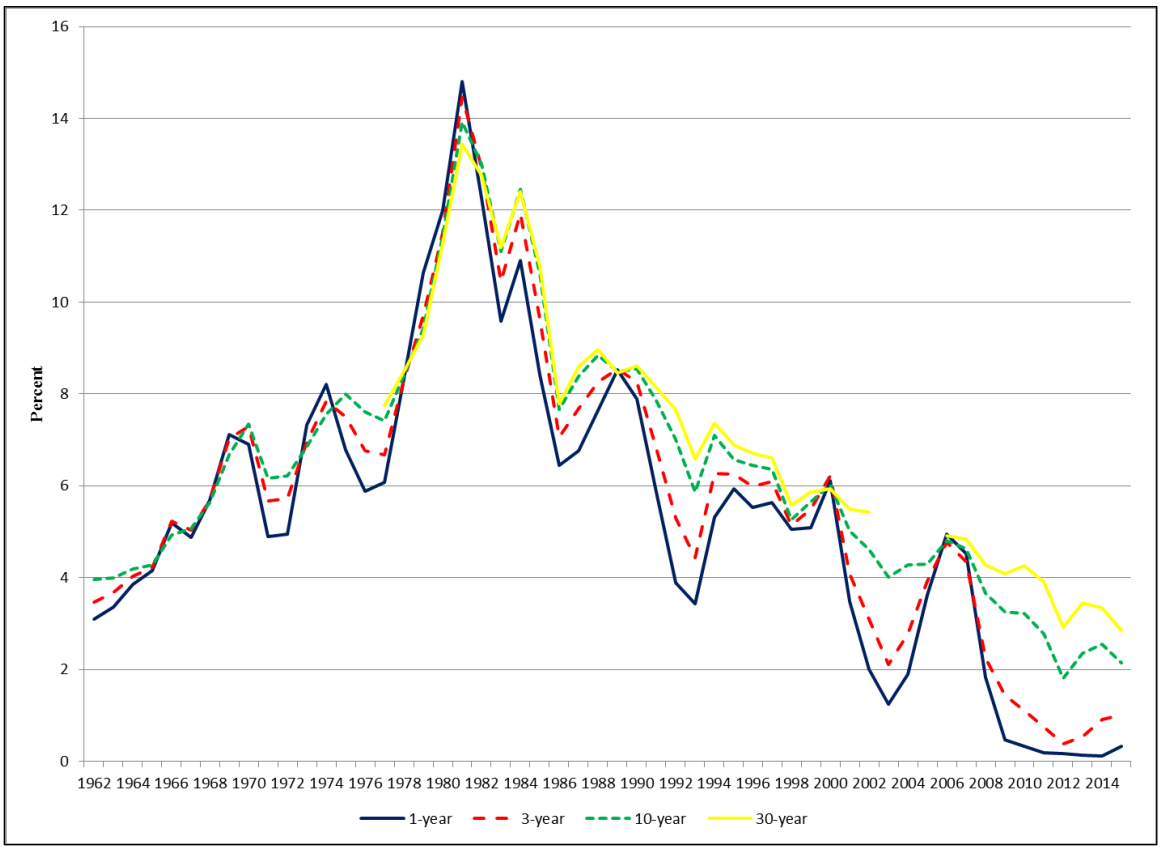
[45] For more information, see CRS Report RS22371, *The Pattern of Interest Rates: Does It Signal an Impending Recession?*, by Marc Labonte and Gail E. Makinen. Out of print. Available to congressional clients upon request.

curves to calculate a rate of constant maturity on Treasury securities in order to provide a meaningful measure of the yield on a security with a 10-year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity.[46] All securities with the same length to maturity must have the same yield, even if they were originally issued with different maturities or coupon rates. Yields are equalized through price changes.

Figure 3 shows the Treasury constant maturity rates for selected maturities since 1962. Rates on securities with different maturities generally track each other. This is because securities with similar maturity periods tend to have similar rates because they offer fixed interest payments over essentially the same period of time. Given that securities with longer maturities tend to reflect expectations about the future path of the interest rates of short-term securities, short-term rates generally provide a picture of the path of their longer-term counterparts. Therefore, over history, movements in constant maturity rates have generally tracked each other, regardless of length of maturity.[47]

Figure 3. Selected Treasury Nominal Constant Maturity Rates

Annual rates, 1962-2015



Source: Federal Reserve Board, Federal Reserve Statistical Release, H.15 Selected Interest Rates, U.S. Government Securities – Annual Series, available at http://www.federalreserve.gov/releases/h15/data.htm.

[46] For information on the methodology used to calculate the constant maturity yields, see http://www.treas.gov/offices/domestic-finance/debt-management/interest-rate/yield.shtml.

[47] Dupont, Dominique and Brian Sack, *The Treasury Securities Market: Overview and Recent Developments*, Federal Reserve Board, Federal Reserve Bulletin, December 1999, pp. 793-794, available at http://www.federalreserve.gov/pubs/bulletin/1999/1299lead.pdf.

Notes: Treasury began issuing 30-year Treasury securities in February 1977 and did not issue these securities between February 18, 2002, and February 9, 2006. The Office of Debt Management also calculates constant maturity rates for securities with other maturity periods in addition to calculating rates for inflation-indexed securities (i.e., TIPS).

As **Figure 3** shows, the maturity rates of both long-term and short-term Treasury securities have declined significantly after peaking in the early 1980s. Increases in the maturity rates of short-term securities from 2004 through 2007 were followed by sharp declines in rates during and after the economic recession. Trends in nominal rates of Treasury securities varied by maturity length from 2012 to 2015, as securities with shorter maturity periods experienced small increases while those with longer periods decreased. However, as of 2015 all securities remained well below their historical averages. The average spread between 30-year and 1-year securities was about 3.1% from 2011 to 2015, which is much higher than the average 5-year average spread since the creation of the 30-year security in 1977 (1.2%). In a recent statement following a meeting of the Federal Open Market Committee, Federal Reserve Chairman Janet Yellen reiterated a desire to increase the federal funds rate to a target rate of 2% in the medium term, though the Federal Reserve opted to keep the federal funds rate at between 0.25% and 0.50% in July 2016.[48]

Determining Maturity Mix

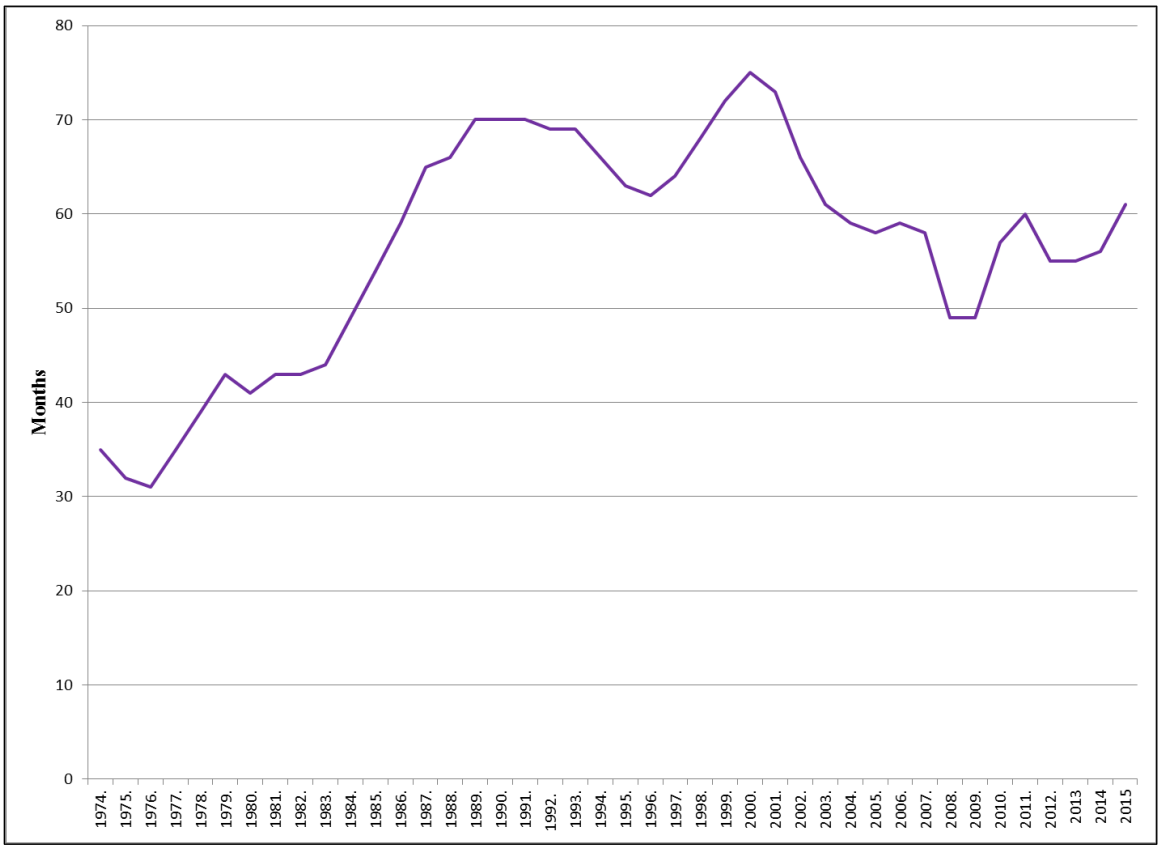
Newly issued Treasury securities, sold to finance the operations of the federal government, are offered at a mix of maturities in order to satisfy the provisions of the regular and predictable debt management strategy and to minimize interest payments over time. The profile of securities is also important due to its influence on liquidity. In addition, Treasury must make sure that it has adequate cash balances available to pay federal obligations. Balancing all of these objectives leads to a strategy which offers a mix of short- and long-term securities.

Longer-term securities generally command higher interest rates compared to shorter-term securities because investors demand greater compensation for incurring risk over a longer period of time. Generally, a strong economy will be accompanied by higher interest rates. If Treasury issues long-term debt during this time, they are committing to paying higher interest rates for a longer period and may decide to purchase short-term securities. However, this leads to uncertainties over the longer term, since the interest rate will likely change. During periods of economic downturn and low interest rates, Treasury may decide to finance at shorter maturities to take advantage of lower borrowing costs. This, however, may lead to more volatile and uncertain yearly interest payments because Treasury has to enter the market more often. **Figure 4** shows the average length of marketable interest-bearing public debt securities held by private investors between 1974 and 2015, as of the end of each fiscal year.

[48] Federal Reserve Bank, Board of Governors of the Federal Reserve System Press Release, July 2016, available at https://www.federalreserve.gov/newsevents/press/monetary/20160727a.htm.

Figure 4. Average Maturity of Marketable Interest-Bearing Public Debt Securities Held by Private Investors, 1974-2015

Maturity period in months



Source: Council of Economic Advisors, *Economic Report of the President*, March 2013, Table B-88, and Department of Treasury, *Treasury Bulletin*, June 2016, Table FD-5.

Since 1974, the average maturity period of Treasury securities reached its minimum point in FY1976 at 31 months and its peak in FY2000 at 75 months. In the mid-1970s, before the initiation of the regular and predictable debt management strategy, the average maturity of Treasury securities declined due to the rapid increase in the deficit during FY1975. To meet the unexpected financing needs, numerous debt offerings took place. However, Treasury officials were generally reluctant to offer long-term securities because they were unsure of investor demand. In contrast, during the surplus years of the late 1990s and the resulting decline in federal debt levels, Treasury did not have immediate financing needs and did not auction new securities as older ones matured. This effectively increased average maturity since greater numbers of long-term bonds remained outstanding.

Given the nature of current borrowing requirements, coupled with expected future demands on borrowing needs due to long-term obligations related to Medicare and Social Security, Treasury's Borrowing Advisory Committee recommended that Treasury increase the size of issues across the maturity spectrum to allow the Treasury to meet its financing needs over the short to intermediate term and reduce the uncertainty surrounding interest rates over the long term.[49] Effectively, this should reduce risk and ensure adequate financing over the long term, while increasing average

[49] Report to the Secretary of the Treasury from the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association, April 29, 2009, available at http://www.treas.gov/press/releases/tg111.htm

maturity. The average maturity period of Treasury securities has increased since the end of the Great Recession, rising from an average length of 49 months in 2009 to 61 months in 2015.

Budgetary Impacts

Legislative activity can affect Treasury's ability to issue debt and can impact the budget process. The statutory limit on the debt can constrain debt operations, and, in the past, has hampered traditional practices when the limit was approached. The accounting of asset purchases in the federal budget has created differences between how much debt Treasury has to borrow to purchase assets and how much the same purchases will impact the budget deficit. If budget deficits continue to rise, thereby requiring devotion of more resources to paying interest on the debt, fewer funds are available to spend on other federal programs, all else equal.

Some economists have expressed concerns that persistent deficits could drive up interest rates, making it more expensive for the government, businesses, and consumers to borrow money. The government cannot add infinitely to the national debt without facing market consequences or hindering future ability to borrow. In recent testimony to Congress, Federal Reserve Chairman Janet Yellen warned that failing to address the government's growing debt will likely cause the United States to face higher interest rates, lower levels of investment, and reduced productivity growth in future years than it otherwise would have with more manageable levels of federal debt.[50]

Constraints of the Debt Limit

Congress sets a statutory limit on federal debt levels in an effort to assert its constitutional prerogatives to control spending and impose a form of fiscal accountability. At times, the debt limit has restricted the Treasury's ability to manage the federal government's finances. Standard methods of financing federal activities or meeting government obligations can be hobbled when federal debt nears its legal limit. If the limit prevents the Treasury from issuing new debt to manage short-term cash flows or to finance an annual budget deficit, the government may be unable to obtain the cash it needs. In recent years, when federal debt levels approached the statutory debt limit, Congress and the Treasury were compelled to intervene. Such actions to stay under the debt limit included the authorization of a "debt issuance suspension period" and the implementation of "extraordinary measures" by the Treasury Secretary, and suspension of the statutory debt limit by Congress.[51] Because the law requires that the government's legal obligations be paid, the debt limit may prevent it from issuing the debt that would allow it to do so. While the debt limit has never caused the federal government to default on its obligations, at times it has added uncertainty to Treasury operations.[52]

Accounting of Recent Debt Increases

In 1990, the Federal Credit Reform Act (FCRA; Title V of P.L. 101-508) revamped the way that federal credit (direct loans and loan guarantees) is accounted for in the budget process. Before the

[50] U.S. Congress, House Committee on Financial Services, *Monetary Policy and the State of the Economy*, 114th Cong., July 15, 2015.

[51] For more information on recent debt limit activity, see CRS Report R43389, *The Debt Limit Since 2011*, by D. Andrew Austin.

[52] For more information, see CRS Report RL31967, *The Debt Limit: History and Recent Increases*, by D. Andrew Austin.

creation of this law, asset purchases were recorded on a purchase price or net cash flow basis. If a subsequent sale led the government to recoup some of its investment, that would be recorded in a later fiscal year as negative outlays. Beginning in FY1992, asset purchases were recorded on an accrual basis, which reported the budgetary cost of a credit program equal to the estimated subsidy costs at the time the credit is provided. The subsidy cost was defined as "the estimated long-term cost to the government of a direct loan or a loan guarantee, calculated on a net present value basis, excluding administrative costs."[53]

Accounting under FCRA became a more prominent issue due to the federal financial interventions and resulting loans and asset purchases made by the federal government to stabilize the economy during the most recent recession. Because the ultimate value of these assets once they were sold was unknown, the ultimate increase in the federal debt as a result of these interventions was also unknown. Asset purchases financed under the Troubled Asset Relief Program (TARP; P.L. 110-343) required outlays to equal the purchase price, which increased the debt held by the public by the same amount. Subsequent proceeds from government sales of those assets are returned to the Treasury's General Fund, thereby decreasing the federal debt.

However, the budgetary impact of this program was somewhat different. The TARP law (Title II of Division A) contained a provision which required budgetary accountability for these asset purchases to follow the provisions of FCRA with an additional adjustment for market risk. This means that for budgetary purposes, the cost of these purchases was recorded on a subsidy basis, which takes into account the asset's expected return. What the government paid to purchase the assets led to an increase in the debt held by the public, in the amount of the purchase price, that exceeded the increase in the budget deficit, in the amount of the subsidy. The most recent estimates project that the government's financial intervention through TARP will result in total asset purchases of $442 billion ($431 billion of which had already been disbursed in March 2016) at a net cost to the government of $30 billion.[54]

Interest and the Debt

Interest paid on the federal debt increases the overall cost of borrowing. As discussed earlier, interest costs can be affected by various conditions, including legislative activity and the economy, as well as actions taken by the Treasury and the Fed. The level of budget deficits and federal debt can also affect the interest rates on Treasury securities. If interest rates are low, interest payments on Treasury securities may also be low, thereby making debt less costly. However, increased borrowing will increase the supply of Treasury securities, which generally leads to higher interest rates and future net interest payments.

Despite the recent increases in federal borrowing during the recent economic recession and subsequent recovery, the actions of the Fed have kept interest rates near zero since late 2008. Therefore, borrowing costs to the Treasury currently remain low. When setting interest rates, the Fed considers potential effects on employment, prices, and long-term interest rate levels. The Fed cited soft business investment measures and uncertainty surrounding global economic and financial developments in its decision to keep interest rates low in FY2016. However, the Fed also suggested that it will raise interest rates in the near future if the labor market continues to

[53] For more information, see CRS Report R42632, *Budgetary Treatment of Federal Credit (Direct Loans and Loan Guarantees): Concepts, History, and Issues for Congress*, by Mindy R. Levit.

[54] Congressional Budget Office, *Report on the Troubled Asset Relief Program – March 2016*, available at https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51378-TARP.pdf.

strengthen and economic inflation increases.[55] Interest payments are projected to match historically low levels both as a percentage of gross domestic product and as a percentage of total outlays even as overall debt is increasing. Over the long term, however, borrowing costs are projected to grow, likely leading to increasing interest payments.

Conclusion

Part of Treasury's mission is to secure America's economic and financial future. In part, this is achieved by maintaining a regular and predictable debt management strategy as well as ensuring global trust and confidence in U.S. currency. However, Treasury's actions are affected by Congress, the Fed, and different types of investors, as well as economic conditions. As long as the United States continues to issue Treasury securities to finance government operations, the actions of the Treasury will continue to play a key role in maintaining stability in the financial and credit markets and the U.S. economy.

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[55] For more information on recent interest rate decisions of the Federal Reserve, please see Federal Reserve, *Why are interest rates being kept at a low level?*, April 2015, available at http://www.federalreserve.gov/faqs/money_12849.htm.