



INTEREST RATES

# **The Treasury Futures Delivery Process, 7th Edition**

February 2018

# THE TREASURY FUTURES DELIVERY PROCESS, 7TH EDITION

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## CONTRIBUTORS

Christopher Bowen, Legal and Market Regulation  
Frederick Sturm, Research & Product Development  
Anthony Zangrilli, Client Development & Research

Treasury futures contracts are contracts for future sale and purchase of US Treasury bonds or notes. Anyone holding a position in an expiring Treasury futures contract during its delivery month must be prepared to fulfill the contractual obligation either to deliver or to take delivery of contract grade Treasury securities.

This note offers a practical introduction to the Treasury futures delivery mechanism.<sup>1</sup>

## THE SIGNIFICANCE OF PHYSICAL DELIVERY

Physical delivery is at once pivotal and rare. Pivotal, because the prospect of transfer via physical delivery forges a fast link between futures prices and cash market prices of contract grade notes and bonds. Rare, because the Treasury futures complex is neither intended nor organized to serve as a primary marketplace for transfer of Treasury securities ownership.

Hedgers – those who use Treasury futures chiefly to shed interest rate risk exposure rather than to acquire it – are

seldom interested in using futures as a means of transacting Treasury securities. For this reason, hedgers typically liquidate their outstanding futures positions before the contracts enter their delivery cycle.

Most such liquidations are rolled. That is, trades to liquidate exposures in expiring contracts are combined with trades to initiate corresponding new positions in contracts for the next (deferred) delivery month. For example, a market participant who holds a long position in expiring futures for June delivery, and who wants to maintain the futures exposure instead of taking the position to delivery, can roll by selling her June contract holdings while simultaneously establishing a new long position in futures for September delivery, equivalent in scale to the liquidated June futures position. Rolling is so prevalent that only a small share of Treasury futures held by market participants go to physical delivery, historically around 2.6 percent. (See Exhibit 1 and, for more information, [A Historical Overview of Physical Delivery](#) on page 17.)

### Exhibit 1 – The Scale of Treasury Futures Deliveries and Delivery Activity, 1991-2017

For Long-Term Bond (UB) futures, median value for delivery months from Mar 2010 through Dec 2017, inclusive. For all other futures contracts, median values for delivery months from Mar 1991 through Dec 2017, inclusive.

Futures Contract (CME Globex Product Code)	Physical Deliveries as Percent of Mature Open Interest
Long-Term Bond (UB)	0.9
Bond (ZB)	1.6
Long-Term (6 ½ to 10-Year) Note (ZN)	2.1
Intermediate-Term (5-Year) Note (ZF)	2.4
Short-Term (2-Year) Note (ZT)	3.5
<b>Total</b>	<b>2.6</b>

Note: The measure of activity shown here is physical deliveries in proportion to mature open interest. For a futures contract for a given delivery month, “physical deliveries” is simply the number of contracts that go to delivery, and “mature open interest” is the median daily level of open interest during the 42 exchange business days (“business days”) ending on, and including, the contract’s First Position Day, *ie*, the second business day before the first business day of the contract delivery month. (In effect “mature open interest” is the representative level of open interest in the contract during the two months immediately preceding its delivery month.) For UB futures, the data set comprises 32 delivery months. For each other futures product, the corresponding data set comprises 108 delivery months.

<sup>1</sup> All rules and procedures for Treasury futures contracts, including those for making or taking delivery, are established by the Board of Trade of the City of Chicago, Inc. (“CBOT” or “exchange”), one of four designated contract markets owned and operated by CME Group Inc., subject to regulation by the US Commodity Futures Trading Commission (“CFTC”).

## WHAT IS DELIVERABLE?

The terms and conditions of each Treasury futures contract specify its deliverable grade, *ie*, the securities that a short position holder is permitted to deliver at contract expiration for sale to a long position holder. All such deliverable grade securities are fixed-principal notes or bonds issued by the US Department of the Treasury, paying fixed semi-annual coupon interest.<sup>2</sup>

Any Treasury security may be tendered for delivery in fulfillment of an expiring contract, provided that it meets the contract's criteria for delivery suitability. Typically, several securities are eligible. From one contract delivery month to the next, their number may vary, depending on the frequency and pattern of issuance by the US Treasury. Criteria for delivery eligibility are summarized in Exhibit 2 and in **Appendix – Treasury Futures Contract Specifications** on page 19.<sup>3</sup>

### Exhibit 2 – Deliverable Grades for Treasury Futures

Futures Contract (CME Globex Product Code)	Contract Size (\$ Face Value)	Deliverable Grade	CBOT Rulebook Chapter
Long-Term "Ultra" Bond (UB)	100,000	Treasury bonds. Remaining term to maturity: at least 25 years.	40
Bond (ZB)	100,000	Treasury bonds. Remaining term to maturity: at least 15 years and less than 25 years.	18
"Ultra" 10-Year Note (TN)	100,000	Treasury notes. Remaining term to maturity: at least 9 years 5 months and not more than 10 years.	26
Long-Term (6 ½ to 10-Year) Note (ZN)	100,000	Treasury notes. Remaining term to maturity: at least 6 years 6 months and not more than 10 years.	19
Intermediate-Term (5-Year) Note (ZF)	100,000	Treasury notes. Original term to maturity: not more than 5 years 3 months. Remaining term to maturity: at least 4 years 2 months.	20
3-Year Note (Z3N)	200,000	Treasury notes. Original term to maturity: not more than 5 years 3 months. Remaining term to maturity: at least 2 years 9 months and not more than 3 years.	39
Short-Term (2-Year) Note (ZT)	200,000	Treasury notes. Original term to maturity: not more than 5 years 3 months. Remaining term to maturity: at least 1 year 9 months and not more than 2 years.	21

<sup>2</sup> Because delivery eligibility is limited to fixed-principal notes or bonds, the contract deliverable grade excludes Treasury Inflation Protected Securities ("TIPS"). Similarly, because delivery-eligible notes or bonds must pay fixed coupon interest, the contract deliverable grade excludes Treasury Floating Rate Notes.

All securities eligible for delivery are obligations of the US Treasury Department, backed by its full faith and credit. The same guarantee does not apply to Treasury futures contracts, because they are not obligations of the US Treasury Department.

<sup>3</sup> For any Treasury futures contract, the definitive statement of terms and conditions is found in the corresponding chapter of the CBOT Rulebook, available at: <http://www.cmegroup.com/rulebook/CBOT/>

## THE ROLE OF THE CLEARING FIRM

The exchange clearing house, CME Clearing, is solely responsible for processing Treasury futures contract deliveries.<sup>4</sup> The physical delivery process takes three exchange business days (“business days”) to accomplish, ensuring adequate time for the participants — the futures seller making delivery, the futures buyer taking delivery, their respective clearing firms, and CME Clearing — to make necessary notifications and arrangements.

Adherence to this three-day timetable is critical. Unlike settlement practices in the cash government securities market, the *Treasury futures delivery process does not support any failure-to-deliver capability*. Any failure to meet delivery obligations in complete accord with contract terms and all other applicable exchange rules and procedures can result in significant economic and regulatory penalties, both to the failing party and to the failing party’s clearing firm.<sup>5</sup>

CME Clearing member firms play a central role in the process, because *deliveries are facilitated by and occur between clearing firms, acting as agents for those who hold accounts with them. Contract deliveries do not occur directly between account holders themselves*.

Each clearing firm is responsible to the exchange and to CME Clearing for guaranteeing the performance of its account holders in meeting the obligations of delivery, in at least three ways:

- (1) Prior to the last day of trading in an expiring Treasury futures contract, each clearing firm must ensure that each account on its books who holds an open position in the contract is capable of participating in physical delivery. Absent satisfactory assurance from an account owner, the clearing firm is responsible for orderly liquidation of the account owner’s open position prior to termination of trading in the contract.<sup>6</sup>

- (2) The short clearing firm, *ie*, the clearing firm making delivery on a short position, is responsible (a) for ascertaining that the account holders who are the ultimate owners of the short position have furnished deliverable grade Treasury securities on time and in sufficient quantity to meet contract requirements and (b) for distributing to those account holders the monies it receives in payment for the securities it delivers.
- (3) The long clearing firm, *ie*, the clearing firm taking delivery on a long futures position, is responsible (a) for assigning Treasury securities it receives in delivery to the account holders who are the ultimate owners of the long contract position and (b) for collecting from those account holders the monies required to pay the invoice amounts for the securities delivered.

If an account holder fails to fulfill her obligations in a Treasury futures contract delivery, the account holder’s clearing firm is itself financially responsible to CME Clearing.

Well-managed clearing firms typically take extra precaution to ensure their fulfillment. For example, although no regulation nor exchange rule requires it — and although the timetable for physical delivery does not strictly necessitate it (see **The Timetable for Delivery** on page 5) — many clearing firms require that any account holder planning to make delivery on a short futures position must have the requisite quantity of deliverable grade securities in hand (*ie*, “in the box”) prior to declaring intent to deliver.

<sup>4</sup> CME Clearing is a division of Chicago Mercantile Exchange Inc. (“CME”), one of four designated contract markets owned and operated by CME Group Inc. CME Clearing is a derivatives clearing organization registered with and subject to regulation by the CFTC.

<sup>5</sup> See Rule 714 for Failure to Deliver and Rule 715 for Failure to Accept Delivery or Remit Full Payment, CBOT Rulebook Chapter 7, available at: <http://www.cmegroup.com/rulebook/CBOT/1/7/7.pdf>.

<sup>6</sup> See Rule 716 for Duties of Clearing Members, *op cit*.

## THE CME CLEARING GUARANTEE

If a clearing member firm fails to guarantee the performance of an account that has defaulted on a delivery, then CME Clearing has procedures in place to maintain the integrity of the delivery process.<sup>7</sup>

Where a long clearing firm whom CME Clearing has assigned to take delivery fails to do so, or fails to make timely payment in delivery, the short clearing firm tendering such delivery should immediately notify CME Clearing, which shall debit the account of the long clearing member by an amount sufficient to complete the delivery.<sup>8</sup>

### Limits upon the Guarantee<sup>9</sup>

If a clearing member fails to fulfill its delivery obligations in respect of a Treasury futures contract, the sole obligation of CME Clearing “is to pay reasonable damages proximately caused by the delivery obligation failure...”

CME Clearing’s payments for “reasonable damages” expressly exclude all of the following:

- Payment for any damages greater than the difference between the delivery price of the specific Treasury security and the reasonable market price of such security at the time that delivery would have been contractually required.
- Making or taking delivery of the actual Treasury security.
- Payment for any damages relating to the accuracy, genuineness, completeness, or acceptability of certificates, instruments, or other similar documents.
- Payment for any damages relating to the failure or insolvency of banks, depositories, warehouses, or similar organizations or entities that may be involved with a delivery.

## Related Responsibilities on the Part of Clearing Firms

The CME Clearing guarantee entails requirements for clearing firms to make timely notification and timely remedy:

- Notification – CME Clearing has no obligation or liability to any clearing member (or any other person) relating to a failure to fulfill a Treasury futures delivery obligation, unless the non-defaulting clearing member notifies CME Clearing of such failure as soon as possible, but in no event later than 60 minutes after the time the delivery obligation was to have been fulfilled.
- Remedy — Any contract delivery obligation that one clearing member fails to fulfill to another clearing member shall be deemed an obligation of the defaulting clearing member to CME Clearing. Any such obligation must be fulfilled to CME Clearing within 60 minutes of the time it was required to be fulfilled to the non-defaulting clearing member.

<sup>7</sup> The authoritative statement of CME Clearing’s guarantee, as it applies to Treasury futures, is set forth in Chapter 7 of the CBOT Rulebook.

<sup>8</sup> See Rule 715 for Failure to Accept Delivery or Remit Full Payment, *op cit*.

<sup>9</sup> See Rule 714 for Failure to Deliver, *op cit*.

## THE TIMETABLE FOR DELIVERY

The process of delivery on an expiring futures contract arises from the interaction of two distinct but complementary functions: (a) the clearing firm's declaration of long positions and (b) the clearing firm's declaration of intent to deliver on short positions and subsequent fulfillment of delivery.

### Declaration of Long Positions<sup>10</sup>

Before the delivery process can begin, each clearing firm must declare to CME Clearing the long positions in the expiring

contract held by its accounts. This occurs initially on First Position Day, two business days before the first business day of the expiring contract's delivery month. On each day thereafter until the end of the contract delivery month, no later than 8:00 pm Chicago time, each clearing firm is required to report to CME Clearing all open long positions in the expiring contract. The open long positions that the clearing firm reports must be ordered by vintage date (the date on which each position was initially established) and aggregated by the origin of their ultimate owners (where "origin" denotes either customer accounts or house accounts).

**Example:** A clearing firm carries accounts who have entered into long positions in June 2016 Treasury 10-Year Treasury Note (TN) futures on two dates –

**Fri, 1 April 2016    8 customer accounts    2 house accounts**

**Fri, 15 April 2016    5 customer accounts    1 house account**

On Friday, 27 May 2016, the First Position Day for June 2016 contract deliveries, the clearing firm must report to CME Clearing two position statistics for the 1 April vintage date: "customer", the total number of TN contracts bought and held by the eight customer accounts; and "house", the total number of TN contracts bought and held in the two house accounts. The clearing firm also reports two position statistics for the 15 April vintage date: "customer", the sum of contracts bought and held by the five customer accounts; and "house", contracts bought and held in one house account.

### The Delivery Timetable — Declaration of Intention to Deliver, and Delivery, on Short Positions

Each Treasury futures contract delivery is accomplished through a three-day process in which

(1) a short clearing firm notifies CME Clearing of a short position holder's intention to make delivery, whereupon CME Clearing matches the short clearing firm to a long clearing firm who becomes obligated to accept delivery, (2) the two clearing firms exchange information as to the Treasury securities that will be delivered by the short clearing firm and the invoice amounts that will be paid by the long clearing firm, and (3) the delivery is fulfilled.

Much of what makes the process financially interesting, especially for cash-futures arbitrage, concerns when and with what the short position holder opts to fulfill delivery.

### Timing of Delivery

The owner of a short position in an expiring futures contract holds the right to decide when to deliver, provided that she makes delivery during the interval between the first delivery day and the last delivery day defined by the contract terms.

### Quality of Delivery

The owner of a short position in an expiring futures contract also holds the right to choose which Treasury issue she will deliver. Provided that the issue meets contract standards for delivery eligibility, the long clearing firm assigned to take delivery must accept the short position holder's selection, as delivered by the short clearing firm.

At any given moment prior to futures contract expiration, some deliverable grade issues will be more economical than others for a short position holder to acquire in order to deliver.

<sup>10</sup> See Rule 807 for Open Long Positions During Delivery Month, *op cit*.

Market participants thus tend to track the price movements and the availability of the **cheapest to deliver** (“CTD”) issue – the contract grade issue that is least expensive to purchase for making delivery – as well as the price movements and availability of other delivery-eligible issues that appear likely to come into play as close alternatives to the CTD issue.

For a given Treasury futures contract, CTD status may pass from one delivery-eligible Treasury security to another, especially in volatile market conditions. Irrespective of how quickly or slowly CTD status migrates among the contract’s deliverable issues, at any given moment the contract price tends to reflect (a) the prevailing prices of the deliverable grade issue(s) that market participants expect will play a material role in the delivery process, (b) the cost of financing ownership of any such issue(s) until the expected futures delivery date, and (c) the levels of volatility in (a) and (b).

Which deliverable grade issue is CTD (or second cheapest to deliver, or third CTD, and so on) depends entirely upon market forces. Although exchange rules define the Treasury securities that are eligible for delivery, at no point does the exchange name which issue is most economical, or “cheapest,” or “best” to deliver.

The following paragraphs discuss each of the three steps. Exhibit 3 summarizes the process.

### Intention Day

On the first day of the process, **Intention Day**, the owner of a short position in an expiring contract instructs her clearing firm that she intends to make delivery. The clearing firm must inform CME Clearing no later than 6:00 pm Chicago time.

For Long-Term Bond (UB) futures, conventional Bond (ZB) futures, 10-Year Note (TN) futures, or Long-Term Note (ZN) futures, a short clearing firm can declare intent to deliver at any time from the second business day prior to the delivery month (**First Intention Day**) through, and including, the second business day before the last business day of the delivery month (**Last Intention Day**).

For Intermediate-Term Note (ZF) futures, 3-Year Note (Z3N) futures, and Short-Term Note (ZT) futures, First Intention Day is the second business day prior to the first business day of

the delivery month. Last Intention Day is the first business day of the next following calendar month. (See **Similarities and Differences among Contract Critical Dates** on page 8.)

*For all Treasury futures, First Intention Day for short clearing firms coincides with First Position Day for long clearing firms.*

CME Clearing then matches a long clearing firm (or firms) to the short clearing firm that has declared intention to deliver. (How this works is discussed in **Matching Longs to Take Delivery from Shorts**, on page 9.) By 10:00 pm Chicago time, both the short clearing firm and the long clearing firm(s) are notified, via electronically delivered assignment notice reports, of the parties to whom they’ve been matched. The same information is published around 10:00 pm Chicago time in the Exchange’s Issues and Stops Report on [cmegroup.com](http://cmegroup.com).

### Notice Day

On the second day — Notice of Intention Day, or simply **Notice Day** — the short clearing firm prepares an invoice for the long clearing firm(s) to whom it has been matched to make delivery, detailing the features of the Treasury securities that will be delivered, including CUSIP numbers, coupon rates, maturity dates, and the invoice amounts as determined on the basis of the appropriate futures contract price. (See **Invoicing for Treasury Futures Deliveries** on page 14.) Short clearing member firms must confirm all invoice details to CME Clearing by 2:00 pm Chicago time (or by 3:00 pm Chicago time on Last Notice Day, the business day following **Last Intention Day**). At 4:00 pm, CME Clearing runs all invoices and provides them to the long clearing firm(s) matched to take delivery from the short clearing firm making delivery.

By 4:00 pm Chicago time, the long clearing firm must provide the short clearing firm with delivery instructions (eg, name, address, and Fed wire and contact details) for the bank to which the Treasury securities will be delivered.

In fulfilling any single Treasury futures contract the short clearing firm must deliver \$100,000 face value (or \$200,000 face value in the case of ZT futures or Z3N futures) of one and only one Treasury issue.

Fractional delivery is not permitted. For example, the short position holder making delivery on an expiring ZB futures



contract cannot deliver a mixed portfolio of Treasury bonds comprising \$40,000 face value of one CUSIP and \$60,000 face value of another CUSIP.

However, a short position holder making delivery on several lots of an expiring contract may deliver different securities into different contract lots, provided that all such securities are deliverable grade. For example, a short delivering on 20 expiring ZF futures may use \$1.8 million face value of one Treasury note to fulfill 18 contracts and \$200,000 face value of another Treasury note to deliver into the remaining two contracts.

### Delivery Day

By 10:00 am Chicago time on **Delivery Day**, the third and final day of the process, the short clearing firm must have the Treasury securities that it named for delivery on the previous Notice Day in its bank account. The securities are then delivered to the long clearing firm's bank account, upon which the long clearing firm remits the correct invoice amount to the short clearing firm. The process must be completed by 1:00 pm Chicago time.

### Exhibit 3 – The Delivery Timetable for Treasury Futures

All times refer to Chicago time.

	Short Clearing Firm	CME Clearing	Long Clearing Firm
<b>First Position Day</b>			By 8:00 pm, two business days prior to the first day allowed for delivery into an expiring futures contract ( <i>ie</i> , first day of delivery month), clearing firms report to CME Clearing all open long positions, grouped by account origin (customer or house) and position vintage date.
<b>Day 1: Intention Day</b>	By 6:00 pm, the short clearing firm notifies CME Clearing that it intends to make delivery on an expiring contract. Once CME Clearing has matched the short clearing firm to long clearing firm(s) for delivery, this declaration cannot be reversed.	At 8:00 pm, CME Clearing matches the delivering short clearing firm to the clearing firm(s) with long positions having the oldest vintage date(s), and then informs the short (long) party that the opposite party will take (make) delivery.	By 8:00 pm, clearing firms report to CME Clearing all open long positions in the expiring futures contract, grouped by account origin (customer or house) and position vintage date.
<b>Day 2: Notice Day</b>	By 2:00 pm (3:00 pm on Last Notice Day), using calculations based on the expiring contract's Intention Day settlement price, the short clearing firm must confirm invoice details with CME Clearing.	At 4:00 pm, CME Clearing runs invoices and provides them to long clearing firm(s) matched to take delivery from the short clearing firm making delivery.	By 4:00 pm, the long clearing firm assigned to take delivery provides the name and location of its bank to the short clearing firm making delivery.
<b>Day 3: Delivery Day</b>	Short and long clearing firms have until 9:30 am to resolve invoice differences. By 10:00 am, the short clearing firm deposits Treasury securities for delivery into its bank account, and it instructs its bank to transfer the securities, via Fed wire, to the long clearing firm's account no later than 1:00 pm.		By 7:30 am, the long clearing firm makes funds available, and notifies its bank to remit the funds upon accepting Treasury securities. By 1:00 pm, the long clearing firm's bank has accepted the Treasury securities and has remitted the invoice amount via Fed wire to the short clearing firm's bank account.

Operational details are subject to change, insofar as CME Clearing periodically reviews the physical delivery process and, when necessary, modifies it to enhance its efficiency. For current information, please consult CBOT Rules.

### Similarities and Differences among Contract Critical Dates

**For all Treasury futures:**

First Intention Day and First Position Day occur simultaneously on the second business day before the first business day of the expiring contract’s delivery month. First Notice Day is the next business day thereafter. First Delivery Day is the first business day of the contract delivery month.

**For Long-Term Bond (UB), conventional Bond (ZB), 10-Year Note (TN), and Long-Term Note (ZN) futures:**

Trading in the expiring contract terminates on the seventh business day before the last business day of the delivery month. Last Intention Day is the second business day before the last business day of the delivery month, Last Notice Day is the next-to-last business day, and Last Delivery Day is the last business day.

**For Intermediate-Term Note (ZF), 3-Year Note (Z3N), and Short-Term Note (ZT) futures:**

Trading in an expiring futures contract terminates on the last business day of the contract delivery month. Last Intention Day is the first business day of the next following calendar month. Last Notice Day and Last Delivery Day are, respectively, the second and third business days of the next following calendar month.<sup>11</sup>

Exhibit 4 illustrates these distinctions with contract critical dates for June 2016 delivery.

#### Exhibit 4 – Contract Critical Dates for Treasury Futures Expiring in June 2016

Contract Critical Date	UB, ZB, TN, and ZN	ZF, Z3N, and ZT
First Intention/Position	Fri, 27 May	Fri, 27 May
First Notice	Tue, 31 May	Tue, 31 May
First Delivery	Wed, 1 June	Wed, 1 June
Last Trading	Tue, 21 June	Thu, 30 June
Last Intention	Tue, 28 June	Fri, 1 July
Last Notice	Wed, 29 June	Tue, 5 July
Last Delivery	Thu, 30 June	Wed, 6 July

<sup>11</sup> To permit notes auctioned during an expiring Treasury futures contract’s delivery month to be eligible for delivery, the interval for making delivery in fulfillment of these contracts extends to include the first three business days of the month following the contract’s named delivery month. Each month the US Treasury sells a new 7-year note, a new 5-year note, and a new 2-year note. Each such newly issued note is dated as of the last day of its auction month. If the last day of the month is a business day for the US government securities market, then the note is also issued on the last day of the month. If not, the note is issued on the first US government securities market business day of the following month. (A note’s dated date and issue date may differ. Both dates are spelled out in the corresponding auction announcement by the US Treasury.)

## MATCHING LONGS TO TAKE DELIVERY FROM SHORTS

At the end of each Intention Day during a Treasury futures contract delivery month, CME Clearing matches long positions to short positions that have been declared for delivery. Before delving into details of the match process, it is useful to define “position.”

*From CME Clearing’s standpoint, a short position is defined by a unique combination of two identifiers: the clearing member firm that carries the position, and the position’s origin (either the clearing firm’s house account or its customer accounts). A long position is defined by a unique combination of three identifiers: clearing firm, origin, and position vintage (the date on which the position was established or, equivalently, the length of time the position has been held).*

*From the clearing firm’s standpoint, the short position on any given Intention Day is the sum across all of the firm’s accounts (including both house accounts and customer accounts) of futures contracts held short for which position holders have declared intent to deliver. A long position is the sum, for each vintage date and origin category, of all outstanding long positions in the expiring contract that are held by the clearing firm’s accounts.*

### Overview

*CME Clearing matches longs to accept delivery from short intentioners (the clearing firms carrying short positions that have declared intent to deliver) without regard to which Treasury issue or issues will be delivered. The short position owner on whose behalf a clearing firm has declared intent to deliver is not obliged to identify which Treasury issue or issues she will tender for delivery until Notice Day, the day after long clearing firms have been matched to take delivery from short intentioners.*

Matching proceeds in three stages. The first is to determine the pool of long positions to be matched with short intentioners. To assemble the eligible long position pool, CME Clearing begins with the long position(s) having the oldest vintage date. If necessary, it supplements these with some or all of the long position(s) having the next oldest vintage date. It repeats this step until it has established a pool of

long positions that exactly matches the number of contracts declared for delivery by short intentioners.

In the second stage, long positions get matched to short positions declared for delivery on the basis of size. Two clearing member firms will be matched automatically if the total number of short positions declared for delivery at one equals the total number of long positions eligible to take delivery at the other.

In the third stage, matching is on the basis of random selection. CME Clearing begins by randomly choosing a short position, then randomly selecting long positions in sufficient number to match the number of contracts in the short position. It repeats this until all short intentioners are matched with long positions.

The following hypothetical example illustrates.

### Stage 1: Determination of the Eligible Long Position Pool

On a given Intention Day during a Treasury futures contract’s delivery month, five clearing firms – F, G, J, K, and M – declare intent to deliver on short positions totaling 3,150 contracts (Exhibit 6). CME Clearing must assemble a pool of long positions, totaling 3,150 contracts, to take delivery from these short intentioners.

#### Exhibit 6 — Clearing Firms Declaring Intent to Deliver on Short Positions

Clearing Firm and Account Origin	Number of Contracts Declared for Delivery
F – House	900
G – Customer	100
J – Customer	1,000
K – Customer	150
M – Customer	1,000
<b>Total</b>	<b>3,150</b>

Recall that by 8:00 pm Chicago time all clearing firms have reported to CME Clearing their outstanding long positions, aggregated by account origin and vintage. Suppose that on this particular Intention Day the long positions associated with the oldest three vintage dates are as shown in Exhibit 7. (Date 1 represents the oldest vintage, Date 2 the second oldest, and so on.)

**Exhibit 7 – Long Positions Reported by Clearing Firms, Sorted by Vintage Date**

Vintage Date and Total Positions (Contracts)	Clearing Firm and Account Origin	Position Size (Contracts)
Date 1 1,150	H – Customer	150
	J – Customer	50
	J – House	950
Date 2 150	L – Customer	150
Date 3 9,000	G – House	1,000
	M – Customer	5,000
	M – House	3,000

To build the eligible long position pool, CME Clearing begins with long positions entered on the oldest vintage date, Date 1. There are three of these, totaling 1,150 contracts, not enough

to match all short positions declared for delivery. CME Clearing moves on to the second oldest vintage date, Date 2, for which there is only one long position for 150 contracts. Adding this to the Date 1 positions brings the eligible long position pool to four pieces, totaling 1,300 contracts, still insufficient.

CME Clearing proceeds to long positions entered on Date 3, for which there are three, totaling 9,000 contracts. Now faced with more contracts than the 1,850 it needs to top up the eligible long position pool, CME Clearing resolves the difference by extracting a prorated share of contracts from each of the Date 3 positions, as illustrated in Exhibit 8. Any prorated amount involving a fractional number of contracts gets rounded **down** to the nearest integer number of contracts. As shown in the right-hand column, proration and rounding achieves allocation of 1,849 contracts, one contract short of the required 1,850.

**Exhibit 8 – Prorating Long Positions for Assignment to the Eligible Long Position Pool**

Clearing Firm and Account Origin	Position Size (Contracts)	Share of Date 3 Total (Percent)	Prorated Shares of 1,850 Contracts Required to Complete Eligible Long Position Pool	Prorated Shares of 1,850 Contracts Rounded Down to Nearest Integer Number of Contracts
G – House	1,000	11	$0.11 \times 1,850 = 203.5$	203
M – House	3,000	33	$0.33 \times 1,850 = 610.5$	610
M – Customer	5,000	56	$0.56 \times 1,850 = 1,036$	1,036
<b>Total</b>	<b>9,000</b>	<b>100</b>	<b>1,850</b>	<b>1,849</b>

For the futures contract left over by rounding, CME Clearing makes assignment by randomly choosing one of the pieces involved in the proration process. In this example, this entails random selection of the house account at clearing firm G, or the house account at firm M, or customer accounts at firm M, with each candidate having one chance in three of being drawn. Assume the winner of the draw is the piece representing the house account at firm M, which now becomes 611 contracts instead of 610. The eligible long position pool, now complete, is shown in Exhibit 9. It contains seven pieces totaling 3,150 contracts, precisely enough to match the 3,150 contracts in the five short positions declared for delivery.<sup>13</sup>

CME Clearing is now equipped to match the five short intentioners (Exhibit 6) with the seven pieces in the eligible long position pool (Exhibit 9). The process proceeds in two stages.

### Exhibit 9 – The Eligible Long Position Pool, Ordered by Vintage Date

Clearing Firm, Account Origin, and Vintage	Eligible Piece (Contracts)
H – Customer – Date 1	150
J – Customer – Date 1	50
J – House – Date 1	950
L – Customer – Date 2	150
G – House – Date 3	203
M – Customer – Date 3	611
M – House – Date 3	1,036
<b>Total</b>	<b>3,150</b>

### Stage 2: Assignment of Longs to Shorts by Size Matching

Initially, pairs of clearing member firm are matched directly in any instance where the total number of short contracts declared for delivery at one equals the total number of long contracts eligible to take delivery at the other. On each side, long and short, each clearing firm's total encompasses contracts held in both house accounts and customer accounts. Likewise, where a clearing firm carries long positions with

different vintage dates, its total long position is aggregated across vintage dates (Exhibit 10).

### Exhibit 10 – Size Matching of Clearing Member Firms

Clearing Firm	Total Contracts Declared to Make Delivery	Total Contracts Eligible for Assignment to Take Delivery
F	900	
G	100	203
H		150
J	1,000	1,000
K	150	
L		150
M	1,000	1,647
<b>Total</b>	<b>3,150</b>	<b>3,150</b>

In this example, the 1,000 short contracts declared for delivery at firm J are automatically matched to the 1,000 contracts held long at firm J. The 150 contracts declared for delivery at firm K might be assigned to either firm H or firm L, each of which carries a total of 150 contracts eligible to take delivery. CME Clearing breaks the tie by directing the match to the clearing member firm carrying the long position with the oldest vintage date, in this case firm H.

Exhibit 11 summarizes the remaining unmatched short intentioners, and Exhibit 12 displays the remaining unmatched pieces of the eligible long position pool, at completion of Stage 2.

### Exhibit 11 – Unmatched Short Intentioners at Completion of Size Matching

Clearing Firm and Account Origin	Number of Contracts
Declared for Delivery	
F – Customer	900
G – Customer	100
M – Customer	1,000
<b>Total</b>	<b>2,000</b>

<sup>12</sup> To be clear, the object of the random draw is not the entire rounding remnant, but each contract in the rounding remnant. If, for instance, the proration and rounding process had resulted in a rounding remnant of three contracts instead of one, then the random draw described above would have been repeated three times, once for each contract.

<sup>13</sup> The fate of the unused portions of the three positions involved in the proration process is explained in *What Happens to the Long Position Stack?* on page 13.

### Exhibit 12 – The Eligible Long Position Pool at Completion of Size Matching

Clearing Firm, Account Origin, and Vintage	Eligible Piece (Contracts)
L – Customer – Date 2	150
G – House – Date 3	203
M – Customer – Date 3	611
M – House -- Date 3	1,036
<b>Total</b>	<b>2,000</b>

### Stage 3: Assignment of Longs to Shorts by Random Matching

Finally CME Clearing matches remaining short intentioners to remaining pieces of the eligible long position pool by random selection. To begin, one of the short intentioners is drawn. Suppose this is firm G, which intends to deliver on 100 contracts held in customer accounts.

CME Clearing then randomly draws one piece from the eligible long position pool. Suppose this is the 1,036-contract house position at firm M. One hundred of the contracts in this piece are matched to firm G’s short position, and the remainder of the piece is returned to the eligible long position pool. Exhibit 13 summarizes the eligible long position pool at the end of the first round of random matching.

### Exhibit 13 – The Eligible Long Position Pool at the End of the First Round of Random Matching

Clearing Firm, Account Origin, and Vintage	Eligible Piece (Contracts)
L -- Customer -- Date 2	150
G -- House -- Date 3	203
M – Customer -- Date 3	611
M -- House -- Date 3	936
<b>Total</b>	<b>1,900</b>

CME Clearing then randomly selects a second short intentioner. Suppose it is firm F, which intends to deliver on 900 contracts for its house account.

CME Clearing randomly draws a piece from the eligible long position pool. Suppose this is the 203-contract house position at firm G. To cover firm F’s short position will require 697 more contracts, so CME Clearing makes another random

draw from the eligible long position pool. Suppose this is the 936-contract house position at firm M. From this piece 697 contracts are assigned to take delivery from firm F, and the remaining 239 contracts are returned to the eligible long position pool. Exhibit 14 summarizes its status at completion of the second round of random matching.

### Exhibit 14 – The Eligible Long Position Pool at the End of the Second Round of Random Matching

Clearing Firm, Account Origin, and Vintage	Eligible Piece (Contracts)
L -- Customer -- Date 2	150
M – Customer -- Date 3	611
M -- House -- Date 3	239
<b>Total</b>	<b>1,000</b>

The remaining unmatched short intentioner is firm M, which has declared it will deliver on 1,000 contracts for customer accounts. By design, the three pieces remaining in the eligible long position pool total exactly 1,000 contracts. These are automatically matched to take delivery from firm M.

The process is now complete. Exhibit 15 summarizes the outcome from the vantage of the short intentioners making delivery. Exhibit 16 summarizes from the vantage of the long clearing members assigned to take delivery.

### Exhibit 15 – To Which Longs Will Each Short Deliver?

Short	Position	Delivers on this many contracts...	To...
F – House	900	203	G – House
		697	M – House
G – Customer	100	100	M – House
J – Customer	1,000	50	J – Customer
		950	J – House
K – Customer	150	150	H – Customer
M – Customer	1,000	150	L – Customer
		611	M – Customer
		239	M – House

## Exhibit 16 — From Which Shorts Will Each Long Take Delivery?

Long	Position	Takes delivery on this many contracts...	From...
G – House – Date 3	203	203	F – House
H – Customer – Date 1	150	150	K – Customer
J – Customer – Date 1	50	1000	J – Customer
J – House – Date 1	950		
L – Customer – Date 2	150	150	M – Customer
M – Customer – Date 3	611	611	M – Customer
		697	F – House
M – House – Date 3	1,036	100	G – Customer
		239	M – Customer

### What Happens to the Long Position Stack?

To construct the eligible long position pool, CME Clearing had to extract prorated portions (totaling 1,850 contracts) from long positions with Date 3 vintage (totaling 9,000 contracts). The remainders of each of those long positions (totaling 7,150 contracts) are returned to the top of the long position stack (the roster of long positions, ordered by vintage date, that clearing firms have reported to CME Clearing). See Exhibit 17.

### Exhibit 17 — The Long Position Stack after the Eligible Long Position Pool Has Been Drawn

Vintage Date and Total Positions (Contracts)	Clearing Firm and Account Origin	Position Size (Contracts)
Date 3 7,150	G – House	797
	M – House	2,389
	M – Customer	3,964
Date 4	—	—
Date 5	—	—
Date 6	—	—

If the ultimate owners of these positions – the house accounts at firm G and firm M, and the customer accounts at firm M – make no net changes to their contract holdings over the coming trading session, then the positions shown in Exhibit 17

will be what firm G and firm M report to CME Clearing at the end of the following business day as their long positions for Vintage Date 3.

In at least two ways, these positions might naturally decrease over the course of the following business day. First, if it is on or before the expiring contract's last trading day, then the account owners might reduce their long positions by selling. Second, for a contract that has ceased trading, an account owner can still reduce her long position by entering into an Exchange for Related Position (“EFRP”) transaction in which she tenders futures in exchange for suitable securities or over-the-counter derivative contracts. For expiring UB, ZB, TN, or ZN futures, this route to position exit remains open until noon on the second business day following the last day of trading. For ZF, Z3N, or ZT futures, it is open until noon on the business day following the last day of trading.<sup>14</sup>

By definition, however, these long positions cannot increase. Any newly added increment would be identified as a newly established long position with a brand new vintage date (namely the following business day).

### What Happens on Last Intention Day?

In matching long clearing firms to take delivery from short clearing firms, CME Clearing follows the procedure described above in all instances, including on Last Intention Day. The only difference is that all short contracts outstanding at close of business on Last Intention Day are required to go to delivery. All automatically become short intentioners. Moreover, since short open interest always equals long open interest, all remaining open long positions automatically enter the eligible long position pool.

<sup>14</sup> EFRP transactions both encompass, and are commonly referred to as, Exchange for Physical (EFP) trades. See Rule 538 for Exchange for Related Positions, Chapter 5, CBOT Rulebook, available at <http://www.cmegroup.com/rulebook/CBOT/1/5/5.pdf> or CME Group Market Regulation Advisory Notice Exchange for Related Positions, which is available at <http://www.cmegroup.com/rulebook/files/cme-group-Rule-538.pdf>

## INVOICING FOR TREASURY FUTURES DELIVERIES

On Notice Day CME Clearing informs long clearing firms assigned to take delivery of the details of the Treasury issues (CUSIP numbers, coupon rates, maturity dates) that will be delivered by the short intentioners to whom they have been matched, and the invoice amounts that the short clearing firms must receive in payment. For each contract going to delivery, the invoice amount is the sum of two components:

***Invoice Amount = Converted Futures Price + Accrued Interest***

### Converted Futures Price

The converted futures price is the critical juncture at which the expiring futures contract price formally enters the delivery process. The converted futures price plays the same role in a Treasury futures delivery as the “clean” price plays in a cash market transaction in Treasury securities. For all Treasury futures contracts, the converted futures price is the product of three elements:<sup>15</sup>

***Converted Futures Price =  
Contract Scale Factor x Futures Settlement Price x  
Conversion Factor***

### Contract Scale Factor

...accounts for differences in contract notional size among Treasury futures. For UB, US, TN, ZN, or ZF futures, it is \$1,000 per contract price point (making notional size of \$100,000 per contract). For Z3N or ZT futures, it is \$2,000 per contract price point (making notional size of \$200,000 per contract).

### Futures Settlement Price

...is always expressed in price points and fractions of price points, with par equal to 100 points. If the owner of a short position in an expiring contract declares intent to deliver at any time prior to the contract's last trading day, then the invoice calculation is based on the futures daily settlement price for the Intention Day on which she declares. If the short position holder declares intent to deliver at any time on or after the contract's last trading day, then the invoice calculation is based on the contract's final settlement price.<sup>16</sup>

### Conversion Factor

Regardless of when the short chooses to deliver, multiple Treasury issues will be available to her to fulfill contract. To make deliverable grade Treasury securities roughly comparable to one another, the futures settlement price that determines the invoice amount is adjusted to account for the characteristics of the Treasury issue tendered for delivery. This adjustment is accomplished through a system of conversion factors. The conversion factor for any given deliverable grade issue represents the price at which \$1 face value, if transacted and settled during the futures contract delivery month, would yield 6 percent.<sup>17</sup>

### Accrued Interest

The short clearing firm making delivery also invoices the long clearing firm taking delivery for any coupon interest that has accrued but has not been paid as of the delivery date. Accrual of Treasury coupon interest is computed on the basis of the actual number of days in the semi-annual interval between the last coupon payment preceding delivery and the coupon payment next following delivery, as set forth in Exhibit 18.<sup>18</sup>

<sup>15</sup> Normal rounding conventions apply to the Converted Futures Price: The amount on the left-hand side of the equation gets rounded to the nearest penny, or rounded up to the nearest penny in the case of a computed amount ending in a half-cent (\$0.005).

<sup>16</sup> Useful to recall in this connection is that the last day of trading for ZF, Z3N, and ZT futures differs from the last day of trading in other Treasury Note and Bond futures. (See *Similarities and Differences among Contract Critical Dates* on page 8.)

<sup>17</sup> Conversion factors are determined and published by the Exchange and are available from most quote vendors. To obtain conversion factors, or to learn how they are computed, please visit <http://www.cmegroup.com/trading/interest-rates/treasury-conversion-factors.html>

<sup>18</sup> Coupon accrual conventions for Treasury bonds and notes are defined in the Code of Federal Regulations. See 31 CFR Part 306 – “General Regulations Governing U.S. Securities, Subpart E -- Interest” and 31 CFR Part 356 – “Sale and Issue of Marketable Book-Entry Treasury Bills, Notes and Bonds, Appendix B.” The latter of these is available as Department of the Treasury Circular, Public Debt Series No 1-93.



For each futures contract lot going to delivery, the accrued interest amount is computed in four steps. The first is to determine the semiannual coupon amount per \$1,000 of face value of the note or bond being delivered:

$$\text{Semiannual Coupon Amount} = (\text{Coupon Rate} \times \$1,000) / 2$$

Using this result and Exhibit 18, find the daily rate of interest accrual:

$$\text{Daily Interest per \$1,000 Face Value} = \frac{\text{Semiannual Coupon Amount}}{\text{Days in Half-Year from Last Coupon Payment to Next Coupon Payment}}$$

### Exhibit 18 — Day Counts for Treasury Notes and Bonds

Interest Period	Beginning and ending days are the 1st or the 15th of months listed under interest period (number of days).		Beginning and ending days are the last days of months listed under interest period (number of days).	
	Regular Year	Leap Year	Regular Year	Leap Year
January to July	181	182	181	182
February to August	181	182	184	184
March to September	184	184	183	183
April to October	183	183	184	184
May to November	184	184	183	183
June to December	183	183	184	184
July to January	184	184	184	184
August to February	184	184	181	182
September to March	181	182	182	183
October to April	182	183	181	182
November to May	181	182	182	183
December to June	182	183	181	182
One year (any two consecutive half years)	365	366	365	366

Source: 31 CFR Part 356, Department of the Treasury Circular, Public Debt Series No 1-93

Then calculate the accrued interest amount per \$1,000 face value. This result should be rounded to five decimal places, using standard rounding procedures:

$$\text{Accrued Interest per \$1,000 Face Value} = \text{Daily Interest per \$1,000 Face Value} \times \text{Days between Last Coupon Payment and Delivery Day}$$

Finally, one scales up this result to the face value required for futures contract delivery. For 3-Year or 2-Year Note futures, this means multiplying by 200. For any other Treasury futures contract, it means multiplying by 100.

**Example**

Assume it is late March 2016. A hypothetical short position holder declares on 29 March (Last Intention Day) that on 31 March (Last Delivery Day) she will deliver on one expiring March 2016 "Ultra" 10-Year Treasury Note contract (TNH6). The short plans to fulfill delivery with \$100,000 face value of the 2% of 15 Aug 2025. What is the correct invoice amount?

Because trading in TNH6 futures terminated on Monday, 21 March, delivery invoicing will be based on the contract final settlement price: 140 and 2/32nds, or 140.0625. The Exchange's conversion factor tables show the conversion factor applicable to delivery of the 2% of Aug 2025 note into TNH6 to be 0.7191. Given that the notional size of the TN contract is \$1,000 per price point, the converted futures price is:

$$\mathbf{\$100,718.94 = \$1,000 \text{ contract size} \times 140.0625 \text{ price} \times 0.7191 \text{ conversion factor}}$$

To get the accrued interest amount for delivery on 31 March, first determine the note's semiannual coupon payment. For \$1,000 face value of the 2% of Aug 2025, this will be

$$\mathbf{\$10 = (0.02 \times \$1,000) / 2}$$

The delivered note pays coupon interest every 15 February and 15 August. Exhibit 18 confirms that the half-year from the last coupon payment before delivery (15 February 2016) to the next coupon payment after delivery (15 August 2016) spans 182 days.<sup>19</sup> Thus, coupon interest will accrue over this half-year interval at the following daily rate per \$1,000 face value:

$$\mathbf{\$0.054945055 \text{ per day} = \$10 / 182 \text{ days}}$$

The interval over which coupon interest will accrue until the delivery date spans 45 days, from and including 15 February 2016, to and not including 31 March 2016. Thus, accrued interest per \$1,000 face value is:

$$\mathbf{\$2.47253 \text{ (rounded to five decimal places)} = \$0.054945055 \text{ per day} \times 45 \text{ days}}$$

Because one contract lot comprises 100 units of \$1,000 face value each, one multiplies result this by 100 to get \$247.253. Applying normal rounding procedures, the final accrued interest amount is \$247.25.

Combining these results, one obtains the correct invoice amount:

$$\mathbf{\$100,966.19 = \$100,718.94 \text{ principal} + \$247.25 \text{ accrued interest}}$$

<sup>19</sup> Recall that 2016 is a leap year, with a 29-day February.

## A HISTORICAL OVERVIEW OF PHYSICAL DELIVERY

We remarked at the outset that physical delivery on Treasury futures is a paradox, simultaneously pivotal and rare. Over the last 27 years the average share of delivery into expiring contracts is a mere 2.6 percent of mature open interest.<sup>20</sup> (See middle column of Exhibit 19.)

The incidence of delivery tends to be higher for futures for shorter underlying term-to-maturity exposures. Thus, for Long-Term Bond futures and conventional Bond futures the average share of mature open interest taken to delivery is light, around 1.4 percent. For Long-Term and Intermediate-Term Note futures, it's in the neighborhood of 2.5 percent. For Short-Term Note futures, it's 5.0 percent.

### Exhibit 19 — Treasury Futures Deliveries and Delivery Activity, 1991-2017

For Long-Term Bond (UB) futures, median value of contract delivery months from March 2010 through December 2017.

For all other futures, median values of contract delivery months from March 1991 through December 2017.

Futures Contract	Physical Deliveries as Percent of Mature Open Interest	Open Interest on First Position Day as Percent of Mature Open Interest
Long-Term "Ultra" Bond (UB)	0.9	14.5
Bond (ZB)	1.6	39.9
Long-Term (6 ½ to 10-Year) Note (ZN)	2.1	39.0
Intermediate-Term (5-Year) Note (FV)	2.4	41.1
Short-Term (2-Year) Note (ZT)	3.5	38.1
<b>Total</b>	<b>2.6</b>	<b>38.4</b>

A useful alternative measure is the open interest in an expiring contract that remains on its First Position Day ("FPD"). As the right-hand column of Exhibit 16 indicates, over the long term around 38 percent of a contract's mature open interest tends to remain open at close of FPD.

This measure directly gauges the willingness of open interest holders to involve themselves in physical delivery, irrespective of whether their contracts actually go to delivery. To see why this is so, recall that FPD is the earliest point in an expiring contract's delivery cycle at which a short holder can declare intent to deliver, and at which a long holder might be assigned to take delivery. A long holder not wanting to take delivery might nonetheless maintain her position through FPD and into the delivery month, for at least two reasons:

Suppose the rate of carry in contract-grade notes or bonds is expected to be positive during the interval between the expiring contract's first and last delivery days. That is, assume market conditions are such that the coupon interest that a deliverable-grade security will pay is expected to exceed the cost of financing ownership of it (through, eg, repurchase agreements or other means of borrowing). Under these conditions, a short holder who contemplates making delivery has at least one financial incentive to wait until the contract's last delivery day. With this in mind, a long position holder might choose to carry her position into the delivery month. If so, she plays the odds that no short position holder would elect to make delivery earlier than the end of the delivery month.

Suppose the long position owner has acquired her futures position very recently. Perhaps she is aware that, on any given day from FPD onward, CME Clearing will search out long positions with oldest vintages when it constructs its eligible pool of longs to accept deliveries from short intentioners. With this in mind she might play the odds that there are outstanding long positions with older vintages than hers, and that these longs, and not she, will be assigned to accept early deliveries.

In both instances nothing is for certain. The long holder knows there is a chance, no matter how remote, that she might be tapped to take delivery. In its essence the choice between holding the expiring contract position (and for how long) versus rolling out of it (and when) remains a gamble.

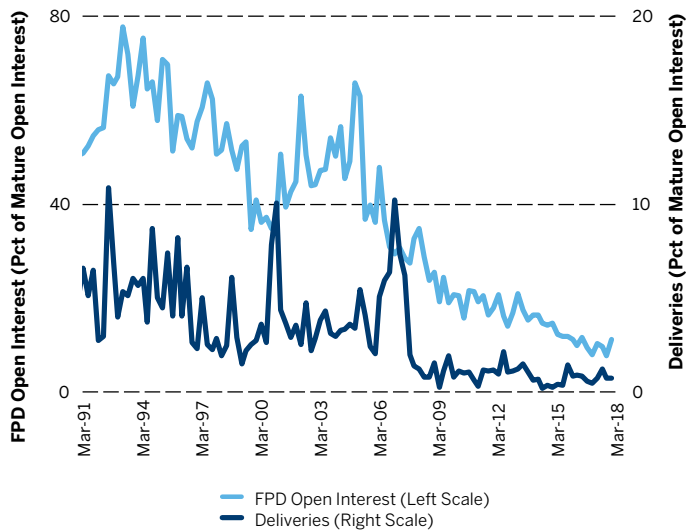
<sup>20</sup> Mature open interest in an expiring futures contract is defined as the median daily level of contract open interest during the 42 business days ending on, and including, the contract's First Position Day – essentially the prevailing level of open interest during the two months ending with the contract's First Position Day.

Because the secular proportions of delivery and FPD open interest shown in Exhibit 19 are 27-year median levels, they conceal that both measures have drifted lower more or less steadily since the early 1990s (Exhibit 20). During 1991-5 the aggregate pace of physical delivery signified around 5.5 percent of futures mature open interest. Since 2010 it has fallen to 0.8 percent. Likewise, the share of mature open interest in expiring contracts that remains open on First Position Day has shrunk from roughly 65 percent in the early 1990s to around 14 percent since 2010.

**Exhibit 20 – Trends in Treasury Futures Deliveries and Delivery Activity, 1991-2017**

Left Scale: Aggregate open interest in expiring contracts on FPD as percent of aggregate contract mature open interest.

Right Scale: Aggregate number of expiring contracts delivered as percent of aggregate contract mature open interest.



## APPENDIX – TREASURY FUTURES CONTRACT SPECIFICATIONS

	<b>All Contracts</b>
<b>Delivery Months</b>	Mar, Jun, Sep, Dec
<b>Delivery Method</b>	Physical delivery of contract grade US Treasury securities via the Federal Reserve book-entry wire-transfer system. Delivery invoice price equals the futures contract settlement price, times the size of the futures contract price point, times a conversion factor, plus accrued interest from the delivered security's last coupon payment date to the futures contract delivery date. The conversion factor, computed and published by the Exchange, represents the price of \$1 face value of the delivered security to yield 6 percent per annum as of the first day of the futures contract delivery month.
<b>Trading Hours</b>	CME Globex: 5:00 pm - 4:00 pm, Chicago time, Sunday - Friday Trading in an expiring contract ceases at 12:01 pm, Chicago time, on the contract's last trading day.
<b>Daily Price Limit</b>	None

	<b>Long-Term US Treasury Bond Futures</b>
<b>Contract Size</b>	One Treasury bond having face value at maturity of \$100,000
<b>Deliverable Grade</b>	Treasury bonds with remaining term to maturity of at least 25 years from the first day of the delivery month.
<b>Price Quote</b>	Par is on the basis of 100 points, with each point equal to \$1,000. For example, 80-16 represents 80 and 16/32 points. Minimum price increment is one thirty-second of one point (\$31.25 per contract) except for intermonth spreads, for which minimum price increment is one quarter of one thirty-second of one point (\$7.8125 per contract).
<b>Last Trading Day</b>	Seventh business day preceding the last business day of the delivery month
<b>Last Delivery Day</b>	Last business day of the delivery month
<b>Product Codes</b>	Globex: UB Clearing: UBE

	<b>US Treasury Bond Futures</b>
<b>Contract Size</b>	One Treasury bond having face value at maturity of \$100,000
<b>Deliverable Grade</b>	Treasury bonds with remaining term to maturity of at least 15 years but less than 25 years from the first day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$1,000. For example, 80-16 represents 80 and 16/32 points. Minimum price increment shall be one thirty-second of one point (\$31.25 per contract) except for intermonth spreads, where the minimum price increment shall be one quarter of one thirty-second of one point (\$7.8125 per contract).
<b>Last Trading Day</b>	Seventh business day preceding the last business day of the delivery month
<b>Last Delivery Day</b>	Last business day of the delivery month
<b>Product Codes</b>	Globex: ZB Clearing: 17

	<b>10-Year US Treasury Note Futures</b>
<b>Contract Size</b>	One Treasury note having face value at maturity of \$100,000
<b>Deliverable Grade</b>	Treasury notes with remaining term to maturity of at least 9 years 5 months, but not more than 10 years, from the first day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$1,000. For example, 84-16 represents 84 and 16/32 points, and 84-165 represents 84 and 16.5/32 points. Minimum price increment shall be one half of one thirty-second of one point (\$15.625 per contract) except for intermonth spreads, where the minimum price fluctuation shall be one quarter of one thirty-second of one point (\$7.8125 per contract).
<b>Last Trading Day</b>	Seventh business day preceding the last business day of the delivery month
<b>Last Delivery Day</b>	Last business day of the delivery month
<b>Product Codes</b>	Globex: TN Clearing: TN

	<b>Long-Term (6-1/2 to 10-Year) US Treasury Note Futures</b>
<b>Contract Size</b>	One Treasury note having face value at maturity of \$100,000
<b>Deliverable Grade</b>	Treasury notes with remaining term to maturity of at least 6 years 6 months, but not more than 10 years, from the first day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$1,000. For example, 84-16 represents 84 and 16/32 points, and 84-165 represents 84 and 16.5/32 points. Minimum price increment shall be one half of one thirty-second of one point (\$15.625 per contract) except for intermonth spreads, where the minimum price fluctuation shall be one quarter of one thirty-second of one point (\$7.8125 per contract).
<b>Last Trading Day</b>	Seventh business day preceding the last business day of the delivery month
<b>Last Delivery Day</b>	Last business day of the delivery month
<b>Product Codes</b>	Globex: ZN Clearing: 21

	<b>Medium-Term (5-Year) US Treasury Note Futures</b>
<b>Contract Size</b>	One Treasury note having face value at maturity of \$100,000
<b>Deliverable Grade</b>	Treasury notes with original term to maturity of not more than 5 years 3 months, and remaining term to maturity of not less than 4 years 2 months, from the first day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$1,000. For example, 91-16 represents 91 and 16/32 points, 91-162 represents 91 and 16.25/32 points, 91-165 represents 91 and 16.5/32 points, and 91-167 represents 91 and 16.75/32 points. Minimum price increment shall be one quarter of one thirty-second of one point (\$7.8125 per contract).
<b>Last Trading Day</b>	Last business day of the delivery month
<b>Last Delivery Day</b>	Third business day following the Last Trading Day
<b>Product Codes</b>	Globex: ZF Clearing: 25

<b>3-Year US Treasury Note Futures</b>	
<b>Contract Size</b>	One Treasury note having face value at maturity of \$200,000
<b>Deliverable Grade</b>	Treasury notes with original term to maturity of not more than 5 years 3 months from the first day of the delivery month, remaining term to maturity of at least 2 years 9 months from the first day of the delivery month, and remaining term to maturity of not more than 3 years from the last day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$2,000. For example, 91-16 represents 91 and 16/32 points, 91-162 represents 91 and 16.25/32 points, 91-165 represents 91 and 16.5/32 points, and 91-167 represents 91 and 16.75/32 points. Minimum price increment shall be one quarter of one thirty-second of one point (\$15.625 per contract).
<b>Last Trading Day</b>	Last business day of the delivery month
<b>Last Delivery Day</b>	Third business day following the Last Trading Day
<b>Product Codes</b>	Globex: Z3N Clearing: 3YR

<b>Short-Term (2-Year) US Treasury Note Futures</b>	
<b>Contract Size</b>	One Treasury note having face value at maturity of \$200,000
<b>Deliverable Grade</b>	Treasury notes with original term to maturity of not more than 5 years 3 months from the first day of the delivery month, remaining term to maturity of at least 1 year 9 months from the first day of the delivery month, and remaining term to maturity of not more than 2 years from the last day of the delivery month.
<b>Price Quote</b>	Par shall be on the basis of 100 points, with each point equal to \$2,000. For example, 91-16 represents 91 and 16/32 points, 91-162 represents 91 and 16.25/32 points, 91-165 represents 91 and 16.5/32 points, and 91-167 represents 91 and 16.75/32 points. Minimum price increment shall be one quarter of one thirty-second of one point (\$15.625 per contract).
<b>Last Trading Day</b>	Last business day of the delivery month
<b>Last Delivery Day</b>	Third business day following the Last Trading Day
<b>Product Codes</b>	Globex: ZT Clearing: 26

**For more information on Interest Rate products, visit [cmegroup.com/interestrates](http://cmegroup.com/interestrates).**



#### CME GROUP HEADQUARTERS

20 South Wacker Drive  
Chicago, Illinois 60606  
cmegroup.com

#### CME GROUP GLOBAL OFFICES

**Chicago**  
+1 312 930 1000

**Singapore**  
+65 6593 5555

**Houston**  
+1 713 658 2347

**Tokyo**  
+81 3 3242 6228

**New York**  
+1 212 299 2000

**Calgary**  
+1 403 444 6876

**São Paulo**  
+55 11 2787 6451

**Washington D.C.**  
+1 202 638 3838

**London**  
+44 20 3379 3700

**Hong Kong**  
+852 2582 2200

**Seoul**  
+82 2 6336 6722

Data sources: CME Group unless otherwise noted

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