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CME CLEARING

U.S. Treasury Futures Delivery Process

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INTRODUCTION

U.S. Treasury futures are contractual obligations to either buy (take delivery of) or sell (make delivery of) U.S. Treasury bonds or notes. Though most contracts are offset prior to contract expiration, the delivery process exerts significant influence on the prices at which Treasury futures contracts trade.

This booklet describes the rules and procedures that govern the Treasury futures delivery process. It is intended as an introduction for those who wish to better understand the mechanics of delivery and how delivery can affect pricing of Treasury futures.

THE SIGNIFICANCE OF DELIVERY

Futures are legally binding contracts. Anyone who holds an outstanding position in an expiring Treasury futures contract when the contract ceases trading must be prepared to fulfill the contractual obligation to buy or sell the underlying Treasury securities. Crucially, the delivery process determines the exact amount to be paid to the seller by the buyer for taking delivery.

Hedgers – those who use Treasury futures chiefly to lay off interest rate risk exposure rather than to acquire it – are rarely interested in using futures as a means of transacting Treasury securities, however. Hedgers typically liquidate their outstanding futures positions before the contracts enter their delivery cycle.

The vast majority of such liquidations are rolled. That is, the offsetting trades in the expiring contract are combined with the establishment of corresponding new positions in the deferred contract month. For example, a market participant with an outstanding long position in an expiring futures contract would sell it, thus netting the position to zero. Simultaneously, he would establish a new long position in the deferred contract, equivalent in scale to the position in the expiring contract that he has just offset. The practice of rolling is so prevalent that only a tiny share of Treasury futures held by market participants result in actual delivery of financial instruments – customarily around 3.3 percent. (For more detail, see *A Short Pictorial History of Physical Delivery* on page 20).

In sum, delivery is rare but pivotal. The Treasury futures complex is not organized primarily as a marketplace for the transfer of Treasury securities. Yet, the ever-present possibility of delivery forms the fundamental link between futures contract prices and cash market prices.

INSTRUMENTS UNDERLYING TREASURY FUTURES CONTRACTS

Each Treasury futures contract specifies the financial instruments a short position holder can deliver. The deliverable-grade securities – Treasury Bonds, and 10-Year, 5-Year and 2-Year Treasury Notes – are debt instruments backed by the full faith and credit of the U.S. government (Note that Treasury futures contracts are not obligations of the U.S. Treasury and therefore do not share the full faith and credit guarantee that supports the underlying Treasury notes and bonds).

Any Treasury security may be delivered to fulfill the obligations of its corresponding Treasury futures contract as long as it meets the criteria for delivery suitability spelled out in the contract specifications. Typically, several Treasury securities are eligible for delivery into each contract. The precise number varies with the issuing needs of the U.S. Treasury.

Delivery grade criteria are summarized in Exhibit 1 and in Appendix – Contract Specifications on page 25. The pertinent chapters of the CBOT Rulebook give

definitive accounts of the regulations specifying delivery grade criteria: Chapter 18 for Treasury Bond futures, Chapter 21 for 2-Year Treasury Note futures, Chapter 19 for 10-Year Treasury Note futures, and Chapter 20 for 5-Year Treasury Note futures. The CBOT Rulebook can be viewed at www.cmegroup.com.

EXHIBIT 1: DELIVERABLE GRADE FOR U.S. TREASURY FUTURES

FUTURES CONTRACT	CONTRACT SIZE (FACE VALUE)	DELIVERABLE GRADE
Treasury Bonds	\$100,000	U.S. Treasury bonds. Both maturity date and, if callable, the first call date must be at least 15 years from the first day of the contract expiration month.
10-Year Treasury Notes	\$100,000	U.S. Treasury notes. Remaining term to maturity must be at least 6 years 6 months and no more than 10 years from the first day of the contract expiration month.
5-Year Treasury Notes	\$100,000	U.S. Treasury notes. Remaining term to maturity must be at least 4 years 2 months and no more than 5 years 3 months from the first day of the contract expiration month.
2-Year Treasury Notes	\$200,000	U.S. Treasury notes. Original term to maturity must be no more than 5 years 3 months from the first day of the contract expiration month. Remaining term to maturity must be at least one year 9 months from the first day of the contract expiration month and no more than 2 years from the last day of the contract expiration month.

ROLE OF THE CLEARING FIRM

Procedures for making and taking delivery on Treasury futures are established by the Exchange. They follow predetermined steps that must be completed within a specific time frame to comply with the terms of the contractual obligation.

Delivery on Treasury futures is a three-day process. (See The Timetable for Delivery on page 5). The three days provide time for the parties to the trade – the buyer, the seller, their respective clearing firms and CME Clearing – to make the necessary notifications and delivery arrangements. The process is completed when the title to an underlying Treasury issue is transferred from seller to buyer and the buyer pays the appropriate contract invoice price, in full, to the seller.

Adherence to this timetable is critical. Unlike settlement practices in the cash government securities market, the Treasury futures delivery process does not support a failure-to-deliver capability. Any failure to make or take delivery on Treasury futures, in complete accord with contract terms, can result in significant economic and regulatory penalties, both to the failing party and to the failing party's clearing firm.

Clearing firms play a central role in the delivery process, because deliveries do not occur directly between customers. Deliveries occur between clearing firms, acting as agents for their customers.

Each clearing firm is responsible to the Exchange and to CME Clearing for guaranteeing the performance of its account holders in meeting contract terms. Among the practical implications:

A clearing firm taking delivery on a long position is responsible for (a) distributing the Treasury securities that it receives to its accounts who are the ultimate owners of the long contract position, and (b) collecting from those same accounts the monies required to meet the contract invoice price for the Treasury securities delivered.

Conversely, a clearing firm making delivery on a short position is responsible for (a) ascertaining that its accounts who are the ultimate holders of the short position have furnished deliverable-grade Treasury securities in sufficient quantity and in timely fashion, to meet contract requirements and (b) distributing to those same accounts the monies it receives as payment for the Treasury securities it delivers.

THE CME CLEARING GUARANTEE

If a clearing firm's account fails to fulfill the terms of a Treasury futures contract, then the clearing firm itself is financially responsible to CME Clearing. Never in the modern history of the Chicago Board of Trade or Chicago Mercantile Exchange — the entities that merged in July 2007 to form CME Group — has a clearing firm failed to meet this responsibility.

In the event that a clearing firm fails in guaranteeing the performance of a defaulting account, CME Clearing steps in as the ultimate guarantor of the integrity of the delivery process. If a clearing member fails to fulfill its specific delivery obligations regarding a Treasury futures contract, the sole obligation of CME Clearing “is to pay reasonable damages proximately caused by the default...”

Limits on the Guarantee

In no event is CME Clearing obligated to:

- pay any damages greater than the difference between the delivery price of the specific commodity and the reasonable market price of such commodity at the time delivery is contractually required; or
- make or take delivery of the actual commodity; or
- pay any damages relating to the accuracy, genuineness, completeness, or acceptability of certificates, instruments, or other similar documents; or
- pay any damages relating to the failure or insolvency of banks, depositories, warehouses or similar organizations, or entities that may be involved with a delivery.

CME Clearing's guarantee also entails responsibilities on the part of clearing firms:

- CME Clearing has no obligation or liability to any clearing member (or any other person) relating to a failure to fulfill a delivery obligation unless it is notified by the non-defaulting clearing member of such failure as soon as possible, but in no event later than sixty minutes after the time the delivery obligation was to have been fulfilled according to the CBOT Rulebook.
- All contract delivery obligations of one clearing member to another which are not fulfilled by the clearing member shall be deemed an obligation of the

defaulting clearing member to CME Clearing. These obligations must be fulfilled to CME Clearing within sixty minutes of the time the obligations were required to be fulfilled to the non-defaulting clearing member.

The authoritative descriptions of CME Clearing's guarantee are contained in Rule 714 in Chapter 7 of the CBOT Rulebook.

TIMETABLE FOR DELIVERY

The timetable for delivery in an expiring futures contract is determined by two distinct but complementary functions: the long's declaration of positions and the short's declaration of intent and delivery on contract. Exhibit 2 summarizes how these two functions mesh. (Note that the details of this timetable, e.g., times of day, may be subject to change insofar as the Exchange and CME Clearing periodically review the delivery process and when necessary, modify it to enhance its efficiency).

EXHIBIT 2: THE DELIVERY TIMETABLE FOR U.S. TREASURY FUTURES (All times refer to Central Time (CT))

	SHORT	CME CLEARING	LONG
First Position Day (Two business days prior to the named delivery month).			By 8:00 p.m. CT, two business days prior to the first day allowed for deliveries in expiring futures, clearing firms report to CME Clearing all open long positions, grouped by origin (i.e., house or customer) and trade date.
Day 1: Intention Day	By 8:00 p.m. CT, 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 with the long clearing firm(s), this declaration cannot be reversed.	By 10:00 p.m. CT, CME Clearing matches the delivering short's clearing firm to the clearing firm(s) with long positions having the oldest trade date(s). Each party – long and short – is informed of the opposite party's intention to make or take delivery.	By 8:00 p.m. CT, all clearing firms report to CME Clearing Provider all open long positions in expiring futures contracts, grouped by origin (i.e., house or customer) and trade date.
Day 2: Notice Day	By 2:00 p.m. CT (3:00 p.m. on Last Notice Day), using calculations based on the expiring contract's Intention Day settlement price, the short clearing firm invoices the long clearing firm through CME Clearing.		By 4:00 p.m. CT, the long clearing firm provides the short clearing firm with the name and location of its bank.
Day 3: Delivery Day	Short and long clearing firms have until 9:30 a.m. CT to resolve invoice differences. By 10:00 a.m. CT, 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 versus payment no later than 1:00 p.m. CT.		By 7:30 a.m. CT, the long clearing firm makes funds available and notifies its bank to remit the funds and accept Treasury securities. By 1:00 p.m. CT, the long clearing firm's bank has accepted the Treasury securities and, at the same time, has remitted the invoice amount via Fed wire to the short clearing firm's account.

The Long's Declaration of Positions

Before the delivery process can begin, each clearing firm must declare the long positions held by its accounts. The clearing firm does so by notifying CME Clearing on **First Position Day** (FPD) of all outstanding long positions, ordered by the dates on which they were established, and aggregated by the origin of their ultimate owners (i.e., either customer accounts or house accounts).

Example: A clearing firm has several accounts who have entered into long positions in Dec06 Treasury Bond futures on two dates –

Mon, October 16, 2006	8 customer accounts	3 house accounts
Tue, October 17, 2006	5 customer accounts	2 house accounts

No later than 8:00 p.m. CT on **First Position Day** for Dec06 deliveries (Wednesday, November 29), the clearing firm reports to CME Clearing two long position statistics for the October 16 vintage date: "Customer", the sum of contracts held in the 8 customer accounts; and "House", the sum of contracts held in the 3 house accounts.

Similarly, for the October 17 vintage date the clearing firm reports two long position statistics: "Customer", the sum of contracts held in the 5 customer accounts; and "House", the sum of contracts held in the 2 house accounts.

First Position Day is two business days before the first business day of the contract expiration month. From **First Position Day** through the end of the contract expiration month, all clearing firms are required to continue reporting on a daily basis all open long positions in the expiring futures. As in the example above, each clearing firm's daily report to CME Clearing will reflect open long positions grouped by vintage and origin (customer or house).

The Short's Declaration of Intent and Delivery on Contract

Much of what makes the Treasury futures delivery process financially interesting, especially for cash-futures arbitrage, concerns when and how the owner of the short position opts to make delivery.

Timing of Delivery: The owner of a short position in an expiring futures contract holds the right to decide when to initiate the delivery process. He can start it essentially at any time during the contract's expiration month.

Quality of Delivery: More important, the owner of a short position in an expiring futures contract holds the right to choose which Treasury issue he will deliver in fulfillment of the contract. As long as the issue meets the Exchange's criteria for goodness of delivery, the buyer must accept the seller's choice. Logically, the seller will want to deliver the security that costs the least to buy and hold until delivery. At any given time some deliverable-grade issues will be more economical to acquire than others. Knowing this, market participants tend to track both the price movements and the availability of the issue that is most economical to deliver – commonly referred to as the cheapest to deliver – as well as the price movements and availability of other eligible issues that are potential alternatives. The rankings of securities in terms of their attractiveness for delivery can change throughout the life of a futures contract. At any particular time, either at expiration or before, a Treasury futures contract's price reflects the prices of the deliverable-grade issues that market participants expect will play a role in the delivery process.

As Exhibit 2 shows, the Treasury futures delivery process spans three business days. The first is **Intention Day**, when the short instructs his clearing firm to notify CME Clearing that he plans to make delivery.

With Bond futures and 10-Year Note futures, a short position holder can declare intent to deliver at any time from the second business day prior to the contract expiration month (**First Intention Day**) through, and including, the second business day prior to the last business day of the expiration month (**Last Intention Day**).

For 5-Year Note futures and 2-Year Note futures, **First Intention Day** is likewise the second business day prior to the contract expiration month. However, **Last Intention Day** is the first business day of the following month. (See Differences Among Bond and Note Futures below).

Note that for all Treasury futures *First Intention Day for short position holders coincides with First Position Day for long position holders.*

CME Clearing then matches a clearing firm(s) representing long position holders with the clearing firm that has declared intent to deliver on short positions. (The next section, **Delivery Matching** on page 10, discusses precisely how shorts and longs are matched). By 10:00 p.m. CT, both the clearing firm representing the short and the clearing firm(s) representing the long are notified, by electronically delivered assignment notice reports, of the parties to which they have been matched for delivery. The same information is made available to clearing firms in the Issues and Stops Report, published daily around 10:00 p.m. CT on www.cmegroup.com.

On the second day in the three-day sequence – **Notice of Intention Day**, or simply **Notice Day** – the short's clearing firm prepares an invoice for the clearing firm(s) to which it has been matched to make delivery, detailing the Treasury security (or securities) that the short will deliver. Essential features of this invoice include the securities' CUSIP numbers, coupon rates, and maturity dates, and the amount of payment required for delivery, as determined by the futures contract price. (See **Invoicing for Treasury Futures Deliveries** on page 16). The invoice must be delivered to the long's clearing firm prior to 2:00 p.m. CT on **Notice Day** (or 3:00 p.m. CT on **Last Notice Day**, the business day following **Last Intention Day**). By 4:00 p.m. CT, the long clearing firm must provide the short clearing firm with delivery instructions (e.g., 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 is required to declare and deliver \$100,000 face value (\$200,000 face value in the case of 2-Year Note futures) of one and only one Treasury issue. The short is not permitted to fulfill an individual futures contract with fractional delivery. That is, he may not deliver a mixed portfolio of Treasury securities (say, \$40,000 face value of one issue and \$60,000 face value of another). However, a short making delivery on several Treasury futures contracts is allowed to deliver different securities into different contracts, as long as these securities are all deliverable grade.

Example: A trader delivering on 20 5-Year Note futures would be permitted to use \$1.8 million face value of one Treasury note to fulfill eighteen contracts and \$200,000 face value of another Treasury note to make delivery on the remaining two contracts, as long as both notes are eligible for delivery into the expiring contract.

On **Delivery Day** – the third and final day in the sequence – the Treasury security is delivered to the long’s clearing firm (acting as agent for the long) by the short’s clearing firm (acting as agent for the short), in exchange for payment of the invoice amount. The short’s clearing firm must have the invoiced Treasury security in its bank account by 10:00 a.m. CT, and must deliver by 1:00 p.m. CT.

Differences Among Bond and Note Futures

For all U.S. Treasury futures: **First Intention/Position Day** is two business days before the first business day of the contract expiration month. **First Delivery Day** is the first business day of the contract expiration month.

For Bond futures and 10-Year Note futures: **Last Intention Day** is the second business day before the last business day of the contract expiration month, **Last Notice Day** is the next-to-last business day, and **Last Delivery Day** is the last business day. Although the delivery process continues until the expiration month’s end, trading in the expiring contract stops at the end of the seventh business day before the last business day of the month.

For 5-Year Note futures and 2-Year Note futures: The U.S. Treasury auctions and issues new 5-Year Notes and 2-Year Notes so that they are dated and settled on the last day of the month. If this is not a business day, the new note’s issue date is typically the first business day of the following month. (Issue dates and dated dates are not always identical. Specifics are established each time the U.S. Treasury announces it will auction a new 5-Year Note or 2-Year Note). To permit eligible notes that are auctioned during the expiration month to be delivered into expiring 5-Year Note futures or 2-Year Note futures, the last day of trading for these contracts is the last business day of the contract expiration month. Moreover, the delivery period for expiring contracts is defined so as to include the three business days that follow the last trading day. Thus, **Last Intention Day** for an expiring contract is one business day after the last day of trading, **Last Notice Day** is two business days after and **Last Delivery Day** is three business days after.

Example: Consider December 2006. Its first business day is Friday, December 1. Its last business day is Friday, December 29. The Exchange observes the Christmas holiday on Monday, December 25, and the New Year’s holiday on Monday, January 1, 2007. Thus, the critical dates in the delivery process for Dec06 Treasury futures are as shown in Exhibit 3.

EXHIBIT 3: CRITICAL DATES IN THE DELIVERY PROCESS FOR TREASURY FUTURES EXPIRING IN DECEMBER 2006

	BOND AND 10-YEAR	5-YEAR AND 2-YEAR
First Intention/Position	Wed, Nov 29	Wed, Nov 29
First Notice	Thurs, Nov 30	Thurs, Nov 30
First Delivery	Fri, Dec 1	Fri, Dec 1
Last Trading	Tues, Dec 19	Fri, Dec 29
Last Intention	Wed, Dec 27	Tues, Jan 2, 2007
Last Notice	Thurs, Dec 28	Wed, Jan 3, 2007
Last Delivery	Fri, Dec 29	Thurs, Jan 4, 2007

Example

To make the preceding explanation concrete, consider the following simplified illustration.

Day 1: Intention Day

1. Mr. Davis informs FCM D – the futures commission merchant that serves as his clearing firm, at which he maintains a customer account – that he intends to deliver on his short position of 100 10-Year Treasury Note (TY) futures. For simplicity, suppose that on this particular **Intention Day** Mr. Davis is FCM D’s only account to declare intent to deliver, and that FCM D is the only clearing firm to declare intent to deliver to CME Clearing.
2. By 8:00 p.m. CT, FCM D has notified CME Clearing of its intention to deliver on 100 TY futures for customer account. Note that FCM D does not identify Mr. Davis, either to CME Clearing or to anyone else. It identifies only the category of origin of ownership (either “customer account” or “house account”).
3. Likewise, by 8:00 p.m. CT, all clearing firms have reported their outstanding long positions, sorted by vintage and origin, to CME Clearing. Suppose, again for simplicity, that the oldest vintage positions are held at two other clearing firms: FCM P, with a long position of 40 contracts for customer account (all owned by Mr. Parker); and FCM C, with a long position of 60 contracts for house accounts.
4. CME Clearing matches FCM D’s short position with the oldest dated outstanding long positions. That is, FCM D’s 100-contract short position is matched with the 60 contracts held in long house positions at FCM C and the 40 contracts held in long customer positions at FCM P.
5. By 10:00 p.m. CT, CME Clearing has notified FCM P that FCM D will deliver into its oldest-vintage long position of 40 contracts for customer account. Likewise, CME Clearing has notified FCM C that FCM D will deliver into its oldest-vintage long position of 60 contracts for house account.
6. Around 10:00 p.m. CT, the daily Issues and Stops Report is published on www.cmegroup.com. The Issues and Stops Report lists those clearing firms, and the aggregate number of contracts for each clearing firm, that have been matched that day for making or taking delivery. The Issues and Stops Report does not disclose the identities of account holders, nor does it say anything about which specific Treasury issues will be tendered for delivery. The report displays only the information shown in Exhibit 4.

EXHIBIT 4: INFORMATION IN THE DAILY ISSUES AND STOPS REPORT

FCM	Stops (takes delivery on) or issues (makes delivery on)	Number of TY futures contracts	On behalf of customer account or house account
C	stops on	60	for house
D	issues on	100	for customer
P	stops on	40	for customer

Note: Limits on the FCM’s Role in Matching Short with Long

Nothing prevents a single clearing firm from representing both sides of a match. Suppose, for example, that instead of clearing through different firms, Mr. Davis and Mr. Parker both clear through FCM D. Then in Step 3 above, FCM D would be matched with itself to make and take delivery on 40 contracts. However, for this to occur, the short and long positions at FCM D would have to be matched by CME Clearing, like any other pair of short and long positions, according to the procedures described below. (See Delivery Matching on the next page). FCM D cannot, on its own, match its accounts with short positions to its accounts with long positions. Thus, for example, it cannot directly match Mr. Davis for delivery to Mr. Parker.

Day 2: Notice Day

1. Mr. Davis informs FCM D which Treasury notes he will use to fulfill delivery on his 100 contracts. FCM D then prepares and delivers invoices to FCM C and FCM P informing them of the details of these securities (i.e., CUSIP numbers, coupon rates, maturity dates) and the dollar amounts it should receive as payment against delivery. These invoices are delivered to FCM C and FCM P by 2:00 p.m. CT. (On **Last Notice Day** short position holders making delivery have until 3:00 p.m. CT to deliver the invoices).
2. By 4:00 p.m. CT, FCM C and FCM P furnish FCM D with instructions for delivery, specifically the details of their respective bank accounts, to which FCM D will deliver Davis's Treasury securities.

Day 3: Delivery Day

1. FCM C and FCM P must make funds available by 7:30 a.m. CT, and must then instruct their respective banks to remit payment to FCM D and to accept delivery of Treasury securities.
2. FCM D is responsible for ascertaining that Mr. Davis's Treasury securities are in its bank account, in the correct amounts, no later than 10:00 a.m. CT.
3. By 1:00 p.m. CT, FCM D instructs its bank to wire the correct securities, in the correct amounts, to FCM C and FCM P. Simultaneously, FCM C and FCM P accept the securities and remit the correct invoice amounts to FCM D's bank account.

DELIVERY MATCHING

At the end of each **Intention Day** during the expiration month, the CME Clearing matches long positions with short positions that have declared intent to deliver. Before delving into the details of this process, a clear definition of "position" is useful.

From CME Clearing's standpoint – A short position is defined in terms of a unique combination of two identifiers: clearing firm and origin (either house or customer). A long position is defined in terms of a unique combination of three identifiers: clearing firm, origin and position vintage (i.e., 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 simply the sum of all positions of its accounts who are short the expiring futures and who, on that day, 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 held by the clearing firm's accounts.

In what follows, it is important to keep in mind that CME Clearing matches longs and shorts for delivery without regard to what specific Treasury issue or issues will be delivered. The short position owners who have declared intent to deliver are not obliged to say which particular Treasury issue or issues they will tender for delivery until **Notice Day** – the day after shorts and longs have been matched with each other.

The matching process proceeds in two steps. The first is determination of the pool of long positions that are eligible to be matched against the short positions that have declared intention to deliver. The second is random matching of the eligible long positions against these short positions. The following example illustrates.

Step 1: Determination of the Eligible Long Position Pool

On a given **Intention Day** during a Treasury futures contract's expiration month, three clearing firms – F, G and H – declare to CME Clearing that they intend to deliver on short positions totaling 2,000 contracts. All three make their declarations prior to the 8:00 p.m. CT deadline – in FCM H's case, just under the wire. Exhibit 5 provides the details.

EXHIBIT 5: CLEARING FIRMS DECLARING INTENTION TO DELIVER ON SHORT POSITIONS

Clearing Firm and Account Origin	Number of Contracts Declared for Delivery	Time of Delivery Declaration to CME Clearing (p.m., CT)
F – Customer	900	4:00
G – Customer	100	4:01
H – House	1,000	7:59
Total	2,000	

CME Clearing must assemble a pool of eligible long positions containing a total of 2,000 contracts to match for delivery from these short positions.

Recall that by 8:00 p.m. CT all clearing firms have reported their outstanding long positions, classified by origin and vintage, to CME Clearing. Suppose that on this particular **Intention Day** CME Clearing's long position stack, sorted by vintage, is as shown in Exhibit 6 (with Date 1 representing the oldest vintage, Date 2 the second oldest vintage, and so on).

To build the eligible long position pool, CME Clearing begins with outstanding long positions established on the oldest vintage date, Date 1. There are three of these, totaling 290 contracts, not enough to cover the 2,000 short contracts declared for delivery.

CME Clearing admits the three Date 1 vintage long positions to the eligible long position pool, then proceeds to the long positions established on the second oldest vintage date, Date 2. There are two of these, totaling 60 contracts. Adding these to the Date 1 vintage positions brings the eligible long position pool to five pieces, totaling 350 contracts, still not enough to cover the 2,000 short contracts declared for delivery.

CME Clearing must find long positions containing at least 1,650 more contracts, so it proceeds to the long positions established on Vintage Date 3. There are three of these, totaling 9,000 contracts: 1,000 in house accounts at FCM G; 5,000 in customer accounts at FCM M; and 3,000 in house accounts also at FCM M.

EXHIBIT 6: PRORATING THE DATE 3 VINTAGE LONG POSITIONS TO COMPLETE THE ELIGIBLE LONG POSITION POOL

Vintage Date and Total Positions (Contracts)	Clearing Firm and Account Origin	Position Size (Contracts)
Date 1 290	H – Customer	150
	J – Customer	50
	J – House	90
Date 2 60	H – Customer	10
	L – Customer	50
Date 3 9,000	G – House	1,000
	M – Customer	5,000
	M – House	3,000

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EXHIBIT 7: PRORATING THE DATE 3 VINTAGE LONG POSITIONS TO COMPLETE THE ELIGIBLE LONG POSITION POOL

Date 3 Vintage Positions	Position Size (Contracts)	Share of Date 3 Vintage Total (Percent)	Prorated Share of 1,650 Contracts Required to Complete the Eligible Long Position Pool
G – House	1,000	11.11	183
M – Customer	5,000	55.55	917
M – House	3,000	33.33	550
Total	9,000	100	1,650

CME Clearing now has far more contracts than it needs to cover the 1,650 that it seeks. To resolve this difference, it extracts a prorated number of contracts from each of the Date 3 Vintage positions, sufficient to total 1,650 contracts. Exhibit 7 illustrates how this is done.

CME Clearing admits to the eligible long position pool the three prorated pieces extracted from the Date 3 vintage positions, shown in the right hand column of Exhibit 7. (The fate of the unused portions of the Date 3 vintage positions is explained in “What Happens to the Long Position Stack” on page 15).

The eligible long position pool, now complete, is shown in Exhibit 8. Note that it contains eight pieces totaling 2,000 contracts – exactly enough to match the 2,000 contracts that short intentioners have declared for delivery.

EXHIBIT 8: THE ELIGIBLE LONG POSITION POOL

Clearing Firm, Account Origin, and Vintage	Size Pool Piece (Contracts)
G - House (Date 3)	183
H - Customer (Date 1)	150
H - Customer (Date 2)	10
J - Customer (Date 1)	50
J - House (Date 1)	90
L - Customer (Date 2)	50
M - Customer (Date 3)	917
M - House (Date 3)	550
Total	2,000

Step 2: Random Matching of Longs with Shorts

CME Clearing is now prepared to match the three short intentioners (Exhibit 5) with the eight pieces in the eligible long position pool (Exhibit 8). It begins by randomly selecting one of the short intentioners. Suppose this is FCM G, which intends to deliver on 100 contracts for customer accounts.

CME Clearing then randomly draws a piece from the eligible long position pool. Suppose this is the 90-contract house position at FCM J. This is matched with FCM G's short position, leaving FCM G with 10 unmatched short contracts.

CME Clearing makes another random draw from the eligible long position pool. Suppose this is the 183-contract house position at FCM G itself. Ten of the contracts in this piece will be matched with FCM G's short position.

FCM G's 100-contract short position is now completely matched for delivery on 10 contracts to FCM G itself and on 90 contracts to FCM J, in both cases for house accounts. The long position piece that was broken up to complete the match is reduced from 183 contracts to 173 and then returned to the eligible long position pool for the next round of matching. Exhibit 9 summarizes the contents of the eligible pool at this stage in the process.

EXHIBIT 9: THE ELIGIBLE LONG POSITION POOL AT THE END OF THE FIRST ROUND OF MATCHING

Clearing Firm and Account Origin	Size Pool Piece (Contracts)
G – House	173
H – Customer	150
H – Customer	10
J – Customer	50
L – Customer	50
M – Customer	917
M – House	550
Total	1,900

CME Clearing randomly selects another short intentioner. Suppose this is FCM F, which intends to deliver on 900 contracts for customer accounts.

CME Clearing then randomly draws a piece from the eligible long position pool. Suppose this is the 917-contract customer position at FCM M. This is more than enough to cover FCM F’s short position, so FCM F becomes fully matched for delivery on 900 contracts to FCM M customer accounts.

As before, the long position piece that was fragmented to complete the match is reduced from 917 contracts to 17 and thrown back into the eligible long position pool for the next round of matching. Exhibit 10 summarizes the pool’s status.

EXHIBIT 10: THE ELIGIBLE LONG POSITION POOL AFTER THE SECOND ROUND OF RANDOM DRAWINGS

Clearing Firm and Account Origin	Size Pool Piece (Contracts)
G – House	173
H – Customer	150
H – Customer	10
J – Customer	50
L – Customer	50
M – Customer	17
M – House	550
Total	1,000

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The only remaining short intentioner is FCM H, which has announced that it will deliver on 1,000 contracts for house accounts. By design, the seven pieces remaining in the eligible long position pool total exactly 1,000 contracts. These are automatically matched for delivery from FCM H.

The process is now complete. Exhibit 11 below summarizes the results from the vantage of the short intentioners. Exhibit 12 summarizes from the vantage of the long position holders who have been assigned to take delivery.

EXHIBIT 11: RESULTS OF THE MATCHING PROCESS: TO WHICH LONGS WILL EACH SHORT DELIVER?

Short	Position	Delivers to
F – Customer	-900	M – Customer (900)
G – Customer	-100	G – House (10) and J – House (90)
H – House	-1,000	G – House (173)
		H – Customer (150), H – Customer (10)
		J – Customer (50), L – Customer (50)
		M – Customer (17), M – House (550)

EXHIBIT 12: RESULTS OF THE MATCHING PROCESS: FROM WHICH SHORTS WILL EACH LONG TAKE DELIVERY?

Long	Position	Takes Delivery from
G – House (Date 3)	183	G – Customer (10) and H – House (173)
H – Customer (Date 1)	150	H – House (150)
H – Customer (Date 2)	10	H – House (10)
J – Customer (Date 1)	50	H – House (50)
J – House (Date 1)	90	G – Customer (90)
L – Customer (Date 2)	50	H – House (50)
M – Customer (Date 3)	917	F – Customer (900) and H – House (17)
M – House (Date 3)	550	H – House (550)

When and How Position Vintage Dates Matter

Vintage dates matter for determining the eligible long position pool: The vintage dates of long positions are critical in determining what long position pieces are admitted to the eligible long position pool and how those pieces are defined. For example, the eligible pool shown in Exhibit 8 contains not one but two distinct pieces representing customer accounts at FCM H – distinct only because they have different vintage dates. An important implication is that, because at least two different random draws from the eligible pool will be required to match these two pieces with short positions, there is no guarantee that they will be matched to the same short intentioner.

Vintage dates do not matter for making random draws from the eligible long position pool: Once the elements of the eligible long position pool have been determined, vintage dates cease to matter, in the sense that a piece's vintage date has no bearing on the order in which the piece is randomly drawn from the pool for matching with short intentioners. In the example above, the three pieces that CME Clearing draws from the eligible pool happen to have vintage dates, in the order in which they are drawn, of Date 1, Date 3 and Date 3.

What happens on **Last Intention Day**? CME Clearing adheres to the general procedure illustrated in the example above in all instances, including Last Intention Day. The only difference is that, because all short contracts outstanding at close of business on

Last Intention Day are required to declare for delivery, all remaining short position holders become intentioners. Moreover, since short open interest always equals long open interest, the entire remaining long position stack is admitted to the eligible long position pool. As above, the pieces drawn from the long position pool are still defined in terms of discrete combinations of clearing firm, origin and vintage date.

What Happens to the Long Position Stack

To complete the eligible long position pool, CME Clearing had to extract pro-rated portions (totaling 1,650 contracts) from the long positions with Date 3 vintage (totaling 9,000 contracts). Once the eligible long position pool has been established, the remainders of each of those long positions (totaling 7,350 contracts) are automatically returned to the top of the long position stack, as shown in Exhibit 13.

EXHIBIT 13: 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 7,350	G – House	817
	M – Customer	4,083
	M – House	2,450
Date 4
Date 5
Date 6

If the ultimate owners of these positions – the house accounts at FCM G and FCM M, and the customer accounts at FCM M – make no net changes to their contract exposure over the coming day, then the positions shown in Exhibit 13 will be what FCM G and FCM M report to CME Clearing at the end of the following business day as their long positions for Vintage Date 3.

There are several ways in which these positions might decrease over the course of the following business day:

If it is on or before the expiring contract’s last trading day, then the account owners might reduce their positions by selling.

If it is on or before the second business day following the last day of trading (or, in the case of 2-Year Note and 5-Year Note futures, on or before noon on the business day following the last day of trading), then the account owners might reduce their positions by entering into either exchange-for-physical, exchange-for-risk, or exchange-for-swap transactions in which they tender futures in exchange for suitable physical securities or over-the-counter contracts. (For more information on such transactions, see “Exchange of Futures for Related Transactions”, in Chapter 5 of the CBOT Rulebook).

By definition, however, these positions cannot increase. Any newly added increments would have a different vintage date, namely the following business day.

How the Clearing Firm Finishes the Job

As noted above, deliveries on Treasury futures take place between clearing firms, not between the ultimate owners of futures positions.

As a general principle, the Exchange requires that a clearing firm’s allocation of Treasury securities among delivery takers and delivery makers – either among its own accounts or to other clearing firms – must be fair and equitable.

Considerations of fairness and equitability of allocation arise clearly whenever one clearing firm is matched to make delivery to many others.

Example: In Exhibit 11, the short house position at FCM H is matched to deliver into diverse long positions at four other FCMs (G, J, L and M) as well as to long customer accounts of its own.

If all of the delivering firm's short accounts have tendered the same Treasury issue for delivery, then it doesn't matter for practical purposes how the firm allocates these securities for delivery to the firms to which it has been matched. However, if the delivering firm's short accounts have tendered different Treasury issues for delivery, then the firm's allocation of them makes a potentially significant difference for the receiving firms.

The same considerations apply within the individual clearing firm. Once delivery from one clearing firm to another has taken place, each individual clearing firm is responsible for fair and equitable allocation to its individual account holders of the Treasury securities taken in delivery and the monetary proceeds made on delivery. These standards apply in any instance, but especially when short and long accounts at the same clearing firm are matched for delivery.

Example: In Exhibit 11, FCM G is matched to deliver on 10 contracts for short customer accounts to its own long house accounts. Likewise, FCM H is matched to deliver on 160 contracts for short house accounts to various of its own long customer accounts.

INVOICING FOR TREASURY FUTURES DELIVERIES

On **Notice Day** the short clearing firm informs the long clearing firm to which it has been assigned for delivery of the details of the Treasury issues (CUSIP numbers, coupon rates, maturity dates) that it will deliver. Once this is established, both clearing firms can compute the invoice amount that the short must receive in payment for the delivered Treasury securities. The invoice amount is the sum of two components: the principal amount and accrued interest.

Principal Amount

The principal amount is critical, because this is the point at which the futures contract price formally enters into the delivery process. Before going further, it is useful to have a clear understanding of which futures price comes into play.

If the owner of a short position in an expiring Treasury futures contract declares intent to deliver on any trading day up to and including the contract's last trading day, then the contract price that determines his invoice amount is the daily settlement price for the **Intention Day** on which the short declares.

If the short position holder declares intent to deliver at any time after the contract's last trading day, the contract price that determines his invoice amount is the contract's final settlement price.

In this context, it is useful to recall that the last day of trading for 5-Year Note futures and 2-Year Note futures differs from the last day of trading for Bond futures and 10-Year Note futures. (See the Timetable for Delivery on page 5).

Regardless of when the short chooses to effect delivery during the expiration month, a variety of coupons and maturities are available to him to fulfill contract. For this reason, before the invoice amount can be calculated, the contract price to be used for invoicing must be adjusted to the characteristics of the specific Treasury issue being delivered. This is done with a conversion factor: the price (as a percent of par, expressed in decimal terms) at which the delivered issue would yield 6 percent.

To identify the correct conversion factor, first determine the remaining term to maturity (or term to first call date) for the Treasury issue being delivered. For deliveries into Bond futures and 10-Year Note futures, the issue's remaining term to maturity (or term to first call date) is calculated in complete three-month quarters, always rounded down to the nearest quarter. The first day – calendar day, not business day – of the expiration month is the date used to establish remaining term to maturity.

Example: A bond with 21 years, 4 months and 17 days to maturity as of the first day of the expiration month would have remaining term to maturity of 21 years and 3 months for purpose of invoice calculation in Treasury Bond futures.

For deliveries into 5-Year Note futures and 2-Year Note futures, remaining term to maturity is calculated in complete one-month increments, rounded down to the nearest month. As before, the first calendar day of the expiration month is used to establish remaining term to maturity.

Example: A note with 1 year, 10 months and 17 days to maturity as of the first day of the expiration month would have a term to maturity of 1 year and 10 months for purposes of invoice calculation in 2-Year Treasury Note futures.

Conversion factors are published on the CME Group Web site and are also available from most quote vendors.

Combining these elements, the principal amount for any single Treasury futures contract is the appropriate futures settlement price (measured in points and fractions of points), times the contract size (measured as U.S. dollars per price point), times the conversion factor:

Principal amount = futures settlement price x contract size x conversion factor

Example: Assume it is late September 2006. A short position holder declares on September 27 (**Last Intention Day**) that he will make delivery on September 29 (**Last Delivery Day**) on one expiring Sep06 10-Year Treasury Note futures contract (TYU6). Since the last day of trading in TYU6 futures was Wednesday, September 20, the pertinent futures price for invoicing is the contract's final settlement price: 107-19.5/32nds.

The short plans to make delivery using the 4 1/4 percent of Aug 15, 2013. The Treasury futures conversion factor tables indicate that the appropriate factor for delivering this note into Sep06 futures is 0.9040.

For 10-Year Note futures (or Bond or 5-Year Note futures) the settlement price is multiplied by the contract size of \$1,000 per contract price point. (For 2-Year Note futures, the settlement price is multiplied by the contract size of \$2,000 per contract price point).

Thus, the principal amount of the futures invoice price is calculated as follows:

Futures settlement price = 107-19.5/32nds = 107.609375

Futures invoice price = (107.609375 x \$1,000 contract size) x 0.9040 conversion factor = \$97,278.875

Apply normal rounding conventions (i.e., round to the nearest penny, and round up each half-penny) to obtain

Principal amount = \$97,278.88

Accrued Interest

The delivering short also invoices the long for coupon interest that has accrued but has not been paid as of the delivery date. Accruals are computed in the standard fashion for Treasury securities. That is, coupon accrual is based on the actual number of days in the semi-annual interval between the last coupon payment before delivery and the next coupon payment, as given in Exhibit 14. (The details of coupon accrual for Treasury bonds and notes are defined in Appendix B of 31 CFR Part 356, available as Department of the Treasury Circular, Public Debt Series No 1-93).

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Accrued interest per futures contract is computed in four steps. First, determine the semi-annual coupon amount per \$1,000 face value:

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

Next, using this result, determine the daily rate of interest accrual:

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

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

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

EXHIBIT 14: 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.

Finally, multiply by 100 to scale up the result to the \$100,000 face value required for contract delivery. (Recall that this applies only to Bond and 10-Year and 5-Year Note futures. For 2-Year Note futures, multiply by 200).

Example, continued: To find accrued interest for the 4-1/4% of August 2013 for trade settlement on September 29, 2006, first determine the note's semi-annual coupon payment. For every \$1,000 face value of the note, this will be:

$$\$21.25 = (0.0425 \times \$1,000) / 2$$

Next, observe that this security pays coupon interest every six months, on February 15 and August 15. In the half-year from the coupon payment preceding delivery (August 15, 2006) to the next coupon payment thereafter (February 15, 2007) there are 184 days. Thus, coupon interest will accrue over this 184-day interval at the following daily rate per \$1,000 face value:

$$\$21.25 / 184 \text{ days} = \$0.115489130$$

Next, determine the number of days over which coupon interest will accrue until the delivery date. This interval spans 45 days from (and including) August 15, 2006 to (but not including) September 29, 2006.

Next, determine accrued interest per \$1,000 face value:

$$\$0.115489130 \text{ (daily interest for 184 days at } 4\text{-}1/4\% \text{ per annum on } \$1,000)$$

$$\times 45 \text{ days (interval from last coupon payment to delivery day)} = \$5.19705 \text{ (rounded to five decimal places)}$$

Multiply this by the futures contract scale of 100 to get \$519.705. Applying normal rounding procedures, this becomes

\$519.71 accrued interest.

Invoice Amount

The invoice amount is the sum of the principal amount and accrued interest.

Example, concluded:

$$\$97,278.88 \text{ principal} + \$519.71 \text{ accrued interest} = \text{Total invoice amount} = \$97,798.59$$

ACQUIRING TREASURY SECURITIES FOR FUTURES DELIVERY

To conform to cash market practices, delivery on Treasury futures contracts is made by book entry. The procedure is handled through an agent. Any commercial bank that is a member of the Federal Reserve System and that has capital (including surplus and undivided earnings) in excess of \$100 million may act as an agent.

A SHORT PICTORIAL HISTORY OF PHYSICAL DELIVERY

As noted earlier, physical delivery on Treasury futures contracts is pivotal but rare. The summary statistics in the first column of Exhibit 15 indicate that since the mid-1990s deliveries into an expiring contract typically amount to 3.3 percent or so of the contract's mature open interest.

Note: Defining Open Interest

When expressing physical deliveries (or any other magnitude) as percent of open interest, it pays to define "open interest" clearly. The measure used here is the expiring contract's "mature open interest," defined as the median level of daily open interest in the contract during the 42 business-day interval (approximately two months) ending on the contract's [First Position Day](#).

Example: For Treasury futures expiring in March 2005, [First Position Day](#) is Friday, February 25, 2005. Thus, a contract's mature open interest is the median level of its daily open interest during the interval December 28, 2004 to February 25, 2005, inclusive.

Historically the incidence of physical delivery is higher for futures with shorter term-to-maturity exposures. Thus, for 10-Year Note futures and Bond futures the share of mature open interest taken to delivery is a relatively light 2.2 to 2.7 percent. For 5-Year Note futures, it is around 3.7 percent. For 2-Year Note futures, it exceeds 6.0 percent

EXHIBIT 15: TREASURY FUTURES DELIVERIES AND DELIVERY ACTIVITY, DEC 96-DEC 06
(Median values for contract expires from Dec 96 to Dec 06, inclusive)

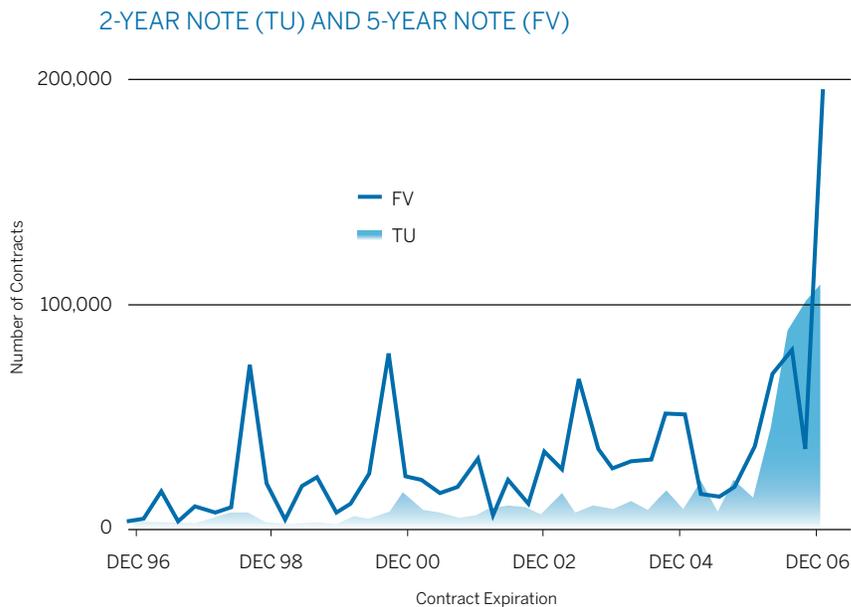
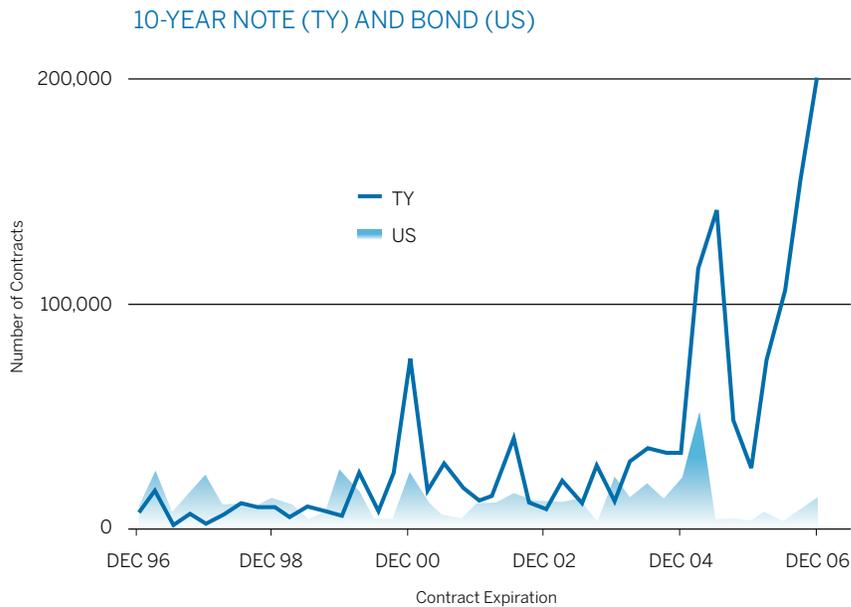
	Physical Deliveries as Percent of Mature Open Interest	Open Interest on First Position Day as Percent of Mature Open Interest
Bond	2.2	47
10-Year Note	2.7	46
5-Year Note	3.7	49
2-Year Note	6.3	51

Physical deliveries and open interest on first position day are expressed as percent of mature open interest. Mature open interest in an expiring futures contract is the median level of daily open interest in the contract during the 42-business-day interval ending on the contract's [First Position Day](#).

Sources: Chicago Board of Trade, Commodity Futures Trading Commission.

The actual volume of physical delivery varies widely from expiry to expiry. To illustrate, Exhibit 16 shows the numbers of Treasury futures taken to delivery at each contract expiration since 1996.

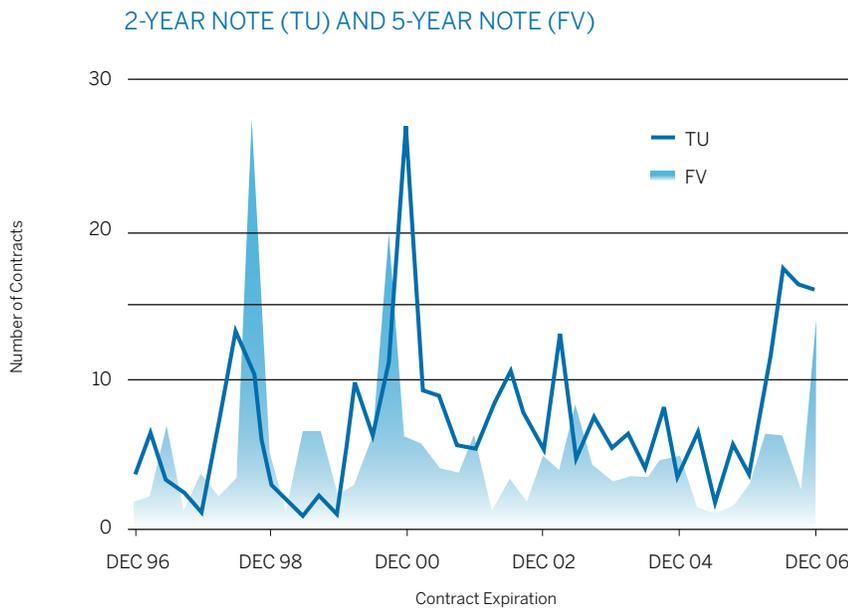
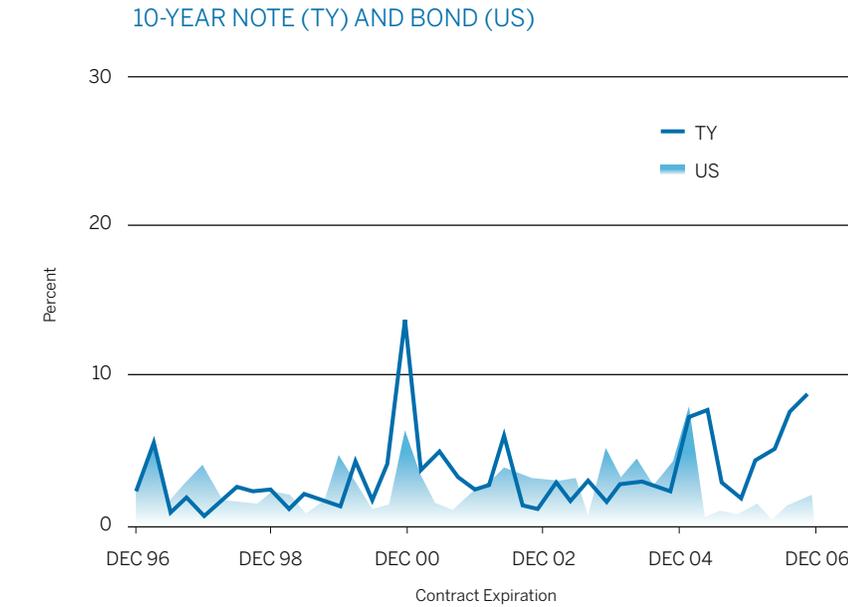
EXHIBIT 16: DELIVERIES INTO TREASURY FUTURES
 (NUMBER OF CONTRACTS TAKEN TO DELIVERY, DEC 96 TO DEC 06)



Sources: Chicago Board of Trade, Commodity Futures Trading Commission.

Several features of these data are striking. One is that 5-Year Note futures routinely draw more physical delivery than other Treasury futures. Another is the relatively high variability in the delivery flows in 5-Year Note and 10-Year Note futures. The pace of delivery into Bond futures and until recently, 2-Year Note futures is comparatively placid. Perhaps most conspicuous is the recent profusion of deliveries into all Treasury Note futures – 2-Year, 5-Year and 10-Year.

EXHIBIT 17: THE SCALE OF DELIVERY INTO TREASURY FUTURES
(CONTRACT DELIVERIES AS PERCENT OF MATURE OPEN INTEREST, DEC 96 TO DEC 06)



Sources: Chicago Board of Trade, Commodity Futures Trading Commission.

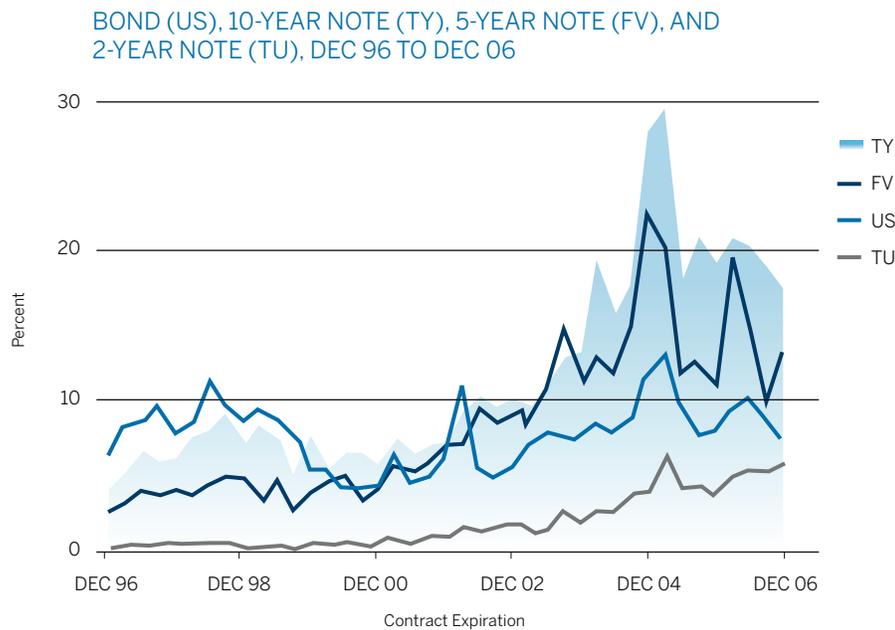
Exhibit 17 likewise depicts deliveries since the mid-1990s, but recasts the data as percentage shares of contract mature open interest. This helps to flesh out the summary statistics in Exhibit 15. For example the upper panel confirms that the scale of deliveries into Bond futures holds consistently to small single digits. Similarly the proportion of open interest taken to delivery in 10-Year Note futures seldom strays out of single-digit territory, notwithstanding the recent upswing in raw number of deliveries. Thus, despite outright volumes of delivery that loom large from time to time, physical delivery on Treasury Bond and Treasury 10-Year Note futures remains essentially a rare event.

By contrast, the lower panel reveals greater diversity of experience for 2-Year Note and 5-Year Note futures. In both cases the recent upsurge in raw number of deliveries manifests in correspondingly high percentage share of open interest taken to delivery. Recent events are not without precedent, however. Especially for 2-Year Note futures, the share of open interest taken to delivery has shot into double-digits at several points since the mid-1990s.

Although the number (or the proportion) of contracts taken to delivery is an obvious gauge of the Treasury futures delivery process, it is not the only one. An interesting alternative is open interest in an expiring contract on its FPD. This is particularly telling insofar as it directly measures the willingness of open interest holders to become involved in the physical delivery process, regardless of whether their contracts finally go to delivery.

To see why, recall that any long position held through close of business on FPD is liable to be matched to a short position on which intent to deliver has been declared. (See The Timetable for Delivery on page 5). Despite this, a long position owner not wishing to take delivery might nonetheless maintain his position into FPD and beyond, especially if he acquired it very recently. The reason is that, in constructing the eligible pool of longs to take deliveries on any given day, the delivery matching process searches out those long positions with oldest vintage. In view of this, the long position owner might be willing to play the odds that short position holders declaring intent to deliver will be few in number, or that there will be plenty of outstanding long positions with older vintages than his, or both. In no case, however, does he know for certain. What he does know is that there is a chance, no matter how remote, that he might be tapped to take delivery. Exhibit 18 shows FPD open interest since the mid-1990s.

EXHIBIT 18: OPEN INTEREST ON FIRST POSITION DAY IN EXPIRING TREASURY FUTURES CONTRACTS



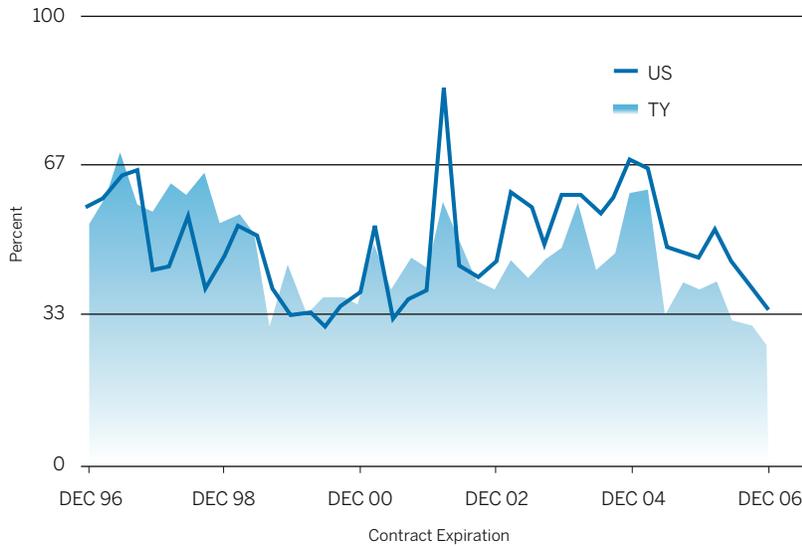
Uptrends prevail in all Note futures. For 5-Year Note and 10-Year Note futures, FPD open interest in 2006 was four to five times greater than a decade earlier. For 2-Year Note futures, it was 17 times more. By contrast, FPD open interest in Bond futures has run steadily in the realm of 260,000 contracts.

As with contract deliveries, it is revealing to examine an expiring contract's FPD open interest as a share of its mature open interest. The summary statistics in the right-hand column in Exhibit 15 show that since the mid-1990s this is around 47 percent for Bond futures and 10-Year Note futures, 49 percent for 5-Year Note futures, and 51 percent for 2-Year Note futures. Exhibit 19 shows the details.

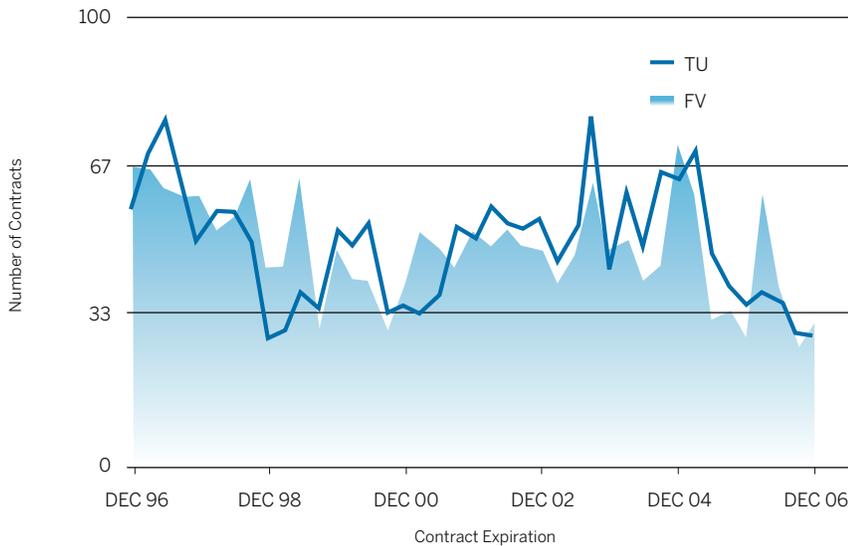
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EXHIBIT 19: THE SCALE OF TREASURY FUTURES OPEN INTEREST ON FIRST POSITION DAY (CONTRACT OPEN INTEREST ON FIRST POSITION DAY AS PERCENT OF CONTRACT MATURE OPEN INTEREST, DEC 96 TO DEC 06)

10-YEAR NOTE (TY) AND BOND (US)



2-YEAR NOTE (TU) AND 5-YEAR NOTE (FV)



Source: Chicago Board of Trade.

With the data thus re-expressed, the trends identified earlier disappear. Rapid though it may have been, growth in FPD open interest has run largely in proportion to concurrent growth in contract open interest. That is, for any Treasury futures contract the share of mature open interest that becomes involved in the delivery process appears to fluctuate around a historical home base of 47 percent or so.

As the plots in Exhibit 19 make apparent, these fluctuations cycle across a wide neighborhood, spanning roughly from 30 percent to 75 percent. Potentially many factors, working in concert, might be invoked to explain these cyclical waves. Among them are yield levels, yield volatility, yield curve slope, yield curve volatility and the available supply of securities for making delivery.

APPENDIX CONTRACT SPECIFICATIONS

U.S. TREASURY BOND FUTURES	
Contract Size	One U.S. Treasury bond having face value at maturity of \$100,000
Deliverable Grades	U.S. Treasury bonds that, if callable, are not callable for at least 15 years from the first day of the delivery month or, if not callable, have remaining term to maturity of at least 15 years from the first day of the delivery month. The invoice price equals the futures settlement price times a conversion factor, plus accrued interest. The conversion factor is the price of the delivered bond (\$1 par value) to yield 6 percent.
Tick Size	The minimum price fluctuation shall be one thirty-second (1/32) of one point (\$31.25 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).* Par shall be on the basis of 100 points.
Price Quote	Points (\$1,000) and 1/32 of a point. For example, 80-16 represents 80 16/32
Contract Months	Mar, Jun, Sep, Dec
Last Trading Day	Seventh business day preceding the last business day of the delivery month
Last Delivery Day	Last business day of the delivery month
Delivery Method	Federal Reserve book-entry wire-transfer system
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:30 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring contracts closes at 12:01 p.m. CT, on the last trading day
Ticker Symbols	Open Outcry Outright: US CME Globex Outright: ZB CME Globex Reduced-Tick Spread: ZB3
Daily Price Limit	None

*Beginning March 3, 2008, CME Group plans to reduce the tick size of 30-Year Treasury Bond futures to 1/2 or 1/32 (\$15,625).

LONG TERM (6-1/2 TO 10-YEAR) U.S. TREASURY NOTE FUTURES	
Contract Size	One U.S. Treasury note having face value at maturity of \$100,000
Deliverable Grades	U.S. Treasury notes with remaining term to maturity of at least 6 1/2 years, but not more than 10 years, from the first day of the delivery month. The invoice price equals the futures settlement price times a conversion factor, plus accrued interest. The conversion factor is the price of the delivered note (\$1 par value) to yield 6 percent.
Tick Size	The minimum price fluctuation shall be one half of one thirty-second (1/32) of one point (\$15.625 rounded up to the nearest cent per contract) except for intermonth spreads, where the minimum price fluctuation shall be one quarter of 1/32 of one point (\$7.8125 per contract). Par shall be on the basis of 100 points.
Price Quote	Points (\$1,000) and halves of 1/32 of a point. For example, 84-16 represents 84 16/32, and 84-165 represents 84 16.5/32
Contract Months	Mar, Jun, Sep, Dec
Last Trading Day	Seventh business day preceding the last business day of the delivery month
Last Delivery Day	Last business day of the delivery month
Delivery Method	Federal Reserve book-entry wire-transfer system
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:30 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring contracts closes at 12:01 p.m. CT, on the last trading day
Ticker Symbols	Open Outcry Outright: TY CME Globex Outright: ZN CME Globex Reduced-Tick Spread: ZN3
Daily Price Limit	None

MEDIUM TERM (5-YEAR) U.S. TREASURY NOTE FUTURES	
Contract Size	One U.S. Treasury note having face value at maturity of \$100,000
Deliverable Grades	U.S. Treasury notes with original term to maturity of not more than 5 years and 3 months and remaining term to maturity of not less than 4 years and 2 months as of the first day of the delivery month. The invoice price equals the futures settlement price times a conversion factor, plus accrued interest. The conversion factor is the price of the delivered note (\$1 par value) to yield 6 percent.
Tick Size	The minimum price fluctuation shall be one half of one thirty-second (1/32) of one point (\$15.625 rounded up to the nearest cent per contract) except for intermonth spreads, where the minimum price fluctuation shall be one quarter of 1/32 of one point (\$7.8125 per contract). Par shall be on the basis of 100 points.*
Price Quote	Points (\$1,000) and halves of 1/32 of a point. For example, 84-16 represents 84 16/32, and 84-165 represents 84 16.5/32
Contract Months	Mar, Jun, Sep, Dec
Last Trading Day	Last business day of the calendar month
Last Delivery Day	Third business day following the last trading day
Delivery Method	Federal Reserve book-entry wire-transfer system
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:30 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring contracts closes at 12:01 p.m. CT, on the last trading day
Ticker Symbols	Open Outcry Outright: FV CME Globex Outright: ZF CME Globex Reduced-Tick Spread: ZF3
Daily Price Limit	None

*Beginning March 3, 2008, CME Group plans to reduce the tick size of 5-Year Treasury Note futures to 1/4 of 1/32 (\$7.8125).

SHORT TERM (2-YEAR) U.S. TREASURY NOTE FUTURES	
Contract Size	One U.S. Treasury note having face value at maturity of \$200,000
Deliverable Grades	U.S. Treasury notes with original term to maturity of not more than 5 years and 3 months, and remaining term to maturity of not less than 1 year and 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. The invoice price equals the futures settlement price times a conversion factor, plus accrued interest. The conversion factor is the price of the delivered note (\$1 par value) to yield 6 percent.
Tick Size	The minimum price fluctuation shall be one quarter of one thirty-second (1/32) of one point (\$15.625 rounded up to the nearest cent per contract). Par shall be on the basis of 100 points.
Price Quote	Points (\$2,000) and quarters of 1/32 of a point. For example, 91-16 represents 91 16/32, 91-162 represents 91 16.25/32, 91-165 represents 91 16.5/32, and 91-167 represents 91 16.75/32
Contract Months	Mar, Jun, Sep, Dec
Last Trading Day	Last business day of the calendar month
Last Delivery Day	Third business day following the last trading day
Delivery Method	Federal Reserve book-entry wire-transfer system
Trading Hours	Open Outcry: 7:20 a.m. - 2:00 p.m. CT, Monday – Friday CME Globex: 5:30 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring contracts closes at 12:01 p.m. CT, on the last trading day
Ticker Symbols	Open Outcry Outright: TU CME Globex Outright: ZT CME Globex Reduced-Tick Spread: ZT3
Daily Price Limit	None

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Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, and because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for a futures position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles. And only a portion of those funds should be devoted to any one trade because they cannot expect to profit on every trade.

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All matters pertaining to rules and specifications herein are made subject to and are superseded by official CME, CBOT and CME Group rules. Current rules should be consulted in all cases concerning contract specifications.

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