Clearing and Bookkeeping Processing for Forwards

Updated March 11, 2013

Introduction

CME Clearing and CME Clearing Europe currently offer clearing of privately-negotiated deals, submitted via CME ClearPort, in several types of forwards, including contracts on **metals**, **wet freight rates**, and **FX**. In the future, we expect to begin offering clearing for other types of **forwards**. Exactly as with futures, forwards may be **cash-settled** or **physically-delivered**.

This section outlines the basics of processing for forwards – what they are, how they work, how they differ from futures, *etc.*

Forwards and futures

A **forward** may be distinguished from a **future** as follows:

- **Liquidation versus no liquidation**

  With futures, you can liquidate your position simply by clearing an offsetting transaction, and with any counterparty. Sell the contract to party A, buy it back from party B, and you are out of the market. (Another commonly used term for this is **multi-lateral position netting** – you can net your positions together regardless of counterparty.)

  With forwards, however, normally there is never any liquidation. All trades are held open, at original trade price, until contract maturity. (The exception is that you can do a **tearup** – more on this below.)

- **Cash mark-to-market versus either cash or collateralized mark-to-market**

  With futures, daily mark to market amounts are always banked in cash. This is called **settlement variation**. (Sometimes you'll see this referred to as **variation margin**.) Every new trade you clear is marked from trade price to that day's end-of-day settlement price. Similarly, your start-of-day position is marked from the previous day's end-of-day settlement price to today's end-of-day settlement price. The net of all of these amounts is banked in cash.

  With forwards, however, daily mark-to-market amounts may either be **collateralized** or **banked in cash**. In either case, every day, for every open trade, we calculate the mark-to-market amount from original trade price to the current day's end-of-day settlement price, and discount the result to present value.

  For forwards with a collateralized mark-to-market, today's value for discounted mark-to-market, simply becomes an increment or decrement to your **performance bond** ("**initial margin**") requirement. So if you've lost money on your mark-to-market amounts, you'll have to post more collateral, of any acceptable collateral type. If you've made money, your collateral requirement will be decreased, and you may be able to withdraw excess collateral.

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For forwards with a cash mark-to-market, the net change in discounted mark-to-market from the previous clearing processing day, is simply banked in cash.

- **Delivery at final settlement price versus delivery at original trade price**

  If you hold your position in a cash-settled futures contract to maturity, the position is simply marked to market one final time, the resulting settlement variation is banked, and the position is removed. For a physically-delivered futures contract, if you hold the position to maturity, it delivers **at the final settlement price** of the future.

  For a physically-delivered forward contract, however, at maturity the position delivers **at original trade price**. Depending on the contract, this may be a **gross delivery** – **each** original trade delivers at its own original trade price. Or it may be a **net delivery**, where the delivery obligations for the open trades are netted together to yield a single net delivery obligation, at the net of original trade price.

  For a cash-settled forward contract, final cash-settlement amounts on all open trades are calculated, by marking each trade from original trade price to final settlement price. These amounts are netted together and then banked in cash.

Forwards are also more likely than futures to have position quantities quoted in **notional** terms. For example, for gold forwards, trade and position quantities are quoted in troy ounces, down to 0.0001 of an ounce. For most FX forwards – for example, a forward on the exchange rate between the US Dollar and the Chinese Yuan – quantities are quoted in currency units, down to the penny. This is not an absolute rule, however, and it is possible for futures to have quantities specified in notional amounts as well.

Calculating mark-to-market amounts for open forward trades

Regardless of whether the forward has a cash or collateralized mark-to-market, the calculation of mark-to-market is the same. There are two methods, however – the **normal** method, and the **inverse** method, which may be used for certain FX contracts.

The normal method: The mark-to-market amount for an open trade in a forward contract is calculated as the product of four values:

- The price difference: Current End-of-Day Settlement Price less Original Trade Price
- The trade quantity, expressed as positive number for a buy or a negative number for a sell
- The contract value factor – the multiplier for this contract that converts quoted prices to money amounts, and
- The discount factor – the appropriate value to discount the mark to market amount from the contract's maturity date back to present value.

In other words:

$$(S - T) * Q * CVF * DF$$

Where:

S is the end-of-day settlement price
T is the original trade price
Q is the trade quantity
CVF is the contract value factor
DF is the discount factor.

The result is rounded normally to the precision of the currency in which the contract is denominated. (For example, for USD, GBP and EUR, to the nearest penny, and for JPY to the nearest yen.)

Discounting the mark-to-market amount back to present value is done because the final delivery or cash settlement won't be realized until contract maturity.

For example, for gold forwards: Suppose you sold 4,379 contracts at a price of 865.67 USD per troy ounce, and at the end of the current clearing day the settlement price is 895.55 USD per troy ounce. The contract value factor is 1 (because the contract is defined as being for 1 troy ounces), and suppose today's discount factor is 0.98039. The discounted mark to market amount is calculated as the product of:

- The price difference of 895.55 less 865.67)
- The trade quantity of negative 4,379
- The contract value factor of 1, and
- The discount factor of 0.98039.

The result is -128,278.658693, which is rounded to -128,278.66 USD.

The inverse method: this is used for non-deliverable FX forwards (NDF's), where it is desirable to express the mark-to-market amount in the primary currency of the pair rather than the contract currency.

The process here is exactly analogous, except that it includes a final step, division by the daily settlement price:

- Take the product of the price difference, the trade quantity, the contract value factor, and the discount factor.

- Divide this result by the end-of-day settlement price.

- Round normally to the normal precision of the currency in which the mark-to-market amount is denominated. (the primary currency for an FX forward)

In other words:

$$[(S - T) * Q * CVF * DF] / S$$

For example, suppose you bought 10M USD in a non-deliverable forward on the exchange rate between the US Dollar and the Chilean Peso, at a trade price of 5.1234 CLP per USD, which had an end-of-day settlement price of 5.4792 CLP per USD. The contract value factor is 1 (because the contract is for 1 USD), and suppose that day's discount factor was 0.98039.

The discounted mark-to-market amount is calculated as follows:

- Take the product of:
  - The price difference of 5.4792 less 5.1234
  - The trade quantity of positive 10,000,000
  - The contract value factor of 1, and
  - The discount factor of 0.98039

- Divide this result by today's settlement price of 5.4792

The result is +636,630.8257, which is rounded to 636,630.83 USD.

Processing the mark-to-market amounts

For forwards with collateralized mark-to-market

As indicated above: Take the mark-to-market amounts calculated for today's clearing business day for the various forward positions, and net them down by currency.

The result becomes part of the equity component of the performance bond (initial margin) requirement, in exactly the same manner as net option value. If a net negative number, it increases the margin requirement, and if a net positive number, it decreases the margin requirement.

The result, if a net negative number, becomes an increment to the performance bond (initial margin) requirement.

For forwards with cash mark-to-market

For each such forward position, take the discounted mark-to-market value calculated at end-of-day for the current clearing business date, and subtract from it the discounted mark-to-market value at end-of-day for the immediately previous clearing business date.

The result is the **settlement variation** (variation margin) for this position for the current date, and is included in the total cash to be banked.

Price Alignment Interest for Forwards with Cash Mark to Market

Forwards with cash mark-to-market will have **price alignment interest (PAI)**. This works in a manner exactly analogous to that for CME's cleared credit default swaps and interest-rate swaps. Note that PAI is **not** applicable to forward contracts using collateralized mark-to-market.

PAI can be thought of as compensating the holders of out-of-the-money positions for the interest they could have received on the cash posted as settlement variation. It is calculated on days which are banking business days for the currency in which that settlement variation is denominated, and covers the period from the current day to the next such banking business day. On days which are **not** banking business days for this currency, PAI is always set to zero.

The effective interest-rate used is the appropriate rate index for the currency in question, annualized on either an actual/360 or an actual/365 basis. The interest-rate index and the annualization convention are specific to the currency. For USD, the rate is the Fed Funds Effective Rate, and the convention is Actual/360.

The cash amount which is the input to the calculation, is the net discounted mark-to-market amount **realized** as of the morning of the current business day. In other words, it is discounted mark-to-market amount calculated as of end-of-day for the **immediately previous** clearing business day (regardless of whether that immediately previous day was a holiday in any currency.)

At the request of clearing firms, price alignment interest for forwards is calculated **trade by trade**. The PAI amount for the position as a whole, then, is simply the sum of the PAI amounts on the trades.

To simplify processing, all the needed attributes needed to drive the calculation will be provided in the FIXML Product Reference File and Settlement Price File for the forwards in question.

The PAI amount is calculated as the product of the following factors:

- Discounted mark-to-market amount for the immediately previous clearing processing day
- Interest rate expressed as a decimal value
- Number of days from the current banking business day to the next banking business day, divided by either 360 or 365
- -1

The result is then rounded normally to the normal precision of the currency in which it is denominated, and is included in the total cash amount to be banked for the position.

Cash-Settled and Physically-Delivered Forwards at Contract Maturity

At maturity, forwards with cash mark-to-market can be either cash-settled or physically-delivered, exactly as for forwards with collateralized mark-to-market.

In other words, there are four different possibilities:

- Cash-settled, cash mark-to-market
- Cash-settled, collateralized mark-to-market
- Physically-delivered, cash mark-to-market
- Physically-delivered, collateralized mark-to-market

Calculating Mark-to-Market at Contract Maturity

Regardless of which of these four possibilities adhere, the mark-to-market amount for margin processing is always set to zero, beginning at end-of-day on the clearing settlement date. Further processing then behaves exactly as on any other day. Hence:

- If the forward has a collateralized mark-to-market, then beginning at end-of-day on the clearing settlement date, mark-to-market will no longer affect the performance bond requirement.

- If the forward has a cash mark-to-market, then the settlement variation amount at end-of-day on the clearing settlement date, will be the negative of the mark-to-market amount from the previous clearing business day – *ie,* zero (today's value), less yesterday's value.

Calculating the Final Settlement Amount for Cash-Settled Forwards

For a cash-settled forward, the final cash-settlement amount is determined on the clearing settlement date, in exactly the same manner as on any normal date:

- If normal mark-to-market calculation: as the product of the final settlement price less the original trade price, the quantity, the contract value factor, and the discount factor, rounded normally to the normal precision of the currency.

- If inverse mark-to-market calculation: as the above product, divided by the final settlement price, rounded normally to the normal precision of the currency.

Calculating the Invoice Amount for Physically-Delivered Forwards

For a physically-delivered forward, the invoice amount is calculated as the product of:

- the trade quantity
- the original trade price
- the contract value factor, and
- -1

Which is then rounded normally to the normal precision of the currency.

Contract Maturity Examples

FX forwards – cash-settled with cash mark-to-market

At contract maturity (end-of-day on the "clearing settlement date"):

- The mark-to-market amount is set to zero.
- We then calculate the settlement variation amount to be banked exactly as on any other day – by subtracting the previous day's value for mark-to-market from the current day's (zero) value.
- The final cash settlement amount is calculated and included in the cash amount to be banked..
- The initial margin requirement is set to zero, exactly as for any other cash-settled forward or future.
- On the value date for the cash movement, the cash moves at the bank, and any collateral deposited to meet the initial margin requirement may be withdrawn.

Wet Freight forwards – cash-settled with collateralized mark-to-market

At contract maturity (end-of-day on the "clearing settlement date"):

- The mark-to-market amount is set to zero, and hence has no further impact on the initial margin requirement.
- The final cash settlement amount is calculated and banked.
- The initial margin requirement is set to zero, exactly as for any other cash-settled forward or future.
- On the value date for the cash movement, the cash moves at the bank, and any collateral deposited to meet the initial margin requirement may be withdrawn.

Gold forwards – physically-delivered with collateralized mark-to-market

For a physically-delivered forward, at contract maturity (end-of-day on the clearing settlement date):

- The mark-to-market amount is set to zero, and hence has no further impact on the initial margin requirement.
- The invoice amount, calculated at original trade price, is included in the total amount to be banked.

On the value date for physical delivery (typically the next day), the position is removed. This causes the initial margin requirement to be set to zero, and any collateral deposited to meet it may be withdrawn.

Tear-up's (liquidations prior to maturity) and transfers

A clearing firm that has two exactly offsetting transactions – same contract, same price, same quantity, opposite market side – may request that the two transactions be torn up. Upon such request, the two transactions will be removed.

Similarly, partial tear-up's may be done. The original transaction and the offsetting transactions must be for the same value date and price. The quantity on the original transaction will be reduced, and the offsetting transaction will be removed entirely.

Two clearing firms wishing to tear up a trade between them, may do so upon request. Upon confirmation by both firms, the trade will be removed for both. If the firms desire, they may also specify a cash amount to be moved between them associated with the tear-up.

If a trade must be transferred from one clearing firm to another, a transfer transaction should be cleared at original trade price. Then, upon request by the original clearing firm, the original transaction and the offsetting transfer transaction will be removed.

All tear-up requests are handled via the CME ClearPort Facilitation Desk.

Regulatory status for forwards

CME Clearing's gold, wet freight, and FX forward contracts are all part of the Cleared Swaps regulatory class, and customer positions in them and related collateral are part of the Cleared Swaps Customer Sequestered class.

As such, these positions, and associated money and collateral deposits, must be kept separate from both "customer segregated" futures positions and money amounts, and proprietary (house) amounts.

PCS not needed for forwards

Because all forward positions are held open in the clearing system, unless explicitly torn up, submission of Position Change Specification ("PCS") data is not required.

Performance bond calculations

Records for all forward products are included in the daily SPAN risk parameter files.

Performance bond ("initial margin") requirements are calculated for gold and freight forwards using SPAN exactly as for any other product. Requirements for FX forwards will be calculated via HVAR.

Data files, attribution and formats

Product master data for forwards is published daily in the FIXML Product Reference files.

The FIXML Settlement Price Files are the single best source for daily settlement prices for forwards, because in addition to prices, they also contain (a) discount factors needed for the mark-to-market calculation, and (b) the interest rates and number-of-days parameters needed for calculating price alignment interest amounts.

The daily SPAN files may also be used to obtain settlement prices, and these also contain discount factors.

Basic FIXML usage for forwards:

The security type attribute provides the product type code, indicating that the product is a forward: **SecTyp="FWD"**

The settlement method attribute specifies whether the forward is cash-settled or physically-delivered: **SettlMeth="C"** or **SettlMeth="P"**

The valuation method attribute specifies whether the forward has a collateralized or cash mark-to-market, and if cash, whether it is calculated in the normal way or the inverse way:

ValMeth="FWD"	Collateralized mark-to-market
ValMeth="FWDC"	Cash mark-to-market, normal calculation
ValMeth="FWDCI"	Cash mark-to-market, inverse calculation

Here are examples of the specification of currency codes for FX forwards:

UOM="Ccy"
UOMCcy="USD"
UOMQty="1"

This tells you that the primary currency is USD and that quantities are specified in terms of one USD.

PxUOM="Ccy"
PxUOMCcy="USD"
PxUOMQty="1"
PxQteCcy="CLP"

This tells you that prices are quoted in terms of a specified amount of CLP, per one USD.

FnlSettlCcy="USD"

This tells you that the mark-to-market amounts are denominated in USD – *ie,* that mark-to-market amounts are calculated using the "inverse" method. (If calculated normally, the value would have been **CLP**, the same as the price quotation currency.)

Exactly as for futures, the **MMY** attribute provides the **contract period code**, and identifies the specific forward contract. Exactly as for futures, this will typically be a value specific either to the month or to the day. For example, **MMY="201012"** (December 2010) or **MMY="20101223"** (Dec 23, 2010).

Exactly as for futures, the **MatDt** attribute provides the **clearing settlement date**, *ie,* the date on which the final settlement price is provided and the the final settlement amount is considered realized on the trade register. For example, **MatDt="2010-12-23"**

For a physically-delivered forward contract, the **delivery date** (also called the **physical settlement date** or **value date**) is provided via the **SettlDt** attribute. For example, **SettlDt="2010-12-24"**

For cash-settled forwards, especially FX non-deliverable and cash-settled forwards, the **fixing date** – the date on which the market observation is done to determine the final marking price – is provided in an **Evnt** element of type **121**. For example, **<Evnt EventTyp="121" Dt="2012-02-10"/>**

Getting the Settlement Price and the Discount Factor

On the FIXML Settlement Price File, the end-of-day settlement price and the discount factor are provided in a **Full** element of type **6**. For example:

<Full Typ="6" Px="29.3838" Mkt="CME" DiscntFctr="0.99952"/>

The discount factor is also provided in the SPAN file. In the expanded-format, the discount factor is provided on the type "B" record for each forward contract, in positions 152-163, with ten implied decimal places.

Discount factors are always provided as a decimal fraction. The maximum precision for a discount factor is 0.00001 percent, or 0.0000001 as a decimal fraction

On the **PosRpt** messages in the Trade Register file, as with any contract, the **SetPx** and **PriSetPx** attributes provide the current day's settlement price and the previous clearing day's settlement price. The discount factor used for the contract is provided in the **Fctr** attribute in the **Instrmt** element, on both the **PosRpt** and the **TrdCaptRpt** messages. For example: **Fctr="0.9998700"**

Attribution specific to the calculation of Price Alignment Interest

The following values are present in both the Product Reference file and the Settlement Price File:

The **Attrb** element of type **111** specifies the Price Alignment Interest rate type applicable to the contract. For example:

<Attrb Typ="111" Val="USDPAI"/>

The **Attrb** element of type **116** specifies the number of calendar days to use in annualizing the interest rate. This will be either **360** or **365**. For example:

<Attrb Typ="116" Val="360"/>

The **Attrb** element of type **112** specifies whether the current business day is a banking business day for the variation margin currency. If the current date is not a banking business day, then by definition the value of price alignment interest is zero. For example:

<Attrb Typ="112" Val="Y"/>

The **Attrb** element of type **110** specifies the number of calendar days to use for the PAI calculation. For example:

<Attrb Typ="110" Val="1"/>

The following values are present in the Product Reference File:

The **Evnt** element of type **114** specifies the prior clearing processing date from which the variation margin balance should be taken – for forwards, always the immediately prior clearing processing date. For example:

<Evnt EventTyp="114" Dt="2012-02-10"/>

The **Evnt** element of type **115** indicates the subsequent banking business date up to which you count when determining the number of calendar days. For example:

<Evnt EventTyp="115" Dt="2012-02-16"/>

The interest rate to use for the price alignment interest calculation is in the Settlement Price File, in percent, in a **Full** element of type **z**. For example, the following means the rate is 9 basis points:

<Full Typ="z" Px="0.09" Pxtyp="1" Mkt="CME" OpenClsSettlFlag="1"/>

Trade Confirmation Messages

For privately-negotiated deals in forwards captured via CME ClearPort, the trade type is **OPNT** – short for over-the-counter privately-negotiated-trade.

Clearing firms will receive FIXML trade confirmation messages for cleared forward trades exactly as for any other contract.

Trade Register Files

In the FIXML Trade Register file produced each day, there will be **TrdCaptRpt** trade records for every open trade and **PosRpt** position records for every position.

On the Trade Records

On the trade records, the **Amt** element for type **TVAR** (trade variation) will contain always contain the discounted mark-to-market amount. This value will be set to zero beginning on the clearing settlement date for the contract.

On the clearing settlement date, the **Amt** element of type **DLV** contains either the final cash settlement amount (for cash-settled forwards) or the invoice amount (for physically-delivered forwards). On all other dates, this value is zero.

For forwards with a cash mark-to-market, the value of price alignment interest is provide in an amount element of type **CASH**, with a reason code of **4**.

On the Position Records

On the position records, the **Amt** element of type **FMTM** will always contain the sum of the discounted mark-to-market amounts from the trades (the sum of the **TVAR** amounts). Exactly as with the **TVAR** amounts, this value will always be zero beginning on the contract's clearing settlement date.

> Note: In the near future, based on clearing firm requests, we may begin including the **undiscounted** mark-to-market amounts as well. This will also be in an **Amt** element of type **FMTM,** but will be distinguished from the discounted amount by having an attribute of **Rsn="5"**. This value is information only and does not affect any actual cash or collateralized amount.

For forwards with cash mark-to-market, the settlement variation amount is provided in an **Amt** element of type **IMTM**, short for "incremental mark-to-market." This is equal to the value of discounted mark-to-market for the current clearing processing day, less the value of discounted mark-to-market for the immediately previous clearing processing day.

The amount element of type **DLV** contains either the final cash settlement amount (for cash-settled forwards) or the invoice amount (for physically-delivered forwards.) The value will always be equal to the sum of the corresponding values from the trade records, and will always be zero except on the contract's clearing settlement date.

For forwards with a cash mark-to-market, the value of price alignment interest is provide in an amount element of type **CASH**, with a reason code of **4**. Note that this value on the position record is the sum of the values on the corresponding trade records.

For simplicity, two **Amt** elements will be provided for every forward position, with types **BANK** and **COLAT**, respectively.

The first of these – the **BANK** type – provides the total cash amount to be banked. It will always include **DLV** and **CASH** amounts, and for forwards with cash mark-to-market, will include the **IMTM** amount.

The second one – the **COLAT** value – will always be zero for forwards with cash mark-to-market, and will be equal to the **FMTM** value for forwards with collateralized mark-to-market.

Spreadsheet-format (CSV) files

Two spreadsheet-format files are made available daily to clearing firms with forward positions, for trades and positions. Both begin with a standard column header row containing field names. These files are provided **in addition to** the standard FIXML-format Trade Register file.

A third spreadsheet-format file serves as a product reference file, providing the mapping between fixing date, value date, and clearing settlement date.

The **Trade Register file** is named **Trade_Register.*xxx.ccyymmdd*.csv**, where ***xxx*** is the clearing firm ID, and ***ccyymmdd*** is the business date. The file contains the following data elements:

Fieldname	Description
Bus_Date	Current clearing business date
Trade_Date	Trade date of the trade
Clear_Date	Clear date of the trade
Exch	Product exchange
Product_Type	Product type = **FWD**
Product_Code	Product code
Setl_Cur	Final Settlement currency
CVF	Contract value factor
Period	Contract Period code
Deliv_Date	Delivery date (value date for physical settlement, if applicable)
Setl_Date	Clearing settlement date (date final price is applied)
Buy_Sell	Buy/Sell code – **B** or **S**
Qty	Quantity
Discount	Discount factor
Setl_Price	Settlement price
Trade_Price	Trade price
MTM_Amt	Mark-to-market amount (discounted trade variation)
Deliv_Cash	Cash Delivery amount
Deliv	Physical Delivery amount
CO	Clearing organization
CMF	Clearing member firm ID
PA	Position account ID
Seg	Position account origin
TMF_Exch	Firm exchange
TMF	Trading Member Firm (TMF) ID
Origin	Trade origin
Broker	Broker acronym, if applicable
Cust_Acct	Customer account ID
CTI	Customer Type Indicator code
Order_ID	Customer order ID
Trade_ID	Firm trade ID
Exec_ID	Deal ID
Exec_ID2	Platform deal ID
ALLOC_IND	Allocation Indicator
Variation	Settlement Variation amount attributable to this trade
MTM_Undisc	Mark-to-market amount – undiscounted
PAI	Price alignment interest amount
SetlMeth	Settlement Method
ValMeth	Valuation Method
UOM	Unit of Measure
UOMCcy	Unit of Measure Currency
PxQteCcy	Price Quote Currency
FnlSettlCcy	Final Settlement Currency
Fix_Date	Date final price was observed
Contra_Qty	Contra currency amount for an FX forward, as if it were delivered

ORIGINAL_TRADE_DATE	Date on which trade was executed bilaterally
Reg_Trd_ID	Universal Swap Identifier (USI) assigned by CME Clearing
InvoiceAmt	The invoice amount for a physically deliverable forward

The **position file** is named **Forward_Posns.*xxx.ccyymmdd*.csv**, where ***xxx*** is the clearing firm ID, and ***ccyymmdd*** is the business date. The file contains the following data elements:

Fieldname	**Description**
Bus_Date	Clearing business date
Exch	Product exchange
Product_Type	Product type = **FWD**
Product_Code	Clearing Product code
Setl_Cur	Settlement currency
CVF	Contract value factor
Period	Contract Period code
Deliv_Date	Delivery date (value date for physical settlement, if applicable)
Setl_Date	Clearing settlement date (date final price is applied)
Long_Qty	Long position
Short_Qty	Short position
Discount	Discount factor
Setl_Price	Current End-of-Day Settlement price
MTM_Amt	Mark-to-market amount (discounted trade variation)
Deliv_Cash	Cash Delivery amount
Deliv	Physical Delivery amount
CO	Clearing organization
CMF	Clearing member firm ID
PA	Position account ID
Seg	Position account origin
TMF_Exch	Firm Exchange
TMF	Primary Trading Member Firm for the position account
Origin	Primary Origin for this TMF and position account
MTM_Undisc	Mark-to-market amount -- undiscounted
UOM	Unit of Measure
FnlSettlCcy	Final Settlement Currency
PAI	Price Alignment Interest
SetlMeth	Settlement Method
ValMeth	Valuation Method
UOMCcy	Unit of Measure Currency // new fields added April 2012
PxQteCcy	Price Quote Currency
Fix_Date	Date final price was observed
Variation	Settlement Variation amount

The **contract master file** is named **Forward_Contracts.*ccyymmdd*.csv**, where ***ccyymmdd*** is the business date. The file contains the following data elements:

Fieldname	**Description**
Bus_Date	Clearing business date
Exch	Product exchange
Product_Type	Product type = **FWD**
Product_Code	Clearing Product code
SetlMeth	Settlement Method
ValMeth	Valuation Method
Setl_Cur	Settlement Currency
UOM	Unit of Measure
UOMCcy	Unit of Measure Currency
PxQteCcy	Price Quote Currency
FnlSettlCcy	Final Settlement Currency
CVF	Contract value factor
Period	Contract Period code
Deliv_Date	Delivery date (value date for physical settlement, if applicable)
Setl_Date	Clearing settlement date (date final price is applied)
Fix_Date	Date final price will be observed

FIXML Product Reference File for FX Forward

```
<SecDef                                          // security definition message
        RptID="10680"                            // message ID
        BizDt="2012-02-14">                      // clearing business date

<Instrmt                                         // instrument block
        Sym="USDCLP"                             // trading product code
        ID="USDCLP"                              // clearing product code
        Desc="CHILEAN PESO FWD"                  // product name
        SecTyp="FWD"                             // product type
        Src="H"                                  // source is clearing
        MMY="20120210"                           // period code = value date
        MatDt="2012-02-09"                       // clearing settlement date
        Mult="1"                                 // contract value factor
        Exch="CME"                               // product exchange
        UOM="Ccy"                                // qty in currency
        UOMCcy="USD"                             // in unit of 1 USD
        UOMQty="1"
        PxUOM="Ccy"                              // price quoted per 1 USD
        PxUOMCcy="USD"
        PxUOMQty="1"
        SettlMeth="C"                            // cash-settled
        ListMeth="0"                             // pre-listed
        ValMeth="FWDCI"                          // valuation method
        ProdCmplx="FX"                           // FX product
        Status="1"                               // active product
        FlexProdElig="N"                         // pre-listed
        FlexInd="N"                              // not a flex contract
        MinPxIncr="0.0001"                       // minimum price fluctuation
        PxQteCcy="CLP"                           // price quotation currency
        FnlSettlCcy="USD">                       // mark-to-market currency

<AID AltID="USDCLP 20120210" AltIDSrc="H"/>      // clearing contract alias
<AID AltID="USDCLPG210" AltIDSrc="101"/>         // trading contract alias
<AID AltID="USDCLP 20120210" AltIDSrc="100"/>    // price reporting contract alias

<Evnt EventTyp="5" Dt="2011-04-07"/>             // first day of trading
<Evnt EventTyp="7" Dt="2012-02-09"/>             // last day of trading
<Evnt EventTyp="13" Dt="2012-02-10"/>            // first delivery date (value date)
<Evnt EventTyp="14" Dt="2012-02-10"/>            // last delivery date
<Evnt EventTyp="114" Dt="2012-02-10"/>           // immediately prior clearing date (for PAI)
<Evnt EventTyp="115" Dt="2012-02-10"/>           // ending banking business date (for PAI)
<Evnt EventTyp="121" Dt="2012-02-10"/>           // fixing date for a cash-settled forward
</Instrmt>
```

```
<InstrmtExt>
        <Attrb Typ="27" Val="N"/>                    //
        <Attrb Typ="25" Val="1"/>                    // price in decimal
        <Attrb Typ="26" Val="1"/>                    //
        <Attrb Typ="29" Val="Y"/>                    // tradeable product
        <Attrb Typ="24" Val="22"/>                   // eligible for privately negotiated trades
        <Attrb Typ="24" Val="3"/>                    // eligible for transfers
        <Attrb Typ="24" Val="0"/>                    // eligible for regular trades
        <Attrb Typ="110" Val="1"/>                   // number of days for PAI calculation
        <Attrb Typ="111" Val="USDPAI"/>              // PAI type
        <Attrb Typ="112" Val="Y"/>                   // banking business day for MTM currency
        <Attrb Typ="116" Val="360"/>                 // PAI day count convention
</InstrmtExt>

<MktSegGrp MktID="CME" MktSegID="ALL">
<SecTrdgRules>
<BaseTrdgRules>
<TickRules
        StartTickPxRng="0"
        EndTickPxRng="1"
        TickIncr="0.01"
        TickRuleTyp="1"/>
<TickRules
        StartTickPxRng="356.4675"
        EndTickPxRng="643"
        TickIncr="0.0001"                            // minimum price fluctuation
        TickRuleTyp="0"/>
</BaseTrdgRules>
</SecTrdgRules>
</MktSegGrp>
<ProdClsfnGrp>
        <ProdClsfn Rsn="8" Val="COTC"/>              // Regulatory class for customers:
</ProdClsfnGrp>                                      // Cleared OTC Customer Sequestered
<MarginDataGrp>
        <MarginData Typ="1" Rate="25"/>
        <MarginData Typ="0" Rate="25"/>
</MarginDataGrp>
</SecDef>
```

FIXML Settlement Price file for FX Forward

```
<MktDataFull                                                    // market-data message
        BizDt="2012-02-10">                                     // clearing business date

<Instrmt                                                        // instrument block
        Exch="CME"                                              // product exchange
        ID="USDRUB"                                             // clearing code
        Sym="USDRUB"                                            // trading code
        SecTyp="FWD"                                            // product type
        MMY="20120213"                                          // period code
        Src="H"                                                 // data source Clearing
        MatDt="2012-02-10"                                      // clearing settlement date
        FnlSettlCcy=”USD”>                                      // final settlement currency

<Evnt EventTyp="7" Dt="2012-02-10" Txt="20120210"/>             // last day of trading
<Evnt EventTyp="114" Dt="2012-02-09" Txt="20120210"/>           // prior clearing date (for PAI)
<Evnt EventTyp="115" Dt="2012-02-11" Txt="20120210"/>           // next banking date (for PAI)
<Evnt EventTyp="121" Dt="2012-02-10"/>                          // fixing date for a cash-settled forward

</Instrmt>

<Full Typ="6" Px="29.7316" Mkt="CME" DiscntFctr=”0.999862”/>        // settlement price
                                                                    // & discount factor
<Full Typ="B" Sz="20000000" Mkt="CME" OpenClsSettlFlag="4"/>        // prior-day volume
<Full Typ="C" Sz="500000000" Mkt="CME" OpenClsSettlFlag="4"/>       // prior-day open-interest
<Full Typ="z" Px="0.0932" Mkt="CME" OpenClsSettlFlag="4"/>          // PAI rate in percent

</MktDataFull>
```

FIXML Position Report for Gold Forward (collateralized mark to market)

```
<PosRpt                                 // position report
        RptID="4062"                    // message ID
        ReqID="1"
        SetSesID="EOD"                  // end-of-day settlement cycle
        MtchStat="0"                    // cleared trade
        SetPx="1952.7545000"            // today's settlement price
        PriSetPx="1952.7545000"         // previous day's settlement price
        SetPxTyp="1"
        SettlCcy="USD"                  // settlement currency
        ReqTyp="1"
        MsgEvtSrc="REG"
        BizDt="2012-02-27"              // current clearing business date
        SettlDt="2012-03-19" >          // delivery (value) date

<Pty ID="CME" R="21"/>                  // clearing organization
<Pty ID="010" R="4"/>                   // clearing member firm
<Pty ID="2R9G" R="38"><Sub ID="1" Typ="26"/></Pty>  // position account
<Pty ID="CME" R="22"/>                  // trade mgmt firm exchange
<Pty ID="2R9" R="1"/>                   // trade management firm ID

<Instrmt                                // instrument block
        ID="GB"                         // clearing product code
        SecTyp="FWD"                    // product type
        MMY="20120319"                  // contract period code
        MatDt="2012-03-16"              // clearing settlement date
        Mult="1"                        // contract value factor
        Exch="COMEX"                    // product exchange
        PxQteCcy="USD"                  // price quotation currency
        Fctr="0.9998700"                // discount factor
        SettlMeth="P"                   // settlement method (P for physical)
        ValMeth="FWD"                   // valuation method (FWD = collateralized mtm)
        UOM="TRYOZ"                     // quantities as # of troy ounces
        UOMQty="1" />

<Qty Long="1000.000" Short="2000.000" Typ="PNTN"/>          // trades cleared today
<Qty Long="1000.000" Short="2000.000" Typ="FIN"/>           // ending quantity
<Qty Typ="DLV" Long="0.00" Short="0.00" Net="0.0" />        // delivered quantity today

<Amt Typ="FMTM" Amt="47239.36" Ccy= "USD"/>       // mark to market
<Amt Typ="IMTM" Amt="0.48" Ccy= "USD"/>           // incremental mtm from previousday
<Amt Typ="DLV" Amt="0.00" Ccy= "USD"/>            // invoice amount
<Amt Typ="BANK" Amt="0.00" Ccy= "USD"/>           // total banked amount
<Amt Typ="COLAT" Amt="47239.36" Ccy= "USD"/>      // total collateralized amount
</PosRpt>
```

FIXML Position Report for FX Forward (cash mark to market)

```
<PosRpt
        RptID="4164"
        ReqID="1"
        SetSesID="EOD"
        MtchStat="0"
        SetPx="479.4000000"
        PriSetPx="480.4000000"
        SetPxTyp="1"
        SettlCcy="USD"                  // settlement currency
        ReqTyp="1"
        MsgEvtSrc="REG"
        BizDt="2012-02-27"
        SettlDt="2012-02-28" >

<Pty ID="CME" R="21"/>
<Pty ID="111" R="4"/>
<Pty ID="111" R="38"><Sub ID="2" Typ="26"/></Pty>
<Pty ID="CME" R="22"/>
<Pty ID="111" R="1"/>

<Instrmt
        ID="USDCLP"
        SecTyp="FWD"
        MMY="20120228"                  // period code (value date)
        MatDt="2012-02-27"              // clearing settlement date
        Mult="1"                        // contract value factor
        Exch="CME"
        PxQteCcy="CLP"                  // price quoted in CLP per USD
        FnlSettlCcy="USD"
        Fctr="0.9985320"                // discount factor
        SettlMeth="C"                   // cash settled
        ValMeth="FWDCI"                 // cash mark-to-market, inverse method
        UOM="Ccy"                       // quantities in USD
        UOMCCy="USD"
        UOMQty="1">
<Evnt EventTyp="121" Dt="2012-02-10"/>        // fixing date for a cash-settled forward
</Instrmt>

<Qty Long="0.000" Short="270000.000" Typ="PNTN"/>
<Qty Long="0.000" Short="270000.000" Typ="FIN"/>
<Qty Typ="DLV" Long="0.00" Short="0.00" Net="0.0" /> // delivered qty:  zero for cash-settled

<Amt Typ="FMTM" Amt="0.00" Ccy= "USD"/>             // discounted mark-to-market
<Amt Typ="CASH" Amt="0.00" Rsn="4" Ccy= "USD"/>     // price alignment interest
<Amt Typ="IMTM" Amt="10.26" Ccy= "USD"/>            // incremental mtm = settlement variation
<Amt Typ="DLV" Amt="-9.72" Ccy= "USD"/>             // final settlement amount
<Amt Typ="BANK" Amt="0.54" Ccy= "USD"/>             // total banked amount

</PosRpt>
```

Trade Message

```
<TrdCaptRpt
        ExecID="891591"         // match event ID
        RptID="177"             // message ID
        TrdTyp="22"             // trade type (privately-negotiated)
        TrdDt="2011-10-14"      // trade date
        BizDt="2011-10-14"      // current clearing business date
        SettlDt="2011-10-17"    // value date
        MLegRptTyp="1"          // outright (not spread) trade
        MtchStat="0"            // cleared status
        MsgEvtSrc="REG"         // message source (trade register)
        TrdID="100017"          // trade ID
        OrigTrdDt="2011-10-12"          // trade date
        LastQty="7000.000"      // trade quantity
        LastPx="1.7000000"      // trade price
        TxnTm="2011-10-14T10:25:35-00:00" // trade time
        SettlCcy="USD" // MTM amounts flipped to USD for banking
        GrossTrdAmt="0.00"      // trade quantity times contract value factor
        VenuTyp="X">            // privately-negotiated trade

<Instrmt
        ID="USDBRL"             // product code
        SecTyp="FWD"            // product type
        MMY="20111017"          // period code (value date as a string)
        MatDt="2011-10-14"      // clearing settlement date
        Mult="1"                // contract value factor
        Exch="CME"              // product exchange
        PxQteCcy = "BRL"        // price quote currency
        Fctr="1.0000000"        // discount factor
        SetlMeth="CASH"         // settlement method
        ValMeth="FWDCI"         // valuation method
        UOM="Ccy"               // unit of measure is a currency
        UOMCCy="USD"            // unit of measure specific currency
        UOMQty="1"              // unit of measure quantity
        CtrctScalingFctr="1">   // equivalent position factor for margining
<Evnt EventTyp="121" Dt="2012-02-10"/>        // fixing date for a cash-settled forward
</Instrmt>

<Amt Typ="TVAR" Amt="0.00" Ccy= "USD"/>     // mark to market for variation
<Amt Typ="DLV" Amt="149.90" Ccy= "USD"/>    // final settlement amount
<Amt Typ="CASH" Amt="0.23" Rsn="4" Ccy= "USD"/>     // price alignment interest
```

```
<RptSide
        Side="1"                // buy-sell (1 is a buy, 2 is a sell)
        CustCpcty="1"           // CTI code
        SesID="EOD"             // clearing session ID
        ClOrdID="C891591"       // order ID
        SesSub="X"              // privately-negotiated trade
        AllocInd="0">           // regular trade
<Pty ID="CME" R="21"/>          // clearing organization
<Pty ID="010" R="4"/>           // clearing firm
<Pty ID="TEST" R="38"><Sub ID="2" Typ="26"/></Pty>   // position account and origin
<Pty ID="CME" R="22"/>          // firm exchange
<Pty ID="010" R="1"/>           // primary TMF for the position account)
<Pty ID="TEST" R="24"><Sub ID="2" Typ="26"/></Pty>   // customer account and origin
<RegTrdID ID="CPC000004463532SN0002"                 // Cleared USI
Src="1010000023"                                     // Namespace of creating entity
Typ="0"                                              // Current USI
Evnt="2"/>                                           // Indicates Cleared USI
</RptSide>
</TrdCaptRpt>
```