

## **Independent Investment Advice Disclosure**

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As an independent interest rate, foreign exchange and commodity risk management consultant, Chatham Financial Europe (“Chatham”) considers all available, relevant information in making investment recommendations. In recommending particular financial instruments for implementing hedging strategies, Chatham will consider a range of financial instruments and data as laid out below. It is important to note that the hedging of financial risks typically utilizes a limited number of bespoke derivatives tailored to a client’s hedging needs. Chatham does not produce financial instruments itself, but rather helps its clients arrange trades in financial instruments. Because a narrow range of financial instruments are typically suitable for hedging a particular risk, Chatham’s investment advice typically focuses on providing independent valuations for particular instruments that are best suited to a client’s hedging needs. The types of instruments Chatham typically recommends are discussed below.

As a provider of independent investment advice, Chatham does not receive or pay any fees, commissions or other monetary or non-monetary benefits from third parties related to advice provided by Chatham, except for fees paid to service vendors for data or benchmarks necessary to develop independent investment recommendations.

### **Summary of Process and Controls – FX and Interest Rate Instruments**

Each day at 4:00 p.m. U.S. Eastern time (UTC-05:00), our systems take a “snapshot” of the market to obtain close of business rates. Our systems pull over 9,500 rates including LIBOR fixings, Eurodollar futures, swap rates, exchange rates, and treasury rates. After the data is pulled into our systems, it is incorporated into Chatham’s proprietary models and valuations. To provide independent valuations, Chatham pulls in as many pieces of relevant pricing data as it reasonably can.

### **General Valuation Methodology – Interest Rate Instruments**

There are three main components needed to value interest rate derivatives: the forward curve, discount curve and volatility surface.

The forward curve and discount curve are calculated from the set of raw data that is generally referred to as the yield curve. For USD LIBOR, the yield curve includes LIBOR deposit rates, prices of Eurodollar futures, swap rates and basis swap rates, if applicable. The raw yield curve data is used as an input into our model, and the forward curve and discount curve are calculated, becoming the outputs of the model. Because interest rate markets are highly efficient, even if Chatham’s systems utilize slightly different sets of input rates (or a different source for rates) compared to a bank or other valuation source, the results generally are very close. The same valuation models used to price trades nightly are used to trade every day. As a result, our models are constantly validated via our trading operations in the markets in which our clients operate.

For our core valuation models, the volatility surface is used only for valuations of option products. Our systems pull in the flat volatility surface several times a day from our data providers.

#### Swap Valuation

A swap is an exchange of cash flows—usually a stream of fixed cash flows is exchanged for a stream of floating cash flows. For example, one party agrees to pay cash flows based on a predetermined fixed rate on a specified notional amount for a specified period of time. In return, it receives cash flows at a floating rate on the same notional amount and period of time. To value a swap, Chatham uses forward rates derived from the raw yield curve data discussed above.

#### Swaption Valuation

An interest rate swaption is an option to enter into an interest rate swap agreement. This instrument gives the holder the right, but not the obligation, to enter into a predetermined interest rate swap at a certain time in the future. Swaptions require the same market inputs as swaps with the addition of implied swaption volatilities and cap/floor volatilities quoted by the market. When available, swaption skew data, in addition to at-the-money swaption volatilities, are used as inputs to the model.

#### Cap/Floor Valuation

An interest rate cap/floor is an option to manage the rate paid or received throughout the term of the contract. The buyer of the option pays a premium which buys the right, but not the obligation, to receive the difference between the strike and the underlying index. For example, an option buyer pays the premium to buy a 3-year LIBOR floor struck at 1%. Anytime LIBOR is below 1% on a reset date, the floor buyer will receive the difference between LIBOR and 1%.

The inputs for the valuation of interest rate options are market volatility and interest rates. Flat cap/floor volatilities are pulled in from the market.

#### Corridor Valuation

An interest rate corridor is a combination of a bought cap and a sold cap with different strikes. In a standard bought corridor, the corridor buyer buys a cap at a certain strike and sells a cap at a higher strike. On the bought cap, the buyer of the corridor pays a premium which buys the right, but not the obligation, to receive the difference between the lower strike and the underlying index. On the sold cap, the buyer of the corridor has sold someone else the right, but not the obligation, to receive the difference between the higher strike and the underlying index. Because the buyer of the corridor is simultaneously buying and selling a cap, the premium on the bought cap is decreased. For example, a corridor buyer pays the premium to buy a 3-year LIBOR cap struck at 3%, but that premium is offset by the premium they receive on the sold 3-year Libor cap struck at 5%. Anytime LIBOR is above 3% but below 5% on a reset date, the corridor buyer will receive the difference between 3% and LIBOR. When LIBOR is above 5%, the corridor buyer will receive a payoff of 2%. While this strategy makes interest rate protection less expensive, it also limits the amount of interest rate protection the corridor buyer can receive.

As noted above, the inputs for the valuation of interest rate options are market volatility and interest rates. The valuation of a corridor is simply the sum of a bought cap and a sold cap. Chatham values these caps according to the methodology described above in the Cap/Floor Valuation section.

#### Collar Valuation

An interest rate collar is a combination of a bought cap and a sold floor with different strikes. In a standard bought collar, the collar buyer buys a cap at a certain strike price and sells a floor at a lower strike price. On the bought cap, the buyer of the collar pays a premium which buys the right, but not the obligation, to receive the difference between the underlying index and the higher strike price. On the sold floor, the buyer of the collar has sold someone else the right, but not the obligation, to receive the difference between the lower strike price and the underlying index. Because the buyer of the collar is simultaneously buying a cap and selling a floor, the premium on the bought cap is decreased. For example, a collar buyer pays the premium to buy a 3-year LIBOR cap struck at 3%, but that premium is offset by the premium they receive on the sold 3-year LIBOR floor struck at 1%. Anytime LIBOR is below 1% on a reset date, the floor buyer will receive the difference between 1% and LIBOR. When LIBOR is above 3%, the collar buyer will receive the difference between 3% and LIBOR. While this strategy makes interest rate protection less expensive, it also limits the amount of interest rate protection the collar buyer can receive.

The inputs for the valuation of interest rate options are market volatility and interest rates. The valuation of a collar is simply the sum of a bought cap and a sold floor. We value the cap and floor according to the methodology listed in the Cap/Floor Valuation section.

#### Cancellable Swaps

A cancellable or extendable swap is a contract that allows the option holder to cancel or extend the swap with certain conditions. This instrument is priced as a combination of swap(s) and swaption(s), that when considered as a portfolio, are economically equivalent to the cancelable swap. Cancellable swaps are swaps with embedded swaptions. Therefore, Chatham breaks the cancelable swaps into sub-components (swap and swaption), values the sub-components, and aggregates the results.

### **General Valuation Methodology – Currency Instruments**

#### FX Forward Valuation

An FX forward is an agreement to purchase a given amount of currency for a given amount of another currency on a contracted date. The FX forward contract obligates the participants to either make the given currency exchange (in the case of deliverable forwards) or pay/receive a cash settlement amount (in the case of non-deliverable forwards). For example, a contract participant may agree with a counterparty to buy 10 million EUR and sell 13 million USD on August 14, 2014.

The inputs for the valuation of FX forwards are spot rates, FX forward rates, and the interest rate curve of the domestic currency. FX Forwards are valued by comparing the contracted forward exchange rate to the current market exchange rate.

### FX Option Valuation

An FX option is an option to purchase a given amount of currency for a given amount of another currency. The buyer of the option generally pays a premium which buys the right, but not the obligation, either to make the given currency exchange (in the case of deliverable forwards) or receive a cash settlement amount (in the case of non-deliverable forwards). For example, an option buyer pays the premium to buy 10 million EUR and sell 13 million USD on August 14, 2017. If the exchange rate at maturity is higher than 1.30, the option purchaser will exercise the option.

The inputs for the valuation of FX options are spot rates, FX forward rates, the interest rate curve of the domestic currency, and FX volatility for the given currency pair. FX options are valued using a variant of the Black-Scholes model tailored for currency derivatives.

### FX Collar Valuation

An FX collar is the combination of a purchased option and a sold option at different strikes (e.g., a bought call and a sold put). The valuation of an FX collar is the sum of the component valuations (e.g., the sum of a bought call and a sold put valuations). We value these collars according to the methodology listed above under the FX Option Valuation section.

### Cross Currency Swap Valuation

A cross currency swap converts fixed or variable rate obligations in one currency to fixed or variable rate obligations in another. In its most basic form, a cross currency swap consists of three elements: an initial exchange of principal, periodic interest-based cash flows, and the final return of principal. However, not all of the standard elements are required to be present when structuring a cross currency swap.

The inputs for the valuation of cross currency swaps are spot rates, interest rate curves in both countries, and the cross currency basis for the given currency pair.

## **Summary of Process and Controls – Commodity Instruments**


Each day at 11:50 p.m. U.S. Eastern time (UTC-05:00), our systems retrieve the same day futures settlement prices published by the various commodities exchanges. In addition to the futures settlement prices, we also pull volatility data into our systems.

## **General Valuation Methodology – Commodity Instruments**

There are three main components needed to value commodity derivatives: forward curve, discount curve, and volatility surface.

The forward curve is calculated using futures settlement prices. The methodology to generate the forward curve differs by commodity and conforms to accepted market standards. The discount curve creation process is similar to the process described above for the valuation of interest rate derivative products.

The volatility surface is used only for valuations of option products. Our systems pull in the volatility surface once a day, at 11:30 p.m., U.S. Eastern time (UTC-05:00), from the data providers. The volatility data then goes through our calibration process. The general



calibration methodology is market standard while the smoothing and interpolation techniques are proprietary.

### Swap Valuation

A swap is an exchange of cash flows—usually a stream of fixed cash flows is exchanged for a stream of floating cash flows. For example, one party agrees to pay cash flows based on a predetermined fixed price on a specified volume for a specified period of time. In return, it receives cash flows at a floating price on the same volume and period of time.

The inputs for the valuation of swaps are the commodity's forward curve built from the futures settlement prices described previously and the interest rate curve in the currency that is the market standard for quoting the commodity.

### Commodity Call/Put Valuation

A commodity call/put is an option to manage the price paid or received throughout the term of the contract. The buyer of the option pays a premium which buys the right, but not the obligation, to receive the difference between the strike price and the underlying commodity price. For example, an option buyer pays the premium to buy a Brent Crude Oil floor struck at \$100. Anytime the Brent Crude Oil Price is below \$100 on a reset date/dates, the floor buyer will receive the difference between the Brent Crude Oil Price and \$100. Chatham supports the valuation of both Asian- and European-styled option products.

The inputs for the valuation of commodity options are market volatility, commodity futures prices and the interest rate curve in the currency that is the market standard for quoting the commodity.