SRP Greeks data service

Explanation of methodology and data supplied

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Contents

Overview

The SRP Greeks data service is provided through a combination of Structured Products data collected and maintained by SRP and derivative pricing calculations powered by FVC.

A collection of principal underlyings has been nominated by SRP to form the universe of underlyings for this service. At the time of writing there are the following 15 underlyings:

Benchmark Indices

S&P 500, Eurostoxx 50, Nasdaq 100, Nikkei 225, Hang Seng China Enterprises Index (HSCEI), Kospi 200, FTSE 100, Russell 2000, Dow Jones Industrial Average (DJIA)

Stocks

Amazon, Tesla, Apple, Nvidia, Roche, Microsoft, Advanced Micro Devices, Meta, Alphabet (Class A)

SRP will source products from its databases that include one or more of the above underlyings. Careful validation to ensure data accuracy will be performed by the SRP team. Products will be sent over by SRP to FVC via API. Further validation will be conducted by FVC to help identify products that have errors or suspicious entries. These validation results will be immediately fed back to SRP to further increase accuracy. SRP are responsible for deciding whether to amend any entries.

There will be an initial batch of all relevant live products to start the service (and provide some backtested data). New products added to the SRP databases will then be sent over to FVC on a regular basis.

To provide the most complete information for each underlying SRP will supply many thousands of products from different structured products markets globally. The higher the number of products chosen, and the higher the aggregate notional involved the more complete the Greeks data will be. Deciding and maintaining an acceptable product coverage level is the responsibility of SRP.

Given the available universe of live products that have been supplied to it and that have mapped successfully, FVC will perform Greeks calculations every business based on each underlying’s respective close values. These are performed for every live product and aggregated by underlyings and markets.

The objective of this service is to provide meaningful aggregate Greeks information for each of the above underlyings. This can then be used by market participants to assess the potential impact of structured product activity and to find trading opportunities.

These trading opportunities can consist of short-term market dislocations and systematic value plays caused by asymmetric aggregate demand. These opportunities can be due to various factors such as the level of the underlying asset itself, concentration and timing effects due to barriers and auto-call levels, and volatility effects affecting the pricing level of hedging instruments.

The data supplied by this service should mostly be viewed in the context of each underlying individually. Further aggregations or comparisons across different underlyings are also possible for SRP or its end clients to perform. For example, it would be possible to aggregate Delta and other Greeks by specific combinations of underlyings or underlyings from the same region.

FVC valuation capabilities

FVC has many years of experience in providing independent valuations, stress testing, analysis and lifecycle functionality.

Its independent valuation service covers structured product and derivative markets worldwide. Products include those linked to equities, fixed income, commodities and other underlying assets, with payoffs ranging from vanilla through to exotic.

FVC constantly monitors the evolution of structured products markets and has regular contact with investment bank and distributor clients and contacts. This includes familiarity with many product types and payoffs, range of underlying assets including complex indices and the pricing practices, risk appetite and likely bid-offer ranges in the market.

This process gives FVC insight on the typical pricing of different payoff profiles, pricing treatments of long dated index and stock products, volatility assumptions, correlations, credit spreads and other parameters. All these aspects provide feedback and intelligence to assist in the core goal which is accurate estimation of fair independent valuations of the types of instruments we cover.

FVC main service calculations (independent valuations and stress testing) are performed on AWS servers for high performance and reliability. This solution also provides the ability to scale up to provide valuations on large portfolios quickly. Full backups of input data and valuations output are taken regularly.

Implied data

Accurate implied data is critical for the provision of derivative valuations and Greeks calculations. Implied pricing curves govern interest rates, credit spreads, dividend yields, volatility surfaces and correlations.

FVC's approach involves using multiple sources to provide verification and to improve the accuracy of the pricing data. Curves for interest rates and credit spreads can be created by direct calculation from input data.

Volatility, dividend yields and correlations present more challenges. FVC collects and analyses market prices of listed instruments such as exchange traded options, certificates, warrants. It also has access to and stated prices from retail issued products from its various business lines, this provides further feedback and calibration.

For a given underlying, if there is sufficient data and liquidity, implied volatility and dividend yields are calculated from this process, validated by reference to historical volatility and realised dividends. If required, extrapolation to longer maturities and strikes further away from "at-the-money" is done by reference to related proxy underlying assets, using ratios from points they have in common.

If no option prices are available, then historical data for the underlying asset spot series will be used to estimate values by references to appropriate proxies drawn from other underlyings. FVC will select one or more underlyings that have similar properties to any target underlying and use this information to calculate pricing curves.

FVC will always use a variety of initial data sources and the final implied pricing curves are therefore FVC created and owned data. For spot data multiple sources are also used to ensure coverage and for cross-checking.

Initial data sources include CBOE, European Exchanges, Refinitiv and FVC's other service lines.

Derivative Models

The standard model used by FVC for equity derivatives and structured products is a Dupire local volatility model. This model is widely used by practitioners and can be constructed from forward curves of interest rates, dividend yields and issuer credit spreads and volatility surfaces by strike, maturity and across underlyings.

Standard references which we have used to implement this approach are:

- Gatheral, J. (2006). The Volatility Surface: A Practitioner s Guide. New York, NY: John Wiley & Sons.
- Dupire, B. (1994). "Pricing With a Smile." Risk 7, pp. 18-20.

Calculation of the volatility surface is the most challenging aspect of this process. It requires a sufficiently rich set of strikes and maturity time points. FVC generally applies best fit smoothing techniques to create a log strike representation of implied volatility to fit the model at each required time point. Best fit smoothing creates the most accurate smooth representation with limited parameters from more complex data curves.

From this two-dimensional implied volatility surface the local volatility surface is then created. The resulting local volatility surface will give the local volatility level to be used by the Monte Carlo simulation at each time and spot level. The evolution of the underlying process can then be fully modelled using local Gaussian distributions with the prevailing levels for interest rates, credit spread, dividend yield and volatility surface. The length and granularity of the Monte Carlo simulation depends on the product features. The results of the underlying simulation for all underlying assets are passed to the product payoff calculation which calculates all cashflows and their timing for each path. The fair value (or price) for the product is then calculated as the average discounted sum of cashflows over all the sample paths. Error reduction techniques are also applied.

Calculation of Greeks

This core valuation process is then used to calculate "Greeks" (option or product sensitivities of the price to various input parameters). These are named Delta (spot), Gamma (Delta), Vega (volatility), Div sensitivity (dividend), Theta (time), Vanna (change in delta with volatility) and Charm (change in delta with time) sensitivities.

Greeks are calculated by applying "bumps" (changes) to the pricing parameters and all product pricing models are re-calculated with these new parameters. Differencing calculations are then done to the resulting product prices. It is possible to either bump the pricing parameters once and take the difference between this value and the base price and divide by the difference, or to apply symmetric bumps (one positive, one negative) and take the difference between these two prices divided by the corresponding difference in pricing parameters.

The current values for bumps that FVC is using is 1% of current spot value for underlyings, 100 basis points (1% absolute) for volatility and 1 week for remaining time to maturity.

Therefore, if an underlying has a current absolute value of 2000, it will be bumped by 20 and the product revalued at a spot level of 2020 for a positive bump and 1980 for a negative bump. For an underlying with current volatility value 18%, 19% would be used for a positive bump and 17% for a negative.

Irrespective of bump sizes used, the differences are rescaled in a consistent fashion to report the relevant Greeks according to the definitions below.

The Greeks for each individual product are calculated at each valuation date. All Greeks shown are multiplied by the product notional to represent the sensitivity due to the size of the position.

Greek	Definition	Meaning
Delta	dP/dS	Change in valuation per unit change in underlying price
Position Delta	dP/dS * S	Size of the position sensitivity to the underlying. Change in valuation per 1% underlying move is approximately 0.01 times this quantity. Spot value on valuation date * Delta
Gamma	d^2P/dS^2	Change in Delta per unit change in underlying price
Position Gamma	d^2P/dS^2 * 0.01 * S^2	0.01 * (Spot value on valuation date)^2 * Gamma
Vega	dP/dv * 0.01	Change in valuation per 100bps absolute increase in volatility at every time point
Div	dP/dd * 0.01	Change in valuation per 100bps absolute increase in dividend yield at every time point
Theta	dP/dt * 1/260	Change in valuation per one business day decrease in remaining time to maturity, assuming no market movement
Vanna	$d^2P/dSdv$ * 0.01	Change in delta per 100bps absolute increase in volatility at every time point
Position Vanna	$d^2P/dSdv$ * 0.01 * S	Spot value on valuation date * Vanna
Charm	$d^2P/dSdt$ * 1/260	Change in delta per one business day decrease in remaining time to maturity, assuming no market movement
Position Charm	$d^2P/dSdt$ * 1/260 * S	Spot value on valuation date * Charm

The relative product price at time t is given by the expression P(t) calculated using some function f

P(t) = f(S, t, {S_history}, {pricing_parameters}, {product_features})

where S is the underlying spot price in index points or currency unit at time t (scalar for single underlying, array for multi-asset), {S_history} is the history of spot prices for all underlyings from strike date to time t (for path dependency calculations), {pricing_parameters} is the array of pricing parameter variables and {product_features} is the set of product features (participation, coupons, barriers etc) that define the product payoff precisely.

The currency value of the structured product at time t is given by

N * P(t)

where N is the notional amount in the payoff currency

Delta and Gamma explanation:

For the case with one-sided bumps, the "simple" delta ($Simple\_Delta_i$) with respect to the *i*-th underlying can be calculated as the difference between P(t) for the current spot price and then with the *i*-th spot entry moved by a small amount, symbolically as

P(t) = f(S, t, {S_history}, {pricing_parameters}, {product_features})

$P^{(i)}*(t)$ = f(S+dS, t, {$S\_history^{(i)}$}, {$pricing\_parameters^{(i)}$}, {product_features})

Where {$S\_history^{(i)}$} and {$pricing\_parameters^{(i)}$} reflect any changes due to moving the *i*-th underlying. We make two implicit pricing parameter changes in addition to moving the spot prices in accordance with an accepted market methodology.

Firstly, dividend yields are divided by a quotient term for the underlying before and after the spot change, this is equivalent to a constant dividend amount assumption.

$y_i^* = y_i /(1+dS_i/S_i)$ where y_i^* and y_i are the adjusted and initial dividend yield for the ith underlying with current value S_i and change dS_i

Secondly, at-the-money volatility curves are adjusted to keep the volatility at given strikes constant (known as "sticky-strike"). For positive spot changes dS_i (and positive skews) this will result in a lower at-the-money curve to keep volatility at a given strike constant.

To calculate Delta we take differences

$Simple\_Delta_i = (P^{(i)} (t) – P(t)) / dS_i$

Where dS_i is a small (scalar) change in the *i*-th underlying, leaving other underlyings unchanged.

All FVC data then reports the Delta as:

$Delta_i$ = N * $Simple\_Delta_i$

where N is the notional amount in the payoff currency

In order to be able to more conveniently calculate the currency amount change of the position caused by the spot change, it is useful to calculate the "position delta" ($Position\_Delta_i$) which is given as follows

$Position\_Delta_i$ = S_i * $Delta_i$

Where S_i is the current value of the spot of the *i*-th underlying

Both Delta and Position Delta aggregate by sum across products, meaning that the Delta and Position Delta for an underlying in totality is given by the sum of the respective quantity for each product.

Relative_Delta$_i$ = Simple_Delta$_i$ * S_i^0

Where S_i^0 is the strike date spot value of the *i*-th underlying

The **Relative Delta** for a collection of products is given by

Sum (RD_j*N_i) / Sum(N_j)

Where RD_j is the Relative Delta of the j-th product and N_j is its notional amount.

Both Delta and Position_Delta can be summed over all instruments irrespective of strike date and notional. This is not true for the Relative Delta.

Delta is consistent with textbook definitions and calculations of Delta based on number of units. Delta gives the change in valuation for a unit change of the underlying price or level (for example the change in valuation for a 1 USD change of the stock price). **This value of Delta cannot easily be compared across different underlyings.**

Position Delta is more consistent across underlyings since it represents the exposure to a proportional change in the underlying.

Relative Delta shows a Notional weighted value for the relative sensitivity of the product set.

Example:

Instrument	Underlying	Current value of underlying	Notional	Delta	Position Delta
A	X	110	1.5	0.012	1.32
B	Y	1100	1.5	0.00120	1.32

Two instruments, both with notional size USD 1.5m, and Position Delta of USD 1.32m. They are intended to be equivalent except for the fact that underlying Y has a value of 10 times underlying X.

This means that the position sensitivity of either instrument to its underlying is currently equal to that for a delta-1 holding of the same underlying of value USD 1.32m.

For either instrument, the first order expected change to the product value for a 1% increase of the current underlying value (moving from a spot 110 to 111.1 for underlying X or 1100 to 1111 for underlying Y)

is therefore 1% * Position Delta = USD 0.0132m = USD 13,200

If underlying X moves by 1 point, the valuation of instrument A will change by approximately USD 0.012m. If underlying Y moves by 1 point, the valuation of instrument B will change by approximately USD 0.0012m.

Gamma is reported in a consistent fashion, with

$Gamma_i$ = N * $Simple\_Gamma_i$

where $Simple\_Gamma_i$ is the change in $Simple\_Delta_i$ when the underlying price changes.

$Position\_Gamma_i$ = 0.01 * (S_i ^2) * $Gamma_i$

NB note the 0.01 factor at the request of SRP

The above definitions of Delta and Gamma together allow the calculation of the first and second order expected change to the product value. For example, for a 1% increase of the underlying spot price S, the expected change to the product value is

$1\% * S * Delta + 0.5 * (1\% * S)^2 * Gamma$

Summary of different delta and related definitions

Term name	Interpretation	Underlying price scale dependent	Notional aggregation	Suitable for comparison across underlyings	Suitable for comparison per underlying over time
Delta	Textbook or number of units definition of Delta	Yes	Sum	No	Yes, but will change significantly if total number of products or total notional has changed significantly
Position Delta	Indication of change in value for given relative change in underlying	No	Sum	Yes	Yes, but will change significantly if total number of products or total notional has changed significantly
Relative Delta	Indication of "in the moneyness" of each product	No	Average	Yes	Yes
Gamma Vanna Charm	See individual definitions below	Yes	Sum	No	Yes, but will change significantly if total number of products or total notional has changed significantly
Position Gamma, Position Vanna, Position Charm	See individual definitions below	No	Sum	Yes	Yes, but will change significantly if total number of products or total notional has changed significantly

Aggregation

Each day calculations are performed from the current whole universe of products supplied by SRP to FVC, that containing at least one principal underlying, have been successfully mapped and valued on the given date.

The principle for all Greeks is that the aggregate sensitivity is given by

$$\sum V_i \, N_i$$

Where N_i is the notional of the *i*th product in USDm (converted at current FX levels if the product currency is not USDm) and V_i is a given individual simple Greeks calculation (Simple Delta, Simple Gamma etc)

Aggregations shown are as follows

- Whole product set
- Product set broken down by product distribution market
- Product set broken down by underlying, with some data further broken down by market

Explanation of data supplied

Table 1: Summary

Property	Title	Description
numProducts	Number of products	Number of products that have been valued and that contain at least one of the principal underlyings
numIssuers	Number of issuers	Number of distinct issuers in the product universe above
numPrincipalUnderlyings	Number of principal underlyings	Number of principal underlyings
numUnderlyings	Number of underlyings	Number of all underlyings, this will exceed the number of principal underlyings due to the presence of baskets and worst-ofs
numMarkets	Number of markets	Number of markets in the product universe above
totalNotional	Total notional (USDm)	Sum of notional, converted into USDm of all products
totalValuation	Total valuation (USDm)	Sum of notional * product price in USDm across all products. For an individual product the product price is defined to be the relative price per notional, with 1 or 100% representing par. Notional * product price is therefore the USDm currency valuation and the sum will give the aggregate total valuation.

Table 2: Summary: markets

Property	Title	Description
id	SRP market id	
name	SRP market name	
numProducts	Number of products	All these entries are calculated as for the overall summary but restricted to products in the relevant market. Since all of these products have a unique market entry, the sum of the market values for this column will equal the overall summary
numIssuers	Number of issuers	Distinct values per market, will not sum across markets
numPrincipalUnderlyings	Number of principal underlyings	Distinct values per market, will not sum across markets
numUnderlyings	Number of underlyings	Distinct values per market, will not sum across markets
totalNotional	Total notional (USDm)	Total USDm notional per market, will sum across markets to equal overall summary total notional
totalValuation	Total valuation (USDm)	Total USDm valuation per market, will sum across markets to equal overall summary total valuation

Table 3: Underlyings

Property	Title	Description
id	SRP underlying id	
name	SRP underlying name	
notional	Total notional (USDm)	Total USDm notional per underlying. The sum across underlyings will exceed the overall summary total notional because of multiple underlying products
attributedNotional	Total attributed notional (USDm)	The attributed notional is a method of apportioning notional across underlyings. The attributed notional per underlying per product is the product notional multiplied by a weighting. Weightings across underlyings for each product must always sum to 1 (100%). For a single asset or basket product the weighting is the underlying weighting as defined by the product. For a worst-of product the weightings are set equal and therefore are 1 divided by the number of underlyings. The attributed notionals across products are then added up across all products for the underlying to give a total value.
valuation	Total valuation (USDm)	Total USDm valuation per underlying. The sum across underlyings will exceed the overall summary total valuation because of multiple underlying products
numProducts	Number of products	Number of products linked to this underlying as a single or multi asset product
delta	Delta (USDm / ABC)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying. ABC represents the currency of the underlying
relativeDelta	Relative Delta (fraction)	Notional weighted average of Relative Delta across relevant products as defined in Table 5

positionDelta	Position Delta (USDm)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
gamma	Gamma (USDm / ABC*ABC)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying. ABC represents the currency of the underlying
positionGamma	Position Gamma (USDm/1%)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
vega	Vega (USDm / 100bps)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
divsens	Dividend sensitivity (USDm / 100bps)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
theta	Theta (USDm / day)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
vanna	Vanna (USDm / (ABC * 100 bps))	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
positionVanna	Position Vanna (USDm / 100bps)	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
charm	Charm (USDm / (ABC * 100 bps*day))	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying
positionCharm	Position Charm (USDm / (ABC*day))	See individual definition in "underlyings by product table". Values are totalled for all products for the underlying

Table 4: Underlyings by market

Property	Title	Description
id	SRP market id	
name	SRP market name	
Remaining fields as shown for underlying Table 3 above		Entries totalled for underlying for each individual market. Entries across all markets within an underlying will sum to the overall underlying total

Table 5: Top selection of products linked to an underlying

Property	Title	Description
id	SRP product id	
name	Product name	
marketId	SRP market id	
marketName	SRP market name	
currencyName	Standard 3 letter currency code	
currencyNotional	Notional in product payoff currency (USDm)	Product stated Sales volume (product currency)
notional	Notional (USDm)	Product stated Sales volume (converted to USDm at prevailing exchange rate at date of Greeks calculation)
delta	Delta (USDm / ABC)	Change in valuation per unit change in underlying price. ABC represents the currency of the underlying
relativeDelta	Relative Delta (fraction)	Change in relative product price with the relative spot price (current spot divided by strike spot). This quantity is not multiplied by the notional amount and gives a relative amount that can be compared across products
positionDelta	Position Delta (USDm)	Size of the position sensitivity to the underlying. Change in valuation per 1% underlying move is approximately 0.01 times this quantity
gamma	Gamma (USDm / (ABC*ABC))	Change in Delta per unit change in underlying price. ABC represents the currency of the underlying
positionGamma	Position Gamma (USDm/1%)	0.01 * (Spot value on valuation date)^2 * Gamma
vega	Vega (USDm / 100bps)	Change in valuation per 100bps absolute increase in volatility at every time point
divsens	Dividend sensitivity (USDm / 100bps)	Change in valuation per 100bps absolute increase in dividend yield at every time point
Theta	Theta (USDm / day)	Change in valuation per one business day (defined as 1/260 years) decrease in remaining time to maturity, assuming no market movement
vanna	Vanna (USDm / (ABC * 100 bps))	Change in delta per 100bps absolute increase in volatility at every time point

positionVanna	Position Vanna (USDm)	Spot value on valuation date * Vanna
charm	Charm (USDm / (ABC * day))	Change in delta per one business day decrease in remaining time to maturity, assuming no market movement
positionCharm	Position Charm (USDm / day)	Spot value on valuation date * Charm

Greeks versus Barrier by underlying

Each of the individual Greeks calculations are aggregated into "level" (L) which is the barrier of the product relative to the current spot value of the product (lowest spot in the case of a worst-of). If a product has no barrier it is excluded from this table.

L = product_barrier / current (min) product_spot

Bucket graduations are expressed in fractional terms and in units of 0.1 (equivalent to 10%). Values are rounded up to the nearest bucket, therefore products with the barrier divided by spot between 0.6 (not inclusive) and 0.7 (inclusive) will be counted for the 0.7 bucket.

Values greater than 1 are possible for the case where the spot level is below the barrier. The maximum value shown is 3, which will be shown for all levels of L greater than 2.9.

This table gives the concentration of sensitivities by barriers versus current index level.

For example, if the product has a barrier at 560 index points and the index value is 800 then the level is 560/800 = 0.7 = 70%.

Note that this data uses the Delta quantity which is heavily dependent on the current underlying value. However, aggregation of delta by barrier for a single underlying which is what this data shows is self-consistent.

Table 6:

Property	**Title**	**Description**
delta	Delta (USDm / ABC)	Delta bucketed by barrier (properties per entry "level" and "amount"). ABC represents the currency of the underlying
positionDelta	Position Delta (USDm)	Position Delta bucketed by barrier (properties per entry "level" and "amount")
Gamma	Gamma (USDm / ABC*ABC)	Gamma bucketed by barrier (properties per entry "level" and "amount"). ABC represents the currency of the underlying

positionGamma	Position Gamma (USDm)	Position Gamma bucketed by barrier (properties per entry “level” and “amount”)
vega	Vega (USDm / 100bps)	Vega bucketed by barrier (properties per entry “level” and “amount”)
divsens	Dividend sensitivity (USDm / 100bps)	Dividend sensitivity bucketed by barrier (properties per entry “level” and “amount”)
theta	Theta (USDm / day)	Theta bucketed by barrier (properties per entry “level” and “amount”)
vanna	Vanna (USDm / (ABC * 100 bps))	Vanna bucketed by barrier (properties per entry “level” and “amount”)
positionVanna	Position Vanna (USDm/100bps)	Position Vanna bucketed by barrier (properties per entry “level” and “amount”)
charm	Charm (USDm / (ABC * day))	Charm bucketed by barrier (properties per entry “level” and “amount”)
positionCharm	Position Charm (USDm/day)	Position Charm bucketed by barrier (properties per entry “level” and “amount”)

Greeks versus Time by underlying

Each of the individual Greeks calculations are aggregated into “time” (T) which is the remaining full time to maturity of the product, rounded up to the nearest bucket. Step sizes are expressed in 0.25 years.

T = time of remaining product maturity

The maximum bucket shown is 10 years, which therefore will include all products with remaining time of more than 9.75 years.

This table gives the concentration of sensitivities by remaining time to go.

For example, products with remaining maturity of between 1.5 (not inclusive) and 1.75 (inclusive) will be counted in the 1.75 bucket.

Note that this data uses the Delta quantity which is heavily dependent on the current underlying value. However, aggregation of delta by barrier for a single underlying which is what this data shows is self-consistent.

Table 7:

Property	**Title**	**Description**
delta	Delta (USDm / ABC)	Delta bucketed by time (properties per entry “time” and “amount”). ABC represents the currency of the underlying
positionDelta	Position Delta (USDm)	Position Delta bucketed by time (properties per entry “time” and “amount”)
gamma	Gamma (USDm / ABC*ABC)	Gamma bucketed by time (properties per entry “time” and “amount”). ABC represents the currency of the underlying
positionGamma	Position Gamma (USDm)	Position Gamma bucketed by time (properties per entry “time” and “amount”)
vega	Vega (USDm / 100bps)	Vega bucketed by time (properties per entry “time” and “amount”)
divsens	Dividend sensitivity (USDm / 100bps)	Dividend sensitivity bucketed by time (properties per entry “time” and “amount”)
theta	Theta (USDm / day)	Theta bucketed by time (properties per entry “time” and “amount”)
vanna	Vanna (USDm / (ABC * 100 bps))	Vanna bucketed by time (properties per entry “time” and “amount”)
positionVanna	Position Vanna (USDm*100bps)	Position Vanna bucketed by time (properties per entry “time” and “amount”)
charm	Charm (USDm / (ABC * 100 bps))	Charm bucketed by time (properties per entry “time” and “amount”)
positionCharm	Position Charm (USDm/day)	Position Charm bucketed by time (properties per entry “time” and “amount”)