

DERIVATIVES A Bloomberg Professional Service Offering

DLIB <GO> QUICK START GUIDE

February 2014

Bloomberg

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OVERVIEW

Derivatives Library, DLIB <GO>, allows you to price exotic hybrid derivatives linked to baskets of equity shares, indexes, FX Rates, Libor and CMS Rates using Bloomberg multi-dimensional Monte Carlo pricing system. Here are some of the main features of DLIB.

- » Seamless integration with market data across Bloomberg including Interest Rate Curves (ICVS), Swaption/Caps Volatility Cubes (VCUB), Equity & FX Implied Volatility Surface (OVDV), Dividend Projections (BDVD), Correlations (CORR) and FX Forwards (FRD).
- » Ability to structure deals using easy to use templates which are flexible and cover a broad set of deals across asset classes.
- » Deals which are not available in standard templates can be created using an easy to use scripting language called BLAN.
- » Advanced lifecycle handling showing past fixings and cash-flows, future events like barriers and call decisions and detailed cash-flow information like payoff formulas and certainty.
- » Dealer quality models across all asset classes with easy to use options for selecting instruments for calibration, viewing and editing model parameters and analysing calibration errors.
- » Scenario and SHOC Analysis.
- » Integration to MARS for calculating prices, basic Greeks and scenarios.
- » Automatic term sheet generation with ability to customize logos and add custom fields.

The screenshot displays the Derivatives Library (DLIB) interface. The top menu bar includes '91) Actions', '92) Products', '93) Data & Settings', and 'Derivatives Library'. Below this is a toolbar with buttons like '41) Update', '42) Load', '43) Send', '44) Book', and '45) Stress Test (MARS)'. The main window is divided into several panes. The left pane shows a tree view with 'BLAN' selected. The right pane shows 'Properties' for a deal with ID 'XDAAG24U'. The bottom pane displays a script editor with BLAN code for a basket option. The bottom status bar shows 'Valuation' for '03/04/2014' with 'Market Data' and 'Funding Spread (bp)' of '0.00 bp'.

```
7
8  (** INPUT **)
9
10 let notional = 100. in
11 let currency = "USD" in
12 let strike_date = 2010-08-15 in
13 let expiry_date = 2016-08-15 in
14 let maturity_date = 2016-08-17 in
15 let type = 0 in (* 0 -> Worst, 1 -> Best *)
16
17 let tickers = ("IBM US Equity",
18               "MSFT US Equity",
19               "SPX Index",
20               "AAPL US Equity",
21               "T US Equity",
22               "F US Equity") in
23
24 let basket = basket_of_tickers(tickers, strike_date) in
25
26 (** CONTRACT **)
27
28 let perf = if(type = 0) then worst_of_basket(basket)
29           else best_of_basket(basket) in
30 let call = notional * max(perf - 1., 0.) in
31
32 flow(maturity_date, currency, fix(expiry_date, call))
33
```

Valuation: 03/04/2014 Market Data 03/04/2014

Valuation

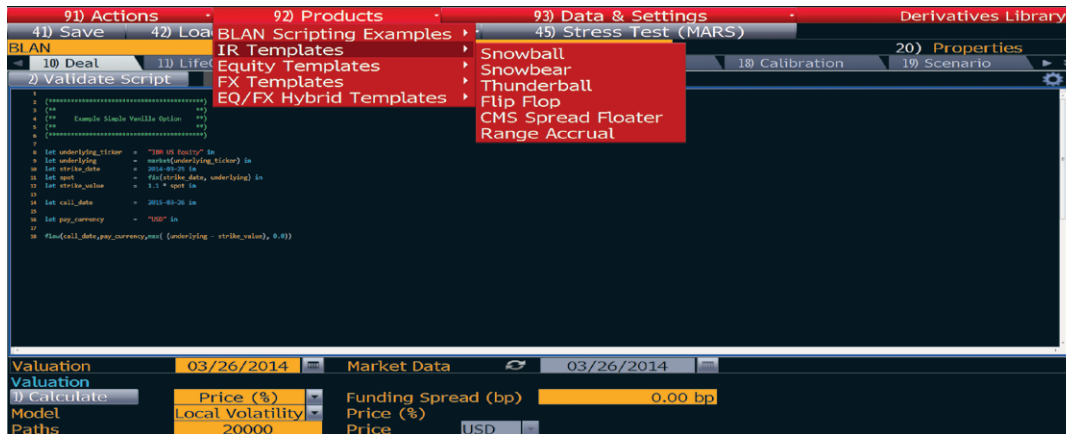
Calculate Price (%) Funding Spread (bp) 0.00 bp

Model Local Volatility Price (%)

Paths 20000 Price USD 6.50

PRODUCT LIST

Open DLIB <GO> to see the list of products covered. The products are grouped by asset class. The following table gives a brief description for each product.



BLOOMBERG LANGUAGE

BLAN is an easy to use language for describing financial contracts. Users will not have to learn too many keywords in order to start scripting. The following are a list of keywords that need to be learnt in order to get started with scripting. This however is not a user guide to learn BLAN. The details for each keyword can be found in {HELP DLIB <GO>}



STRUCTURING & PRICING DEALS

Contract Details

For the template deals, all deal parameters are displayed in the "Deal" tab. Schedules are folded by default and can be opened by clicking on the "+" sign near the Schedule name. The content in the main tab can be dynamically resized using the zoom slider or by using Ctrl + Mouse Wheel or Shift + Mouse Wheel. To price the deal, user can modify all values and hit <GO>, then 1 <GO> to Calculate.



The valuation panel at the bottom of the screen displays information on pricing parameters and basic results. This can be useful to perform a quick pricing on the selected product. More results, including Greek numbers, can be found in the Pricing/Greeks Tab. In the Valuation Panel, the user can change the market data date and valuation date, as well as adjust pricing settings such as Model/Path/Funding Spread/etc.



91) Actions

92) Products

93) Data & Settings

Derivatives Library

40) Solver (Price (%))

41) Save

42) Load

43) Send

44) Book

45) Stress Test (MARS)

Autocallable

10) Deal

11) LifeCycle

12) Pricing

14) Curves

15) Underlying

17) Correlation

18) Calibration

20) Properties

31) Results

32) MC Projections

33) Greeks Settings

Model:

Local Volatility

Basket Greeks

☒ Delta/Gamma

Shifts	1	%
Vega	50	bps
Theta	1	days

☒ Scale Delta/Gamma

Shifts	10	bps
IR Vega	5	bps

Underlyings

<input checked="" type="checkbox"/>	Ticker
<input checked="" type="checkbox"/>	AAPL US Equity
<input checked="" type="checkbox"/>	IBM US Equity
<input checked="" type="checkbox"/>	SPX Index

Currencies

<input checked="" type="checkbox"/>	Currency
	USD

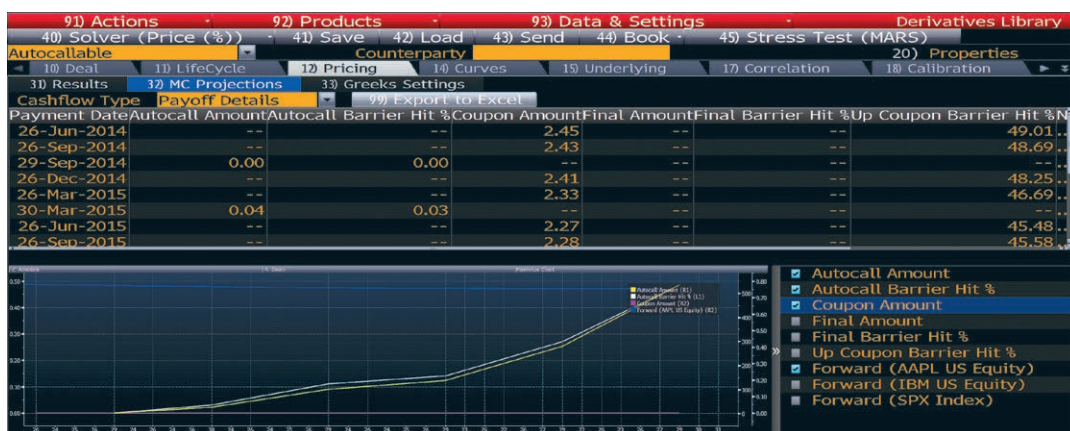
Save

Greeks numbers in all models require relevant calculation power that can materially increase response time. For this reason Greeks are switched off by default. User can switch the calculations of Greeks on, by clicking on button 33) Greeks settings. A popup will appear where preferences for Greeks calculations (including parameters shifts) can be customized.



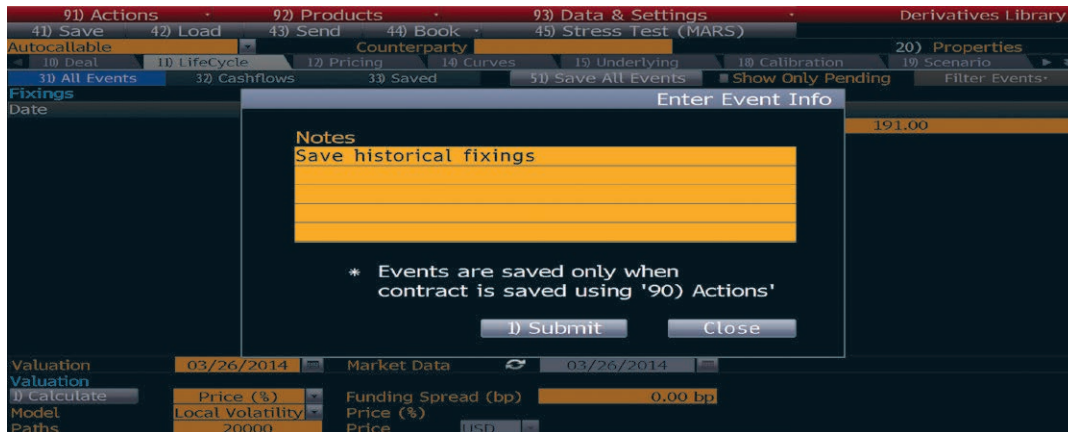
In addition to showing the price for a deal, DLIB provides other details like standard deviation, expected coupon payments, expected call payments, greeks etc in the Results tab.

DLIB shows detailed breakdown of the price calculated during simulation by showing cashflows paid during each coupon period, computing expressions based on underlying like survival probability, barrier hit percentage etc and computing forwards computed from monte carlo simulation. This is shown in the MC Projections tab.



LIFECYCLE HANDLING

Lifecycle tab in DLIB allows users to view and edit historical fixings, view future cashflows, manage lifecycle events like continuous barrier and call options and in certain cases handle corporate events gracefully.

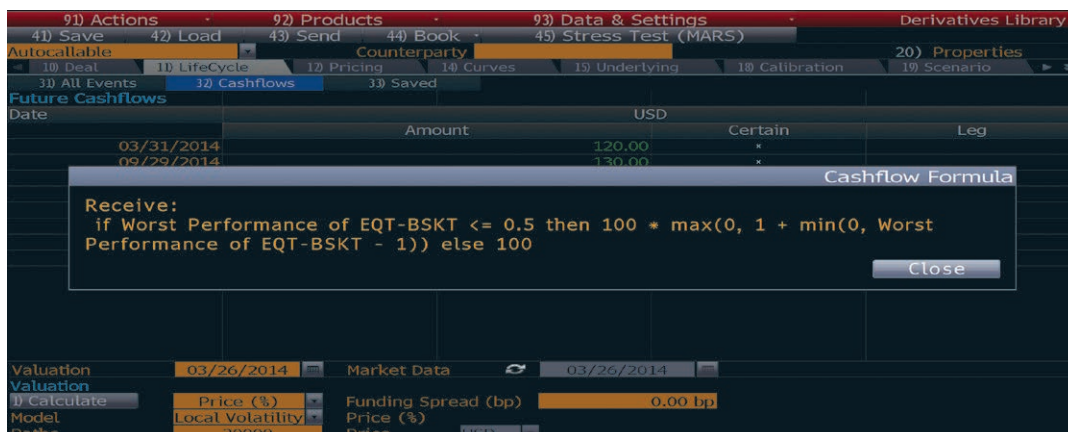


Historical Fixings

All Events section would show the historical fixings whenever application. The user can edit the fixings and save it with the deal.

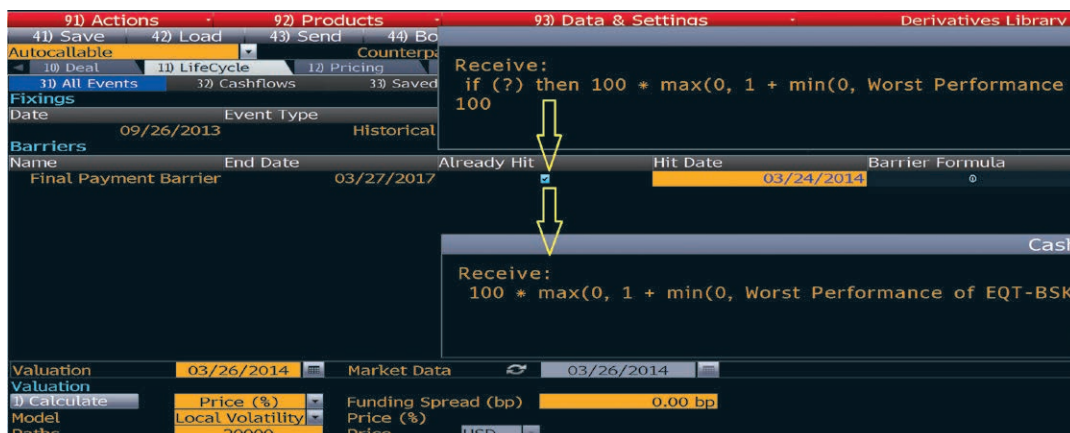
FUTURE CASHFLOWS

The user can view all the cashflows which occur in the future and if the cashflows are certain or are dependent on the path of the underlying.



CONTINUOUS BARRIERS & OTHER EVENTS

In case the contract has continuous barriers starting in the past, user can specify if the barrier has been hit during lifecycle of the deal. As shown below specifying that the barrier has been hit updates the formula in lifecycle.



CORPORATE ACTIONS

DLIB automatically handles corporate actions like ticker changes and stock splits. These events can be viewed in the lifecycle tab. DLIB displays a list of corporate actions that may affect the stock price, including stock splits and ticker changes. Each action is linked to the Corporate Actions Calendar function (CACX). Clicking the button next to the action launches CACX, which displays further information on the action.

91) Actions				92) Products				93) Data & Settings				Derivatives Library			
Autocallable				Counterparty				20) Properties							
10) Deal				11) LifeCycle				12) Pricing				13) Curves			
31) All Events				32) Cashflows				33) Saved				51) Save All Events			
Corporate Actions: Stock ...								Show Only Pending				Filter Events			
Date				Ticker				Adjustment Factor				CACX<GO>			
Fixings				01/22/2014				MA US Equity				10			
Date				Event Type				MA US Equity							
03/26/2013				Historical				535.47				53.55			
04/29/2013				Historical				539.01				53.90			
05/28/2013				Historical				575.74				57.57			
06/27/2013				Historical				570.68				57.07			
07/29/2013				Historical				597.02				59.70			
08/27/2013				Historical				607.92				60.79			
09/26/2013				Historical				677.58				67.76			
09/27/2013				Historical				681.85				68.19			
10/28/2013				Historical				729.94				72.99			
11/27/2013				Historical				760.40				76.04			
12/27/2013				Historical				827.87				82.79			
01/27/2014				Historical				76.05				76.05			
Valuation				03/26/2014				Market Data				03/26/2014			
Valuation															
Calculate				Price (%)				Funding Spread (bp)				0.00 bp			
Model				Local Volatility				Price (%)							
Paths				20000				Price				USD			

» **Stock Split** – Occurs when a stock share is split into two, or stock shares are merged into one. In the example below, you can see that MSFT US <EQUITY> split multiple times since 1988.

» **Ticker Change** – Occurs when the ticker of a company changes before the market data date. In the example below, the ticker change from RIMM US <EQUITY> to BBRY US <EQUITY> appears.

MARKET DATA

91) Actions				92) Products				93) Data & Settings				Derivatives Library			
Autocallable				Counterparty				20) Properties							
10) Deal				11) LifeCycle				12) Pricing				13) Curves			
USD - USD Swaps (30/360, S/A)				Mid - USD Bloomberg Curve				Curve Type Swap				Reset Fixing			
Interpolation				Piecewise Linear (Simple)				Settle Date 03/28/2014				Swap Rates			
DV01 Calc Method				Shifting (L) Libor Fixing				Rate Source Custom Curve				Swap Contract			
Shift				Dual Curve Stripping				No				Reset Fixing			
Term Market Rate				Shift				0.00 bp							
3 MO				0.233350				0.233350				0.999391			
EDJ4				0.237000				0.240829				0.999278			
EDK4				0.240000				0.242626				0.999044			
EDM4				0.245000				0.245225				0.998850			
EDN4				0.254000				0.249396				0.998637			
EDQ4				0.264000				0.253182				0.998378			
EDU4				0.268000				0.254206				0.998174			
EDZ4				0.326000				0.272904				0.997352			
EDH5				0.453000				0.311519				0.996211			
EDM5				0.645000				0.370225				0.994590			
EDU5				0.877000				0.445506				0.992390			
EDZ5				1.133000				0.534572				0.989556			
Valuation				03/26/2014				Market Data				03/26/2014			
Valuation															
Calculate				Price (%)				Funding Spread (bp)				0.00 bp			
Model				Local Volatility				Price (%)							
Paths				20000				Price				USD			

Curves Tab

The Curves Tab allows visualization and customization of some parameters of the interest rates curves used for pricing and calibration. The curve loading in DLIB is done keeping in mind users settings in functions like SWDF <GO> and ICVS <GO> functions.

91) Actions				92) Products				93) Data & Settings				Derivatives Library			
Autocallable				Counterparty				20) Properties							
10) Deal				11) LifeCycle				12) Pricing				13) Curves			
10) Solver (Price (%))				10) Solver (Price (%))				10) Solver (Price (%))				10) Solver (Price (%))			
Autocallable				Counterparty				20) Properties							
10) Deal				11) LifeCycle				12) Pricing				13) Curves			
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10) Equity				10) Equity				10) Equity				10) Equity			

For basket options and hybrid deals, DLIB allows users to get an accurate estimate of realized correlation. You can use either “Spot” correlations or correlations calculated using a “Rolling Windows” methodology. Settings can be adjusted in the Correlation tab. For more details on correlation methodology please refer to {IDOC 2065568 <GO>}

91) Actions		92) Products		93) Data & Settings		Derivatives Library	
41) Save	42) Load	43) Send	44) Book	45) Stress Test (MARS)			
Autocalcable		Counterparty				20) Properties	
11) Deal	11) Lifecycle	12) Pricing	14) Curves	15) Underlying	17) Correlation	18) Calibration	
Settings	Custom			EURUSD		IBM US	MA US
Method	Rolling window			1.0000	0.3068	0.3237	
Price Using	Percentile			0.3068	1.0000	0.4093	
Return Type	Logarithmic			0.3237	0.4093	1.0000	
Return Freq.	2 DAY						
Period	5 Years						
03/25/09	03/25/14						
Window Length	6 Months						
Window Shift	1						
Percentile	50						
Show Details							
Parallel Bump	0.00						
Exponential Bump	1.00						
Set all							
		31) Fix Matrix		32) Reset		33) Export to Excel	
Valuation	03/26/2014	Market Data		03/26/2014			
Valuation							
Calculate	Price (%)	Funding Spread (bp)		0.00 bp			
Model	Black Scholes	Price (%)					
Ratio	39000	Price		USD			

91) Actions		92) Products		93) Data & Settings		Derivatives Library	
41) Save		42) Load		43) Send		44) Book	
45) Stress Test (MARS)							
Autocallable		Counterparty				20) Properties	
10) Deal		11) Lifecycle		12) Pricing		13) Curves	
14) Underlying		15) Correlation		16) Calibration			
30) Equity		31) FX					
Ticker		Spot Price		Vol. Source		Implied	
Market Type		Forward Curve					
1) EURUSD Currency		1.3783		Bloomberg B		EUR	
						Offshore	
						Currency Source	
						EUR <-> USD	
						via USD	
						BGNF	
						Term	
						Delivery Date	
						Forward Rate	
						0 DY	
						03/31/2014	
						1.3783	
						1 WK	
						04/07/2014	
						1.3782	
						2 WK	
						04/14/2014	
						1.3782	
						3 WK	
						04/22/2014	
						1.3782	
						1 MO	
						04/30/2014	
						1.3782	
						2 MO	
						05/30/2014	
						1.3781	
						3 MO	
						06/30/2014	
						1.3781	
						6 MO	
						09/30/2014	
						1.3781	
						9 MO	
						12/31/2014	
						1.3782	
						1 YR	
						03/31/2015	
						1.3786	
						18 MO	
						09/30/2015	
						1.3806	
						2 YR	
						03/31/2016	
						1.3856	
						3 YR	
						03/31/2017	
						1.4027	
Valuation		03/26/2014		Market Data		03/26/2014	
Valuation							
1) Calculate		Price (%)		Funding Spread (bp)		0.00 bp	
Model		Black Scholes		Price (%)			
Paths		20000		Price		USD	

The FX tab is displayed in case of Quanto deals or if FX rate is one of the underlying. The FX tab allows user to choose Forward curve from FRD and volatility surface from OVDV. It also lets user to imply one of the discount curves from the FX forward and other discount curve.

91) Actions		92) Products		93) Data & Settings		Derivatives Library	
41) Save	42) Load	43) Send	44) Book	45) Stress Test (MARS)			
Autocallable		Counterparty				20) Properties	
10) Deal	11) LifeCycle	12) Pricing	13) Curves	15) Underlying	17) Correlation	19) Calibration	
30) Equity	32) FX	33) IR					
Ticker		Currency Vol Source Type		Market Side Source		Forward Curve	
31. US0003M	USD	VCUB	Mid	USD Golden Copy NY 3		Curve 23 USD Bloomberg Curve	
						OIS Discounting Off	
						Term	Fixing Date Forward Rate
						0 MO	03/26/2014 0.2334
						3 MO	06/26/2014 0.2503
						6 MO	09/26/2014 0.2733
						9 MO	12/26/2014 0.3406
						12 MO	03/26/2015 0.4740
						15 MO	06/26/2015 0.6779
						18 MO	09/26/2015 0.9082
						21 MO	12/26/2015 1.1798
						24 MO	03/26/2016 1.4632
						27 MO	06/26/2016 1.7363
						30 MO	09/26/2016 2.0095
						33 MO	12/26/2016 2.2747
						36 MO	03/26/2017 2.4790
Valuation		03/26/2014	Market Data		03/26/2014		
Valuation							
Calculate	Price (%)	Funding Spread (bp)		0.00 bp			
Model	No Model	Price (%)					
Paths	20000	Price					

The IR tab is displayed in case of Libor or CMS Index is one of the underlying. This tab allows user to view Forward curve and choose volatility surface from VCUB.

MODEL CALIBRATION

DLIB allows flexibility in creating models used for pricing a deal. The detailed calibration process allows users to select instruments for calibration (where ever appropriate), view model parameters and analyse errors for vanilla market instruments between models computed prices vs market quoted prices.



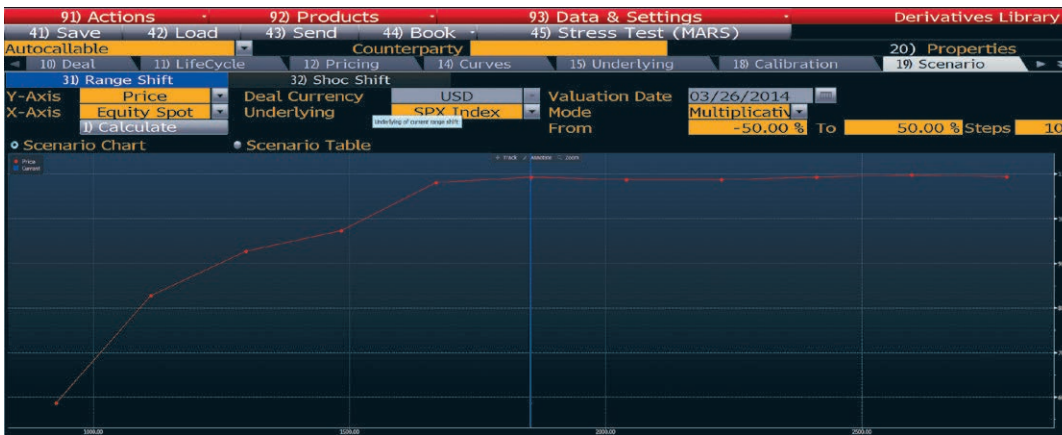
For more details on Black Scholes, Local Volatility and Heston model please refer to {DOCS #2071537 <GO>}

For more details on Hull White and Libor Market Model model please refer to {DOCS #2071536 <GO>}

SCENARIO

The Scenario Tab provides two types of market data shift analysis: range shift and SHOC shift.

Asset Type	Y-Axis Options	X-Axis Options
Equity	Price	Equity Spot
	Price(%)	Equity Volatility Surface
	Delta	Equity Dividend
	Gamma	Curve for ticker Currency
	Vega	Curve for deal Currency
	Rho	
FX	Price	FX Spot
	Price(%)	FX Volatility Surface
	Delta	Curve for non-implied currencies
	Gamma	
	Vega	
	Rho	
Libor/CMS	Price	Curve for Libor Currency
	Price(%)	Curve for Deal Currency
	DV01 (termed as Rho)	



Range Shift

A range shift computes multiple pricing results with shifts from a single market data. The options available in DLIB are

91) Actions				92) Products		93) Data & Settings		Derivatives Library	
41) Save		42) Load		43) Send		44) Book		45) Stress Test (MARS)	
Autocallable				Counterparty				20) Properties	
10) Deal		11) LifeCycle		12) Pricing		14) Curves		15) Underlying	
31) Range Shift		32) Shoc Shift		18) Calibration		19) Scenario			
Market Shifts (SHOC)									
Time Shift									
Equity Price									
SPX Index									
Equity Vol									
SPX Index									
Swap Curve									
USD,23									
1) Calculate									
Basic Results									
Funding Spread (bp)									
Price (%)									
Price (%) Std									
Price									
Price Std									
Zero Coupon (%)									
Delta (%)									
SPX Index									
Gamma (%)									

SHOC Shift

A SHOC shift calculates a single pricing result based on multiple market data shifts. We provide 4 individual SHOC shifts that are computed in one calculation. All available market data shifts are presented in each shift column for users to configure. Each shift has two associated fields of shift mode and shift value. They define how shift is applied and what value is used, individually. The preconfigured SHOCs in the dropdown menu are loaded from the SHOC database and accessible from SHOC function.

APPENDIX

Interest Rate Deals

Product	Description	Payoff Formula	Other Features
Snowball	Pays a coupon which increases over time in a bullish market when interest rates fall	$\text{Coupon} = \text{Prev Coupon} - \text{Index Rate} + \text{Spread}$	<ul style="list-style-type: none"> » Intro Coupon initially » Caps, Floor for Coupons » Option to cancel the deal » Quanto
Snowbear	Pays a coupon which decreases over time in a bullish market when interest rates fall	$\text{Coupon} = \text{Index Rate} - \text{Prev Coupon} + \text{Spread}$	<ul style="list-style-type: none"> » Intro Coupon initially » Caps, Floor for Coupons » Option to cancel the deal » Quanto
Thunderball	Pays a coupon which is difference between previous coupon and current index level multiplied by a gearing factor	$\text{Coupon} = \text{Leverage} * (\text{Prev Coupon} - \text{Index Rate}) + \text{Spread}$	<ul style="list-style-type: none"> » Intro Coupon initially » Caps, Floor for Coupons » Fully customizable formula dependent on previous coupon and current index level » Option to cancel the deal » Quanto
Flip Flop	Start with Fixed/ Float coupon for a period of time and shift to Float/Fixed coupon	$\text{Coupon} = \text{Fixed Rate/Index Rate} + \text{Spread}$	<ul style="list-style-type: none"> » Intro Coupon initially » Caps, Floor for Float Coupons » Option to cancel the deal » Quanto
CMS Spread Options	Pays coupon based on the spread between two index rates of a particular currency. The index rate can be two Libor rates or two CMS rates	$\text{Coupon} = \text{Index Rate1} - \text{Index Rate2}$	<ul style="list-style-type: none"> » Intro Coupon initially. » Caps, Floor for Float Coupons » Option to cancel the deal » Quanto
Range Accrual	Pays coupon based on percentage of the time basket of underlyings exceed a given range	$\text{Coupon} = \text{Fixed/Float Rate} * \text{Percentage of time underlyings exceed a range}$	

Equity-FX Hybrid Deals

Product	Description	Payoff Formula	Other Features
PRDC	Pays a coupon based on FX Forward	$\text{Coupon} = \text{Foreign Cpn} * \text{FX Rate/Strike} - \text{Base Coupon}$	<ul style="list-style-type: none"> » Intro Coupon initially. » Caps, Floor for Coupons » Option to cancel the deal » Quanto
Basket Option	Vanilla Option based on function of performance of basket of underlyings. The function could be best of/ worst of/ average/rainbow	$\text{Final Payment} = \text{Max} (\text{Basket Performance} - \text{Strike}, 0)$	<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Asian/Lookback features » Quanto » Equity – FX Hybrids
Capital Protected	Vanilla Option based on function of performance of basket of underlyings. The function could be best of/ worst of/average/rainbow. Has a notional protection and participation	$\text{Final Payment} = \text{Protection} * \text{Notional} + \text{Max} (\text{Basket Performance} - \text{Strike}, 0)$	<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Asian/Lookback features » Quanto » Equity – FX Hybrids
Stellar	Pays a coupon based on average performance of the basket	$\text{Coupon} = \text{Average performance of the basket}$	<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids
Call Spread Lock In	Pays a coupon based on average performance of the basket. Pays a minimum return if basket performance exceeds a barrier	$\text{Coupon} = \text{Notional} * \text{Max} (\text{LockInInterest}, \text{Min}(\text{BasketReturn}, \text{MaxReturn}))$ LockInInterest is 0 if BasketReturn is below a certain level	<ul style="list-style-type: none"> » Quanto » Equity – FX Hybrids
Autocap	Pays a coupon based on average performance of the basket. Pays a minimum return	$\text{Coupon} = \text{Notional} * \text{Max} (\text{Minimum Rate}, \text{BasketReturn})$	<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids
Autocallable	Pays an amount at maturity based on worst performing underlying. There is also an option to early redeem the deal based on certain conditions		<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Completely customizable final payoff as a function of calls, puts, forwards, digital options and cash » Quanto » Equity – FX Hybrids

Product	Description	Payoff Formula	Other Features
Phoenix	Pays an amount at maturity based on worst performing underlying. Pays a fixed coupon every period in case the worst performing underlying exceeds a certain barrier. There is also an option to early redeem the deal based on certain conditions		<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Completely customizable final payoff as a function of calls, puts, forwards, digital options and cash » Quanto » Equity – FX Hybrids
Altiplano	Pays a fixed coupon based on number of underlying assets trading below a barrier		<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids
Reverse Convertible	Pays an amount at maturity based on worst performing underlying		<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids
Outperformance	Coupon based on difference in performance of two underlyings	$\text{Coupon} = \text{Und1 Performance} - \text{Und2 Performance} - \text{Strike}$	<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids
Best/Worst	Pays a coupon based on ordered average performance of the basket. Highest return in each period has a different weight than lowest return		<ul style="list-style-type: none"> » Caps, Floor for Performance of Each underlying » Strike to calculate performance can be reset every period » Quanto » Equity – FX Hybrids

BLAN Quick Guide

User	Language Features	Financial Keywords	Contracts Covered
Basic	<p>tuple – Collection of variables which can be strings, dates, floats or another tuple</p> <p>map – Converts one set of tuple into another set of tuples</p>	<p>market – Create a observable from standard Bloomberg ticker</p> <p>fix – Fix the observable on a date in the past or future</p> <p>flow – Creates a cashflow to be paid in the past to future</p> <p>give – Revert the roles of the long and short position</p> <p>all – Combines a set of flows together to form a contract</p> <p>Math keywords like max, min, exp, log etc.</p>	<p>All non-path dependent deals can be priced using these keywords. Some examples are:</p> <ul style="list-style-type: none"> » Fixed-Float Swap » Vanilla options, caps and floors » Stellar, Reverse Convertible, Autocaps with fixed strikes and single underlyings
Basic – Intermediate		<p>basket_of_tickers – Create a tuple of performances from tuples of tickers and strike date</p> <p>worst_of_basket – Calculates the worst performance In basket</p> <p>best_of_basket – Calculates the best performance in basket</p> <p>weighted_sum_of_basket – Calculates the weighted average performance of basket</p>	<p>All non-path dependent basket options can be priced using these keywords. Some examples are Stellars, Reverse Convertibles, Autocaps, Call spread lock in.</p>
Intermediate	<p>get – Gets the ith element in the tuple. Useful for special processing of last schedule item.</p> <p>len – length of the tuple</p>	<p>ifc – Conditional contract providing choice between two contracts</p> <p>notify – Report the value of any float observable or expression based on float observable</p> <p>barrier_crossed – Continuously monitor barrier between two dates</p>	<p>Used to price deals with continuous or discrete barriers. Allows users to report certain variables for debugging.</p>
Advanced	<p>fold_left – Similar to map but aggregates results from left to right in the tuple.</p> <p>fold_right – Similar to map but aggregates results from right to left in the tuple.</p>		<p>Can price all path dependent deals without any early exercise features. Some examples include:</p> <ol style="list-style-type: none"> 1) Snowball, snowbear, Thunderball 2) Autocalls and Phoenix 3) Stellar, Outperformance etc with Floating strike 4) Asian, lookback options
Expert		<p>either – Make a decision to get into one of a given set of contracts by pricing future cashflows on exercise date and making a decision.</p> <p>american_option – American style exercise by choosing a contract between two</p> <p>instrument_of – Creates a contract by aggregating a series of either contracts along with the regression variables to be used in Least Squares /American Monte Carlo</p>	<p>All options with a european/bermudan /american style exercise can be priced using these keywords. For example:</p> <ol style="list-style-type: none"> 1) Bermudan Cancellable Swaps 2) Bermudan Swaptions 3) American Options 4) POINT structure

ABOUT THE BLOOMBERG PROFESSIONAL SERVICE

The founding vision in 1982 was to create an information services, news and media company that provides business and financial professionals with the tools and data they need on a single, all-inclusive platform. The success of Bloomberg is due to the constant innovation of our products, unrivalled dedication to customer service and the unique way in which we constantly adapt to an ever-changing marketplace. The Bloomberg Professional service is a powerful and flexible tool for financial professionals—whatever their needs—in cash and derivatives markets as diverse as equities, currencies, commodities, money markets, government and municipal securities, mortgages, indices, insurance and legal information. The Bloomberg Professional service seamlessly integrates the very best in real-time data, news and analytics.

In addition, Bloomberg users benefit from on-demand multimedia content, extensive electronic trading capabilities and a superior communications platform. Bloomberg customers include influential decision makers in finance, business and government. Business and financial professionals recognize the Bloomberg Professional service as the definitive tool for achieving their goals because it offers unparalleled assistance and functionality on a single platform for a single price.

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