Credit Analytics Release Notes

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v2.1 12 March 2013

12 March 2013 (v2.1)

- Fast, Multi-layer, interpolating curve building: Discount/Credit Curve build out using highly efficient and robust curve calibration techniques. Also customize the build out based off of different node interpolation techniques, curve variate parameters, and boundary conditions.

- Fast calibration of CDS/bond measures: Make the calibration of the bond/CDS calibration much more faster and robust. For bonds, the new calibration is applied for yield, Z Spread, and implied credit spread. For CDS, the new calibration is applied to flat spreads.

- Calculation of Curve Self-Jacobian: Calculation of the curve Jacobian of the characterizing curve variate to itself. This curve variate could be discount factor, zero rate, or forward rate. Process also involves evaluating the corresponding canonical measure cross-Jacobian.

- Calculation of product measure Jacobian: Fast computation of the rates/credit product measure Jacobian to the curve variate factors. In particular, we compute the a) product quoted measure Jacobian, and the b) product PV Jacobian. Products considered all the standard rates and credit products (cash/EDF/IRS/CDS/bonds and their variants).

- Monte-Carlo based product algorithmic differentiation: Formulation and implementation of a) path-wise self-Jacobian estimator, b) path-wise parameter Jacobian estimator, and c) path-wise product payoff derivative estimator. Also computes product path-wise pay-off derivative estimator, along with the implementation for specific products.

19 July 2012 (v1.6)

- Separation between CreditProduct and CreditAnalytics: Separation of the functional and behavioral interface provided by CreditProduct, and the actual implementation provided by CreditAnalytics – currently merged onto a single jar.

- Curve Re-factoring: Re-factoring and re-creation of the rates curve, the credit curve, the zero curve, and the FX basis/forward curves, along with their serialization, interface stub exposure, the creation factories, and the regression suite.

- Parameter Re-factoring: Re-factoring and re-creation of the component and the multi-sided quotes, the component and the basket market parameters, the credit/rates/FX scenario curve containers, and the environmental market parameters container, along with their serialization, interface stub exposure, the creation factories, and the regression suite.

- Product re-factoring: Re-factoring and re-creation of the bond, CDS, basket CDS, basket bond, Cash/EDF/IRS products, and the FX Spot/forward contracts, along with their serialization, interface stub exposure, the creation factories, and the regression suite.

- BBG CDS Samples: Replication of the Bloomberg CDSW sample pricing in a specimen – incorporation of the credit/rates curve, as well the CDS product contract details, and emitting of the calculation results.

22 May 2012 (v1.5)

- Regressor Framework: Implementation of the regressor set, tolerance check, curve scenario regressors, regression framework suite, and the eventual regression output.

- Discount Curve Regression: Regressing Base Curve Creation, scenario Curve creation, and calculation of spot/effective implied rates and discount factors.

- Credit Curve Regression: Regressing Base Curve Creation, scenario Curve creation, and calculation of spot/effective implied hazard rates, recoveries, and survival.

- FX Curve Regression: Creation of the basis and forward curves, conversion from one to another, and implying of the basis nodes and the enhanced discount curve on the domestic/foreign discount curves.

- Zero Curve Regression: Creation of the zero curve from the product cash flow nodes, implying of the zero rates and zero discount factors at the relevant nodes.

1 May 2012 (v1.4)

- Supplemental Bond Measures: Implementation of the Yield Spread, the Zero Discount Margin, and the PECS calibration
- Bond Analytics API Update: Documentation/Calculation Update for Yield Spread, Zero Spread, and PECS
- Curve Enhancement and Samples: Enhanced Credit Curve calibration and full suite samples for discount and credit curve creation
- Construction of CDX from Reference Data: Creation of CDX Reference Data series of objects from static reference data
- CDX basket default Swap Analytics API: Suite of API for construction basket default swap objects off of the standard CDX reference data, as well as categorizing them.

23 March 2012 (v1.3)

- Full implementation of the standard CDX contracts – all index varieties, series, tenors, and versions for CDX and iTRAXX
- Comprehensive set of live and EOD detailed valuation and risk calculation samples for the rates, bond, CDS, CDX, and CDO products
- Detailed CDS valuation and calibration measures – segmented into Fair and Market measures.
- Implementation of discount margin and OAS for bonds
- Specifications for the Bond Measure calculation and calibration from different kinds of inputs

22 February 2012 (v1.2)

- Comprehensive coverage for the bond's fair, market, and work-out measures from the set of relevant market parameters
- "Value" calibration: Calibration of any market input parameter via solving for any of the "valued" measure – with specific optimizations added for the calibration process.
- Node Tweaking: CreditAnalytics can now adjust input curves to create an arbitrary set of market scenario curves to build custom scenario valuers.
- Simple APIs now to generate bond market measures for a given EOD.
- Z Spread: Introduced multiple ways of implying – as a yield basis (also now called bond basis), as a discount curve parallel shift, and as a zero rates curve parallel bump.

23 January 2012 (v1.1)

- Introduced support for Bond Basket and Bond ETFs.
- Full support for amortization schedules (including principal pay down schedules).
- FI API enhancement: Yield based analytics calls and simplification of the API calls
- Additional bond fields (next exercise information, previous/current/next coupons/dates)
- Remove dependency on odbc.jar

4 January 2012 (v1.0)

- Added a base serializer class, and incorporated object level serialization for objects transmittable between AnalyticsClient and AnalyticsServer
- Introduced a full-featured serialization test suite.

11 December 2011 - v0.11

- Credit Curve enhanced to calculate time-weighted survival/bumped/recovery factors and hazard rates
- Jzy3D surfaces moved onto a separate package
- Complete set of named scenario credit curves moved into their own container.
- Valuation parameters and work out information moved into their own separate classes
- Separate test Suites for the bond and the credit functionality now available in Bond Test Suite and Functional Test Suite

24 November 2011 - v0.10

- Discount Curve re-factored and enhanced to calculate time-weighted discount factors and rates
- Weekend holidays array gets their own class
- Complete set of named scenario IR curves moved into their own container.
- Treasury benchmark set contains the primary treasury and an array of secondary treasuries.
- Abstractable base component functionality now pushed into the component Class
- Created the FI Sample to provide full interface sample for CreditAnalytics
- Utilities internal to FI packaged into FI General

7 November 2011 - v0.09

- FX Basis class provides the abstractable basis functionality
- 3D contour plots to make a surface "shadow"
- Full set of credit feeds are now set in the Credit Feed class.

- Credit Product Valuation Parameters now moved to a separate class.

- Component specific calibration functionality now moved over to the Calibratable Component Abstract Class

- Analytics Server acts as the CreditAnalytics server to the API Analytics Client.

- Validatable class abstracts out the validation functionality

20 September 2011 - v0.08

- Created a Day Count Basis class to now create the full set of day count measures, accrual fraction, date rolls/adjusts, and holiday checks.

- Abstracted out the holiday base interface from which all the holidays are derived.

- Full set of bond feeds are now set in the Bond Feed class.

- Factor schedule class now holds the factor/notional dates and amounts

- Implementation of the new bond builder class that holds stubs to create custom bonds of various types.

- Introduction of the new API Analytics Client.

- Implementation of CreditAnalytics's DateTime class

28 August 2011 - v0.07

- Created a Component Output class that contains all the component scenario output measures.

- The Component Calibrator calibrates the component's discount/hazard rate from the component's measure, market quote, and the calibration type.

- XML configuration Reader now parses the XML configuration to load the configuration settings.

- Detailed American/European schedules are now held in the Embedded Option Schedule class

- Bond Builder factory class from the full set of bond parameters now occurs in the Bond Product Builder
- Implementation of the Static BA Curves class that provides the container for creating the custom EOD IR and EOD credit curves of all types.
- Internal implementation of the Julian Date class now contains the comprehensive static and instance Julian Date creation and functional methods.

17 August 2011 - v0.06

- Created an FX Curve that holds the FX nodes, points, their types, and the corresponding FX Spot.
- New 3D chart plotter - histogram
- Capturing the basket market parameters onto a separate class
- Currency Pair now captures the FX currency information
- The complete set of bond reference data is now put into its own class, away from the Bond Valuation/Product parameters
- Implementation of the Rates Manager class that provides the container for creating the EOD IR curves of all types.
- All the internal and external utility functions are packed into a new FI Utility class.

30 July 2011 - v0.05

- Added comprehensive date adjustment and roll functionality
- Introduced a separate bootstrapper interface
- Scenario market parameters needed to value baskets are now in a separate class
- Created bond treasury parameters to hold all the treasury benchmarks corresponding to the bond
- Implemented the basket default swap product

- Implementation of the EOD Curves class that provides the container for creating the EOD IR and credit curves.
- Logger class for level based and location specific logging.

13 July 2011 - v0.04

- Another chart plotter class – Multi Color Scatter
- Market Parameters needed to value the component
- Encapsulation of the loss period dates
- Bond periods can be generated now from an elaborate set of generation parameters
- Creation of a new basket product class from which all the basket products can be derived
- Implementation of the Environment Manager class that provides the container for the EOD IR and credit curves.

26 June 2011 - v0.03

- Act/Act Parameters spun off to a separate class
- Market Parameters needed to value the component
- 4D scatter plot includes the ability to plot a 3D surface with the color depth plane
- Notional, notional schedule, and redemption value at maturity get their own class
- Creation of the Bond foundation class from which all other variants are derived
- Implementation of the CDS Manager class that provides the container for the EOD credit curves.

9 June 2011 - v0.03

- Floating holiday parameters onto a new Floating Holiday class

- Introduction of the new Period class from which period of all types are derived

- The Basket Output class now contains all the base and scenario measures for full complete product valuation

- Currency, IR/treasury/EDSF curve names for the bond now in Bond IR Valuation Parameters

- Creation of the Credit Component class from which the Bond, CDS, and the basket default swap classes are derived

- Implementation of the Bond Manager class that provides the container for the bond instances.

22 May 2011 - v0.02b

- Day count string and adjustment rules are now in the Day Count class
- Enhancement of the period class for the floating periods
- All the EOD scenario Credit curves for the specified set of instruments and quotes in Credit Curve Scenario Container
- CUSIP, ISIN, ID, name, and ticker are in Bond Floater Parameters
- Creation of the FI main analytics API class
- Implementation of the Credit Default Swap product

5 May 2011 - v0.02a

- Full date holidays now are in Static Holidays
- Delaunay surface plots now display wire frame charts
- All the EOD scenario IR curves for the specified set of instruments and quotes in IR Curve Scenario Container

- Bond's Rate Index, reset rule, floater spread, and floating day count convention are packed into Bond Floater Parameters
- Creation of the FX Forward class
- Implementation of the Interest Rate Swap product

18 April 2011 - v0.02

- Merged all the coupon period parameters
- Contour 3D surface now displays contour plots
- Created an EOD specific Market Parameters Container to hold all the EOD specific market parameters
- Bond Fixed Period Generation Parameters contain all the bond's period generation parameters.
- Spot rate and date together now form FX Spot
- Implementation of the Euro-dollar product

1 April 2011 - v0.01b

- Fixed Holiday class containing the holiday month/year information
- Bond Output class contains all the bond price/treasury spread measures
- Credit pricing parameters collected into Pricer Parameters
- Trade/Redemption/Quote currencies can now be different from each other for the bond
- Sided, multi-measure component quote
- Implementation of the Cash/money market product

25 March 2011 - v0.01

- First cut of CreditAnalytics fixed income analytics
- Created the location holidays
- Implemented the First Coupon Period
- Separated a new Bond Cash flow termination event class
- Aggregated the Bond Coupon Parameters
- Base Quote Class
- Live Quote to capture ticking quotes