

F3 Platform

Advanced Structures

And Hybrids

FINCAD

The FINCAD F3 Platform is a powerful and flexible analytics framework for constructing and valuing virtually any derivative instrument and asset class, including those with complex payoffs and structures.

Index Expression Language

F3 Platform allows creation of payoffs of arbitrary levels of complexity using Index Expression Language (IEL).

High-Level Scripting

Index Expression Language is a high-level scripting language used to construct complex indices in F3. Starting from simple indices such as Libors, share prices, FX rates or credit survival probabilities, Index Expression Language allows straightforward construction of complex indices such as “the number of days a CMS spread spends inside a range, subject to a knock-out event not having occurred, and a credit entity survival index, quantoed”.

Intuitive Scalability and Flexibility

Construction of complex indices from simple indices is intuitive and straightforward, and here is no theoretical limit to the complexity of indices that can be created.

Each Index can be valued and risk-analysed separately, enabling on-the-fly validation of each component of a payoff during its construction.

Cashflow, Leg, and Portfolio Products

With F3 Platform, building complex products is straightforward with portfolio product functionality.

Single Cashflows

The simplest financial product that can be created in F3 is a single cashflow product. Single cashflow products consist of the instruction to pay, or receive, a given index, on a given date, against a given notional, in a given currency.

Legs and Portfolios

One step up from single cash flows is a Leg, which additionally contains a Roll Schedule, enabling the construction of a leg of Cashflows linked to an arbitrary index. Any number of F3 Products can then be used to form a Portfolio Product. A Portfolio Product is still a product, and it can be used to recursively construct further Portfolio Products of ever-increasing complexity.

Intuitive Structuring

In conjunction with the Index Expression Language, this gives a very powerful framework for the construction of complex structured products, while remaining simple, straightforward and intuitive.

Automated Numeraire Corrections

With Automated Numeraire Corrections, users can mix multiple currencies and curve models in F3 Platform.

Multi-currency, Multi-curve Automation

F3 employs Automated Numeraire Corrections to enable simulation of multiple currencies and multiple yield curves in the same valuation, while automatically ensuring that choice of numeraire does not affect the result of the calculation. This enables combining multiple curve models in the same simulation, and translation of indices and cashflows between currencies.

Automated Numeraire Correction methodology as implemented in F3 is subject of a current US Patent Application.

Calibrated Hybrid Correlations

F3 Platform delivers accurate calibration of cross-asset correlations using Calibrated Hybrid Correlations.

Direct and Calibrated

The complexity of possible products and valuation methods in F3 is supported by two types of correlation: Direct Correlations and Calibrated Correlations.

In Direct Correlations, the user directly supplies correlations between underlying stochastic processes. In Calibrated Correlations, the user supplies target correlations between observable Indices, and F3 calibrates the Direct Correlations to those targets.

Cancellable Products, Exercise Boundaries, and Trigger Replacement

F3 Platform supports callable and puttable structures using trigger replacement valuation methods, combined with different approximations for exercise boundaries.

Numerical Method Replacement

F3 enables construction of multiple cancellation points on any financial product, with multiple choices such as long

or short the option to cancel at different points, and others.

Monte Carlo valuation of cancellable products uses trigger replacements to calculate optimal exercise boundaries. A trigger replacement specifies the valuation method to be used for valuation of the remainder of the product if not cancelled (triggered).

Trigger replacements can range from nested Monte Carlo simulations, to any of a number of closed form, integral, or Fast-Fourier-Transform-based valuation methods or approximations. The surfaces used to estimate optimal exercise boundaries are subject to user-supplied parameters and constraints.

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