Open Source Risk Engine: Update and Outlook

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Quaternion Risk Management

30 November 2017

Quaternion Risk Management

Agenda

ORE Update

ORE Outlook

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Recall

The *Open Source Risk Project* aims at establishing a transparent peer-reviewed framework for **pricing and risk analysis** that can serve as

- a benchmarking, validation, training, teaching reference
- an extensible foundation for in-house and vendor solutions

... based on QuantLib

Recall

First release in October 2016

Covering IR/FX derivatives, exposure simulation, XVA

Web site, FAQ, Forum:

`http://www.opensourcerisk.org`

Code base:

`https://github.com/OpenSourceRisk/Engine`

Recall

Second release in May 2017

Adding

- Bonds
- Inflation Swaps
- Equity Derivatives
- Simulation framework for IR, FX and EQ
- Sensitivity analysis and stress testing (for IR and FX products)

Use Cases

A use case we are allowed to quote: **Aareal-Bank**

Successfully completed a PoC between May and September this year

Now implementing ORE for Market Risk production

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Jung aber mächtig.

- ORE war überraschend schnell am laufen.
- Mitgelieferte Beispiele und Dokumentation erleichtern den Zugang.
- Zugang recht intuitiv und aufgeräumt: Beratungsbudget bei weitem nicht ausgeschöpft
- Stattdessen Sponsoring von fehlenden Features (z.B. Tilgungsstrukturen), wurde schnell umgesetzt.
- Fast vollständige Produktabdeckung.
- Bugs waren schnell gefunden und schnell beseitigt, kleinere „Wünsche“ schnell selbst umgesetzt.
- Markt- und Simulationsbeschreibung ist mächtig; führt zu entspr. Konfigurationsaufwand
- Schnittstellen für Geschäfte und Marktdaten sind auf ORE-Seite recht transparent; überraschend schwierig war der Download aus den Quellsystemen
- Die Community könnte größer sein – aber die ORE ist ja noch jung.

Die Folgen:

- ✓ Als taktisches Instrument im Risikocontrolling nicht mehr wegzudenken.
- ✓ IT-Projekt zur Ablösung von SEM-RA (SAP) durch ORE gestartet.
- ✓ Weiteres quantitatives Projekt auf ORE als Kernlösung umgeschwenkt.

10

Aareal

Use Cases

Another use case: **Acadia Soft** in collaboration with **Quaternion** and **Tullett Prebon**

Sensitivity service pilot using extended ORE:

- Client portfolio input in FpML format
- Tullett Prebon market data feed
- Pricing, sensitivity analysis, "par" conversion and CRIF generation

SIMM backtesting pilot using extended ORE:

- SIMM backtesting with full revaluation and sensitivity based P&L
- SIMM benchmarking versus Historical Simulation VaR and Delta Gamma VaR with Saddlepoint Approximation

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Third ORE Release

Third release underway, expected arrival in December (this year)

- CMS products
- Credit Default Swaps
- Amortisation structures
- Extended sensitivity framework (adding inflation, equity and credit)
- Added inflation simulation (Dodgson-Kainth model calibrated to CPI Caps/Flors)
- Added basic parametric VaR
- Extended unit test, examples, documentation

2018 ORE Release(s)

What's next

- Credit Simulation
- Postprocessor refactoring
- Some consolidation of ORE's QuantExt into QuantLib ?
- Portfolio Credit Risk - integrated Credit/Market Risk, Cash and Derivative products
- Commodities

Firm locations and details

Quaternion™ Risk Management is based in four locations:

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