Improving Systemic Risk Monitoring and Financial Market Transparency: Standardizing the Representation of Financial Instruments

By

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Today's Presentation:

1. Why the financial world needs data standards
2. The standards challenge in a large and complex financial world
3. Methodology for creating a financial instrument reference database suitable for the analytical use case
4. Key aspects of our approach to standardizing financial data
5. Where we are and where we are going with the ACTUS project
6. Demonstration of the product of the "proof of concept" phase of the project.

Why the Financial World Needs Data Standards:

- The 2008 financial crisis made one fact indisputably clear: financial policy officials, regulators, and company executives lacked the data and analytics to understand what was going on.

- Fateful decisions by very high level officials – made without the necessary data and analytics - turned a difficult situation into a full blown crisis.

- DFA enacted reforms to make possible forward looking financial oversight.

- The creation of two key reference data bases by OFR is at the center of that reform: the *counterparty reference database* and the *financial instrument reference data base*.

- A reference database, counterparty of financial instrument, that will support the analytical use case needs data standards.

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The Standards Challenge in a Large and Complex Financial World

- The financial system is overflowing with a very large number of complex financial products, simply classifying and cataloging them will not solve the problem

- A way must be found to extract from financial instrument the common elements that are critical for financial analysis.

- The most basic data in financial analysis fall into two categories:
  - The contractual obligations of counterparties to exchange specific cash flows
  - The risk factors that determine what cash flows are actually exchanged

- By focusing on *cash flow patterns*, we believe we can represent a very large part of all financial obligations at a high level of precision with about 30 cash flow patterns, which we call Contract Types (CTs)

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An Intuitive Explanation of our Approach

- The distinctions between financial products based on product types and legal differences fall away when the focus is on:
  - The contractual cash flow obligations
  - The state of the risk factors - counterparty market and behavior – and
  - The interaction between the cash flow obligations and the state of the risk factors.

  To illustrate:
  - An annuity and a long-term fixed rate mortgage represent the same cash flow pattern.
  - A plain vanilla interest rate swap is just the linking of two simple principle at maturity contracts, one fixed and one floating.

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Key Elements of ACTUS

- The ACTUS approach clearly differentiates between data inputs and analysis results. Only the hard facts of the system – contractual obligations, which are essentially mechanical - are standardized.
- The ACTUS standard is agnostic with respect to the analytical models used. Analysts are free to use what ever analytical models they choose. ACTUS provides the interfaces for any financial model.
- ACTUS preserves contract details that affect cash flow obligations by accommodating a wide range of commonly used contract conventions, such as different day count methods, fixing conventions, settlement options, etc., in order to yield state contingent cash flows that are as precise as possible.
- The careful representation of cash flow obligations means that current analysis and forward looking analysis can be performed with a high degree of confidence in the results. Variations in analysis results will be based on model differences, not the contract data that goes into the models.

Where We are and Where We are Going:

PHASE 1

- We are now completing Phase 1 of the project which involves:
  - Programming the algorithms for the first six Contract Types (PAM, ANN, SWAP, STOCK, OPTION, FUTURE)
  - Creating a public access website which will include:
    - An introduction to the ACTUS Standard
    - Descriptions of each Contract Type
    - The ACTUS Data Dictionary
    - The ACTUS Academy with online educational lectures on how to use ACTUS
    - Relevant documents
    - Access to the first 6 programmed algorithms, so that anyone can take ACTUS for a test drive.
    - Holding Webinar(s) with the launch of the web portal to introduce ACTUS to the financial research community

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PHASE 2

- Complete the programming of the full set of 30 CT algorithms
- Enrich the available research environment
- Test accuracy of the full set of algorithms
- Test the breadth of market coverage for the full set of 30 CTs
- Start the formation of an ACTUS Open Source Community to take over the project and give it an institutional framework and permanence.

PHASE 3

- Stand up the ACTUS Open Source Community
- Complete in-depth testing of the market coverage and precision of the algorithms.
- Establish the mechanisms to enable ACTUS to evolve with the financial markets. As innovation creates important new products that might not be covered by the existing set of CTs, the ACTUS Community will have to create new CTs and algorithms that will be added to the original set in order to maintain broad coverage of the obligations extant in financial markets.

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Website Demonstration:

We will demonstrate a few of the computational capabilities of the first set of 6 Contract Types with the intent of demonstrating how a compact set of Contract Types is capable of representing the breadth of financial obligations extant in the market.

Thank you for your interest. If anyone would like to receive an invitation to the webinar(s) that will coincide with the website's launch, please provide Prof. Khashanah with your email address. Alternatively, you may contact him at:

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