Smart Financial Contracts: The Basic Building Blocks of the Future Digital Banks

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3rd COST Conference
ZHAW Winterthur
Sept. 6, 2018
Table of Content

Definition of “Smart Contract”
Financial Sector
Financial Contracts
Standardized Smart Financial Contracts
The New World of Finance
Definition of «Smart Contract»

- Smart contract are “a set of promises, specified in digital form, including protocols within which the parties perform on the other promises”

- Four basic objectives:
  - Observability
  - Verifiability
  - Privity
  - Enforceability

Nick Szabo, Building Blocks for Digital Markets
Promise of FinTech

- Efficiency
- Transparency
- Inclusion
- Disintermediation
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The Reconciliation Problem

**Analysis Level**
- Financial Analysis $i = f(\text{SC[Cash-Flows]},\ldots)$
  - RISK
  - FINANCE
- Expected CFL’s under forecasted conditions

**Transaction Processing Level**
- Real exchanged CFL’s
- Under current conditions
The Reconciliation Problem

BANK

Analysis Level
Financial Analysis \( i = f(SC[Cash-Flows],...) \)
Expected CFL’s under forecasted conditions

Transaction Processing Level
Real exchanged CFL’s
Under current conditions

Cost Ratio
Cost Saving Potential
>50%
Cost Saving Potential ~80%
<50%
Cost Saving Potential ~30%
## Table of Content

- Definition of “Smart Contract”
- Financial Sector
- Financial Contracts
- Standardized Smart Financial Contracts
- The New World of Finance
Financial contracts today

Bank shall pay the sum of __1000____ USD on __2013.01.01__ (date) to Mr. Smith (obligor). Obligor will pay an interest of __10__ % on a semi-annual basis and repay the full amount in __3__ years.

Date, Signature
The real Agreement
Contracts and Algorithms
Another Agreement
Endre vullumsandio dion endipsummy nos dolobore vel ut alis amet autem dionseq uismodigna feumsan dionse dolor ullandre magna feuipsummy nullum ad tin ....

Bank shall pay the sum of __1000____ USD on __2013.01.01__ (date) to Mr. Smith (obligor). Obligor will pay an interest of ___10___ % on a semi-annual basis and repay the full amount in ___3___ years.

Date, Signature
Effect of Central Data Stores

Analysis Level

Value Balance Sheet

Add Risk Factors

„Reinvent“ Algorithms

Data Store

Data WITHOUT Algorithms

Transaction Processing

Expected Cash-Flows:
- $+cfl_1$
- $+cfl_2$
- $\ldots$
- $+cfl_n$

Expected Cash-Flows:
- $-cfl_1$
- $-cfl_2$
- $\ldots$
- $-cfl_n$

Data AND Algorithms
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Algorithmic Contract Types

www.projectactus.org
ACTUS and Data Stores

Data and Algorithms
STANDARDIZED

Data and Algorithms
UNSTANDARDIZED
The Model

Risk Factors
Inputs

Credit Risk
Factors

Market Risk
Factors

Behavior Risk
Factors

Financial Contracts
(Data + Algorithms)

Contract
Inputs

Contract
Events

Expected
Cash-Flows

Analytical
Results

Liquidity
Income
Value
ACTUS Contract Types
Overview, State of Development

* Definitions and explanations to the Contract Types may be found on www.actusfrf.org
Standardized Smart Financial Contracts
The New World of Finance
ACTUS
FinTech Architecture

Analysis Results

Add Risk Factors

Data and Algorithms

ACTUS STANDARD

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ACTUS Smart Contract Eco-system

Blockchain lending

Traditional Banks

Digital Banks

Traditional Banking

Integrated Accounting, Treasury & Reporting

FinTech Banking

Crypto-Currencies & Payment Channels

Traditional Currencies & Payment Channels

Traditional Banking

Blockchain Banking

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September 18
Including Analytics

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<th>Account</th>
<th>Nominal Value</th>
<th>Fair Value</th>
<th>IFRS</th>
<th>IGAAP</th>
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<tr>
<td>Product Group</td>
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<td>464,652.30</td>
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Summary Statistics
- Min: 388.46
- 99.9%-VaR: 388.46
- 99%-VaR: 388.46
- 95%-VaR: 408.41
- Mean: 450.090.46
- Max: 597.7274.17

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