

CONTENTS

LIST OF CONTRIBUTORS	xiii
----------------------	------

PREFACE	xv
---------	----

CHAPTER 1 THE COMING CATAclysm	1
----------------------------------	---

Financial services in brief	1
-----------------------------	---

Introduction	3
--------------	---

The blockchain revolution in financial services	3
---	---

Facebook joins the blockchain revolution—buckle up!	4
---	---

Libra: The latest innovation	8
------------------------------	---

Blockchain transformation for financial services	9
--	---

Cryptoassets and open finance	9
-------------------------------	---

Financialization and digitization of everything	15
---	----

Blockchains as state machines	17
-------------------------------	----

A new model for identity	19
--------------------------	----

Decentralized finance: The golden nine	22
--	----

Challenges and implications	30
-----------------------------	----

Threat and opportunity for incumbents	30
---------------------------------------	----

Rethinking central banking	33
----------------------------	----

Onboarding the unbanked	39
-------------------------	----

Preventing crime while preserving rights	41
--	----

Conclusion: Promise and peril	42
-------------------------------	----

The world in 2030	42
-------------------	----

What can we do?	44
-----------------	----

CHAPTER 2 THE TOKEN ECONOMY	49
-------------------------------	----

Token economy in brief	49
------------------------	----

A preface to this chapter	50
---------------------------	----

Introduction to the token economy	53
-----------------------------------	----

A solution to the Tragedy of the Commons?	54
---	----

Initial coin offerings: A new breed of meta-asset	56
---	----

The advent of digital scarcity	57
--------------------------------	----

Tokens as powerful incentives	60
-------------------------------	----

Balancing innovation and regulation	61
A golden age of protocols?	64
The BAT: A new paradigm for online advertising?	67
The token landscape: Cryptocurrencies, cryptocommodities, and cryptotokens	73
Cryptocurrencies	75
Cryptocommodities	90
Cryptotokens	102
But is it legal? Is it safe?	114
Conclusions and recommendations	122

CHAPTER 3 | FINANCING OPEN BLOCKCHAIN

ECOSYSTEMS	125
Financing open blockchain ecosystems in brief	125
Introduction to blockchain's impact on fundraising	126
Inherent tension of privately funding a public good	130
Ecosystem tokens	131
Decentralized application (Dapp) tokens	133
An evolving landscape of practices and regulatory approaches	134
Historical analysis	134
Evolving SEC standards	139
Recontextualizing <i>Howey</i> in light of ecosystem tokens and app coins	149
Legal fictions and creative structuring: A review of practical solutions	154
The foundation model	154
The SAFT model: Simple agreement for future tokens	158
Securities registration exemptions	162
Creative solutions moving forward	165
Sell only to strategic partners or potential platform users	165
Discourage the establishment of a secondary market	166
Cap the token price or use token bounding mechanisms	168
Separate fundraising from token ecosystem governance	171
Conclusion	173

CHAPTER 4 | REINVENTING INTERNATIONAL CLEARING AND SETTLEMENT

	177
The global payment system in brief	177
Introduction to global payments	179
How the global payment system works	179
Why the system sometimes doesn't work	179
A history of payment systems	180
The East India Trading Company and Ronald Coase	183
The rise of the mercantile bank, letters of credit, and the associated pain	185
The creation of SWIFT and its messaging service	187
Payment systems to manage payment systems	193
In search of a better system	195
The strategies of existing players	199
Canada	199
US Federal Reserve	200
European Central Bank	201
Singapore	202
Japan	203
SWIFT	203
Ripple	208
Depository Trust and Clearing Corporation	209
TransferWise	212
Analysis: Creating a better system on the blockchain	213
A new role for government?	216
A new role for SWIFT?	217
Conclusions and recommendations	221

CHAPTER 5 | CONSOLIDATING MULTIPLE LEDGERS WITH BLOCKCHAIN

	225
Consolidating multiple ledgers in brief	225
Overview of receiver general ledger system	226
Central financial management reporting system	226

Receiver general-general ledger	227
Account balance concept	227
Public sector applications of blockchain	228
Identity management in Estonia	229
US GSA and FAST Lane	232
State of Delaware's blockchain initiative	235
Sweden's land registry	237
A single ledger for the accounts of Canada	238
Solution approach	239
Solution architecture	240
Public versus private blockchain consensus mechanisms	242
User experience	245
Adaptation of the receiver general mandate and workflow	247
Challenges and risk management	248
Implementation costs	251
Triple-entry accounting	252
Conclusions and recommendations	254
CHAPTER 6 MANAGING BLOCKCHAIN TRANSPARENCY	259
Blockchain transparency in brief	259
Introduction to real-time information symmetry	260
The benefits of shared knowledge	261
How much is <i>too much</i> transparency?	262
Native transparency in blockchain technology	264
Ownership transfers: Central registries versus distributed ledgers	264
Ownership transfers: Public versus private blockchains	265
Transparency as a risk and an asset	269
Transparency as a strategic risk	269
Transparency as a strategic asset	271
Solving the problem: Technological approaches to	
privacy in blockchains	277
Procedural workarounds: Usage of multiple IDs	278
High-tech solution: Zero-knowledge proofs	280

Implementation in public versus private blockchains	282
Conclusions and recommendations	286

APPENDIX TO CHAPTER 6 HOW TO ACCESS THE ETHEREUM BLOCKCHAIN	289
--	------------

ACKNOWLEDGMENTS	291
------------------------	------------

ABOUT THE BLOCKCHAIN RESEARCH INSTITUTE	293
--	------------

ABOUT THE CONTRIBUTORS	295
-------------------------------	------------

ACRONYMS AND ABBREVIATIONS	301
-----------------------------------	------------

NOTES	305
--------------	------------

INDEX	343
--------------	------------