

Digital Innovation in Financial Services

Legal Challenges and Regulatory Policy Issues

Phoebus L. Athanassiou



Table of Contents

About the Author	vii
Preface	xvii
List of Abbreviations and Acronyms	xix
Acknowledgements	xxiii
CHAPTER 1	
Introduction: Digital Innovation in Financial Services – An Overview of Risks, Benefits and Use Cases	1
§1.01 FinTech and Its Promises	2
[A] The Consumer Perspective	3
[B] The Financial Institutions’ and Service Providers’ Perspective	3
[C] The Regulators’ and Supervisors’ Perspective	6
§1.02 FinTech: Risks and Challenges	7
[A] Headline Consumer and Investor Risks	7
[B] Headline Risks for Financial Institutions and Service Providers	8
[C] Regulatory Challenges: Highlights	10
§1.03 Headline Use Cases of FinTech: An Introduction	11
[A] Clearing and Settlement of Payments	12
[B] Securities Issuance, Trading and Post-trading	13
[C] Information Sharing	14
§1.04 Final Remarks and Scope of This Study	14
CHAPTER 2	
DLTs, Blockchain and Distributed Ledgers: Scope, Definitions and Headline Legal and Regulatory Issues	19
§2.01 DLTs and Blockchain: Definitions, Possible Areas of Application and Key Strengths	19

Table of Contents

	[A] Prefatory Remarks	20
	[B] Blockchain: The Archetypal DLT	21
	[C] DLTs: Strengths, Weaknesses and Practical Limitations	22
§2.02	Distributed Ledgers	25
	[A] Ledgers and Their Significance for the Contemporary Financial System	25
	[B] Financial Intermediaries and Their Function in Modern Financial Markets	26
	[C] Distribution	27
	[D] Consensus Protocols and Security Features	30
§2.03	Recapitulative Remarks	32
§2.04	DLTs and Distributed Ledgers: High-Level Legal and Regulatory Issues	33
	[A] Why, How and When to Regulate and Supervise DLTs and Distributed Ledgers	34
	[1] Why Regulate DLTs and Distributed Ledgers?	34
	[2] How to Regulate DLTs and Distributed Ledgers?	36
	[3] When to Regulate DLTs and Distributed Ledgers?	39
	[B] Legal and Regulatory Implications of the Use of DLTs for the Holding of Funds, the Issuance and Holding of Securities and the Settlement of Payments and Securities Transfers	40
	[1] Legal Status of Assets Issued and Transactions Performed in a DLT Environment	41
	[2] Asset Identification, Issuance and Segregation	41
	[3] Settlement Finality in a DLT Environment	44
	[4] Conflict of Laws	46
	[5] Insolvency Proceedings	48
	[6] Access to Central Bank Accounts and Liquidity	48
	[7] Compliance with Legal and Regulatory Requirements	49
	[C] Protection of Transactional and Other Data in a DLT Environment	50
	[D] Legal Limits to Decentralisation	51
§2.05	Closing Remarks	53
CHAPTER 3		
Cash and Cash Alternatives as Retail Payment Media: State of Play and Scope for Digital Innovation-Driven Alternatives		
§3.01	Traditional Payment Media and Rails: Strengths and Weaknesses	56
	[A] Cash	56
	[B] Account-Linked Credit and Debit Cards	60
	[C] Electronic Fund Transfers (Credit Transfers and Direct Debits)	61
	[D] E-Money	62
	[E] Online Payment Platforms	65
§3.02	Alternative Payment Providers: Overview of Services, Regulatory Status and Legal Issues	67

[A]	Apple Pay, Google Wallet and Venmo: Overview of Main Features	68
[B]	APPs and Headline Legal Issues	69
§3.03	Concluding Remarks: What Scope for Innovation in Payments?	72
CHAPTER 4		
	Virtual Currencies as Retail Payment Media: Core Legal Issues	75
§4.01	Definitions and Introductory Remarks	76
[A]	On Bitcoin and the Bitcoin Network	78
[B]	How Payments Are Made in Bitcoin	80
[C]	Virtual Currency Networks and Validation/Consensus Protocols	81
§4.02	Virtual Currencies and Underlying Technologies: An Overview of User Benefits and Risks	82
§4.03	Virtual Currency Regulation in the EU and the US: General Overview	84
[A]	Virtual Currencies under EU Law	84
[1]	Virtual Currencies and PSD2	85
[2]	Virtual Currencies under EMD2, AMLD4, CSDR and MiFID	86
[3]	Interim Conclusions	88
[B]	US Federal Legal Framework: Highlights	89
§4.04	Virtual Currencies: Core Legal and Regulatory Issues	92
[A]	Virtual Currencies: Fundamental Legal Nature and Characterisation	92
[1]	Virtual Currencies as ‘Money’ or ‘Currency’: Bitcoin and Beyond	93
[2]	Virtual Currencies as Property Rights	98
[3]	Virtual Currencies as Mere Contractual Rights or Securities	101
[4]	Virtual Currency Networks and Exchanges as FMIs	103
[B]	Virtual Currency Networks: Regulatory Competence, Regulatory Compliance and Substantive Law Issues	107
§4.05	Concluding Remarks on Virtual Currencies, and the Prospect of Their Use as Payment Media	110
CHAPTER 5		
	Use Cases of Digital Innovation in the Financial Services Field: DLT-Enabled Smart Contracts, Instant Payments and Their Legal Aspects	115
§5.01	‘Smart Contracts’: Working Definition, Link to DLTs and Practical Examples	117
[A]	Smart Contracts: Working Definition	117
[B]	Modus Operandi and Financial Sector-Specific Use Cases of Smart Contracts	118
§5.02	Benefits of DLT-Enabled Smart Contracts	121
§5.03	Legal Nature of Smart Contracts	122
[A]	Introductory Remarks	123

Table of Contents

[B]	Smart Contracts and the ‘Code Is Law’ Doctrine	124	
[C]	Substantive Law Considerations	128	
[1]	Intention to Create Legal Relations	128	
[2]	Certainty of Contractual Terms	130	
[3]	External Enforceability	131	
[4]	Impact of the Electronic Creation of Smart Contracts on Their Validity	132	
[5]	Interim Concluding Remarks	134	
§5.04	Smart Contracts: Legal Challenges, Practical Questions and Possible Solutions	135	
§5.05	Concluding Remarks on Smart Contracts	138	
§5.06	Legal Issues Specific to Instant (or Faster) Retail Cashless Payments and Link to FinTech	139	
[A]	Introductory Remarks	139	
[B]	Advantages and Legal Challenges of Instant Payments	142	
[C]	Closing Remarks on Instant Payments	146	
CHAPTER 6			
DLTs and Their Application in Securities Issuance, Clearing and Settlement: Risks, Benefits and Legal Challenges			149
§6.01	Life Cycle of a Typical Securities Trade and Features of the Contemporary Securities Markets’ ‘Consensus Through Reconciliation’ Model	151	
[A]	Introductory Remarks	151	
[B]	What Possible Applications for DLTs?	154	
§6.02	DLTs and Their Use in the Initial Issuance of Public Securities	155	
[A]	Issuance of Securities and the Pivotal Role of Securities Accounts	156	
[B]	Main Areas of Concern with the Use of DLT for the Issuance of Securities	158	
[C]	Concluding Remarks	161	
§6.03	DLTs and Their Use in the Trading of Public Securities	162	
§6.04	DLTs and Their Use in the Clearing and Settlement of Transactions over Public Securities	163	
[A]	Prefatory Remarks	163	
[B]	Intermediaries Active in the Clearing Stage of Securities Transactions and Their Future in a DLT Environment; Netting and Its Relevance to Various Asset Classes	165	
[C]	Shortening of the Settlement Cycle: Opportunities and Undesirable Consequences	167	
[D]	DLTs, DvP Settlement and Access to Central Bank Money	169	
[E]	DLTs and Settlement Finality	170	
§6.05	Other Uses of DLTs in the Public Securities Markets: Challenges, Opportunities and Deployment Prerequisites	172	
[A]	DLTs and Regulatory Reporting	172	

[B]	DLTs, Shareholder Transparency and Asset Servicing	174
[C]	DLTs and Their Use in Collateral Management Purposes	175
[D]	DLTs, Data Privacy, Cyber-Security and AML/CTF	176
§6.06	Concluding Remarks and Regulatory Considerations	177
CHAPTER 7		
Digital Innovation, Central Banks and Monetary Policy: The Case of Central Bank-Issued Digital Currencies		181
§7.01	Why Would Central Banks Consider Issuing CBDCs?	184
[A]	CBDCs: Distinguishing Features and Types	185
[B]	What Rationales for the Issuance of CBDCs? An Overview	188
[C]	Interim Conclusions	193
§7.02	CBDCs: Features and Means of Distribution and Holding	194
[A]	CBDC Features: A Non-exhaustive Overview	195
[B]	Means of Distribution and Holding of CBDCs	197
[C]	CBDC: What Use for DLTs?	199
[1]	Rationale for the Use of DLTs for the Issuance of CBDCs and Processing of Transactions over Them	199
[2]	What Type of Distributed Ledger for the Issuance and Distribution of CBDCs, and for the Validation and Processing of Transactions over Them?	201
§7.03	Core Legal Issues Relative to the Issuance of CBDC	203
[A]	Requirements to Be Fulfilled for CBDCs to Qualify as General Legal Tender	203
[1]	General Remarks	203
[2]	Euroarea-Specific Remarks	204
[B]	Legal Finality of CBDC Transfers	206
[C]	Legal Issues Specific to Particular Types of CBDC	207
[D]	Other Regulatory Issues	210
§7.04	Possible Role of Central Banks in Facilitating Access of DLT Platforms to Central Bank Money for Settlement Purposes	210
[A]	Access to Central Bank Money for Private DLT Payment Platforms	211
[B]	Access to Central Bank Money for DLT Securities Platforms	212
CHAPTER 8		
Epilogue: Financial Services in the Twenty-First Century – What Future for DLTs, Blockchain and Virtual Currencies?		215
Glossary of Key Terms		225
Bibliography		231

Table of Contents

Table of Cases	251
Table of Legal Acts	253
Index	257