

Contents

<i>Acknowledgments</i>	<i>xiii</i>
1 Introduction	1
M-Pesa: Providing Some of the World's Poorest With Financial Access	4
Venmo: Effortlessly Split Dinner Tabs, Buy Concert Tickets With Friends	5
Bitcoin, Ethereum and Other Cryptocurrencies	5
Blockchain: A Protocol With Wide Application Potential	6
Square: Mobile Payments	7
Stripe: E-Commerce Payments	7
Lending Club, SoFi, Kiva: Peer-to-Peer Lenders Disintermediate the Banks	8
Transferwise: Matching Users for Remittances	9
Chapter 2. Disruption and Disintermediation in Financial Products and Services: Why Now?	10
Chapter 3. Money: A Medium of Exchange, Unit of Account and Store of Wealth	11
Chapter 4. Financial Institutions	11
Chapter 5. Bubbles, Panics, Crashes, and Crises	12
Chapter 6. Bank Lending	12
Chapter 7. Time Value of Money: Interest, Bonds, Money Market Funds	13
Chapter 8. Equities, Efficient Markets, Exchanges	13
Chapter 9. Foreign Exchange	13
Chapter 10. Forwards, Futures, and Swaps	14
Chapter 11. Commodities	15
Chapter 12. Options	15
Chapter 13. Startup Financing	16
Chapter 14. Fintech in a Global Setting	16
Chapter 15. Fintech and Government Regulation	17
Chapter 16. Social Issues: Diversity and Inclusion, Unemployment, and Income Distribution	18

Chapter 17. The Future Millennial Bank—Your Parents’ Bank Integrates With the Disrupters	18
2 Disruption and Disintermediation in Financial Products and Services: Why Now?	21
Millennials	22
Millennials are Using Money Differently	29
Technology	30
Quantum Computing	30
Graphical Processing Units	31
The Cloud	32
Artificial Intelligence	34
Fintech Application of AI	36
Startup Lifestyle	38
References	38
Further Reading	39
3 Money: A Medium of Exchange, Unit of Account, and Store of Wealth	41
How is Money Measured?	44
Trends in Non-Cash Payments	46
Financial System Plumbing: How Credit Cards Work	48
Financial System Plumbing: The ACH	50
How the ACH Network and ACH Payments System Works	50
Fintech Applications	51
Digital or “Crypto” Currencies	53
How Bitcoin Works	53
Silk Road	55
Mt. Gox	55
Bitcoin in China	56
Bitcoin in Venezuela	56
Bank of England	57
Initial Coin Offering	57
Blockchain: A Form of Distributed Ledger Technology	58
BIS: Digital Ledger Technology	61
R3	63
Depository Trust and Clearing Corporation	64
Digital Asset Holdings	64
Chicago Mercantile Exchange	64

Ripple	65
Payments	65
Adyen	66
Apple Pay	66
Square	66
Stripe	66
Venmo	67
Zelle	67
Zoop	68
Alipay	68
References	68
4 Financial Institutions	69
Information Asymmetries, Moral Hazard, and Adverse Selection	71
Commercial Banks	73
Investment Banks	75
Central Banks	83
Insurance Companies, Finance Companies, Hedge Funds, Mutual Funds, Exchange Traded Funds	89
Shadow Banking: Other Financial Intermediaries	89
Historical Innovation in Big Financial Institutions	90
Fintech Applications	91
World's Best Digital Bank	92
References	94
5 Bubbles, Panics, Crashes, and Crises	95
Selected Notable Events	96
Tulipmania	97
South Seas Bubble	98
Mississippi Company	99
Bank Panic of 1907	99
The Great Depression	100
Regulatory Responses to the Great Depression	103
Stock Market Crash of 1987	103
Tech Bubble: The Dotcom Crash in 2000	105
The Global Financial Crisis	106
Regulatory Responses to the Global Financial Crisis	110
Common Features: Run-Up Phase and Crisis Phase	110
Fintech Issues Relevant to Systemic Financial Risk	113

APPENDIX: Timeline of Global Financial Crisis Events 2007–10	115
References	136
6 Bank Lending	139
Secured vs Unsecured Loans	140
LIBOR	143
Real Estate Loans	144
Payday Lending	147
Credit Scores: FICO	148
Fintech in Lending	150
References	155
Further Reading	156
7 Time Value of Money: Interest, Bonds, Money Market Funds	157
Future Value and Present Value	158
Internal Rate of Return	160
Credit Instruments	161
Fisher's Law	162
Term Structure and Yield Curve	162
Types of Debt Instruments: Money Market Instruments	165
Types of Money Market Funds	167
Types of Debt Instruments: US Treasury Securities	168
Types of Debt Instruments: Agency Securities	169
Types of Debt Instruments: Corporate Bonds	169
Types of Debt Instruments: Municipal Securities	170
Types of Debt Instruments: Sovereign Debt	171
Fixed Income Trading Platforms	171
Fintech Applications	174
8 Equities	177
Risk, Return, and Diversification	178
Capital Asset Pricing Model	180
Efficient Market Hypothesis	181
Random Walk	181
Equity Indexes	181
Types of Orders	185
Equity Trading Venues	186
Regulation	187

Fintech in Equities	188
Roboadvisors	190
References	192
9 Foreign Exchange	193
Exchange Rate Determination in the Long Run	197
Exchange Rate Determination in the Short Run	199
Effects of Relative Interest Rates on Exchange Rate Determination	200
Currency Futures, Options, and Swaps	201
Fintech Applications	203
Anti-Money Laundering and Other Concerns	204
References	205
10 Futures, Forwards, and Swaps	207
Futures Mechanics	209
Single Stock Futures	211
Equity Swaps	212
Total Return Swap	213
Inflation Swap	213
Stock Index Futures	213
Interest Rate Swaps	214
Interest Rate Futures	215
Hedging Example: Locking in an Interest Rate	215
Credit Default Swaps	216
Hedging Example: Protecting a Bond Payment Stream With CDS	216
Fintech Applications	217
References	219
11 Commodities	221
Evolution of Commodity Trading	222
Central CounterParty	223
Categories of Commodities	223
Commodity Forwards, Futures, Swaps, and Options	224
Trading Conventions and Terminology	224
Participants in Futures Markets	225
Hedging Example: Farmers and Corn	226
Hedging Example: Airlines and Jet Fuel	227
Commodities as an Asset Class	229
Commodities Exchange Traded Fund	230

Fintech in Commodities	230
Blockchain in Post-Trade Processing	231
Blockchain in Physical Commodities	231
Artificial Intelligence in Energy Data Analysis	232
References	233
12 Options	235
Risks in Trading Options	237
Basic Option Strategies	237
Additional Option Strategies	242
Option Pricing	244
Theoretical Pricing Models	246
Fintech Applications in Options	246
References	247
13 Startup Financing	249
Credit Cards and Cash on Hand	251
Friends and Family	251
Loans	251
Crowdfunding	251
Equity Crowdfunding	253
AngelList	254
Angels	255
Accelerators	256
Venture Capital	257
Initial Public Offering: Is Going Public (IPO) the Founder's Holy Grail?	261
Initial Coin Offerings	264
References	266
Further Reading	267
14 Fintech in a Global Setting	269
Fintech in the United Kingdom	272
Fintech in the European Union	273
Fintech in Germany	275
Fintech in Canada	276
Fintech in China	277
Fintech in Singapore	280
Fintech in India	281

Fintech in Africa	282
Fintech in Brazil	282
References	283
15 Fintech and Government Regulation: If It Quacks Like a Bank...	285
Financial Regulation Background	287
Significant Legislation Governing US Financial Regulation	288
Financial Regulators	290
Office of the Controller of the Currency	296
Federal Depositors Insurance Corporation	297
Office of Financial Asset Control and Financial Crimes Enforcement Network	297
Several Start-ups Have Been Found to Be in Violation of Regulations	299
US Policies to Support Fintech Start-ups	307
UK Policies to Support Fintech Start-ups	310
EU Support for Fintech	310
Regtech: Fintech Technologies Designed to Help With the Financial Regulatory Burden	312
References	313
16 Social Issues: Diversity and Inclusion, Unemployment, and Income Distribution	315
Lack of Diversity in VCs	321
Is It a Pipeline Problem? A Bias Problem? Both?	323
Unemployment and Income Distribution Effects	323
Income Distribution Effects	324
Who Reaps the Gains of Technological Advancement?	325
References	329
Further Reading	330
17 They are Not Dead Yet: How Big Financial Institutions Will Work with Fintech Startups to Define the Market Structure of the Future	331
Incubators and Accelerators	335
Big Financial Institutions Investing in and Partnering with Startups	337
Card Startup Support Programs	340
Distributed Ledger Projects	341

Internal Bank Units	343
Goldman Sachs: “We are a Technology Company”	344
Altering Internal Banking Culture to Reflect Millennial Sensibilities	347
For Banks, Disruption has Its Risks But Also Opportunities	348
References	350
Further Reading	351
<i>Index</i>	353