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Disruptive Technology in Banking and Finance

An International Perspective on FinTech

Edited by
Timothy King
Francesco Saverio Stentella Lopes
Abhishek Srivastav
Jonathan Williams

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Editors
Timothy King
University of Kent
Kent, UK

Francesco Saverio Stentella Lopes
Roma Tre University
Rome, Italy

Abhishek Srivastav
University of Edinburgh
Edinburgh, UK

Jonathan Williams
Bangor University
Bangor, UK

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Foreword

As a financial services professional and fintech investor, lecturer, and board member, I was naturally honoured in 2020 when Dr. Tim King asked me to write a chapter and contribute with this foreword for a publication that he and his colleagues were putting together. I enjoyed collaborating with Tim on the UK challenger bank sector, and at the time I noted Tim's insights on the intersection of finance and technology.

Now reading carefully the final draft nearly a year later, I am struck by the timeliness and breadth of this literature and expect its readers will agree with this assessment.

First, this book spans the fintech domain and is well-timed following a pandemic year in which most of us, our co-workers, and our families moved online and went digital. Technology was not only actively used in many health-related endeavours during this period, but it also became fully integrated into financial markets via embedded finance, predictive tools for risk assessment, and open banking applications. This tech-led transformation underscores the strength and reliance of fintech, and this book is a very timely addition as a resource for both practitioners and academics/students alike.

The contribution of this book is not only its timeliness but also its breadth of material from notable thought-leaders and academics in this domain. After revealing historical disruptive trends and a taxonomy of digital innovation, the book then tackles cryptos, insurtech, and bank/fintech partnerships. To my eyes, these subjects have been absolutely brought to the foreground during the pandemic period and they will change the financial technology intersect going forward for good. The partnership issue is interesting: while commercial banks have scale, they often look to fintechs as an agent of cultural change and innovative solutions, as described in Chapter 6. The final three chapters consider the future for digital disruption in this fast-moving sector.

Given my touchpoints with fintech today, I believe readers will find that this book contributes to their understanding of the exciting and complex developments that are taking place today during these extraordinary times. Enjoy!

London, England

Walter Gontarek
Chairman & CEO of Channel, a London-based, technology-enabled provider of working capital to global companies, Visiting Academic Fellow at Cranfield University

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Notes on Contributors

James Bowden is a Lecturer in Financial Technology at the University of Strathclyde and co-director of Strathclyde Business School's M.Sc. Financial Technology programme. His research is in the domain of financial technology and behavioural finance and his research interests include sentiment and textual analysis of financial documents, investor behaviour in online communities and activist short-sellers. He has previously published in journals including the *European Journal of Finance* and *Journal of Comparative Economics*. He holds a B.A. (Hons.) in International Business from Nottingham Trent University, an M.Sc. in Investment Analysis from the University of Stirling and a doctorate in Accounting and Finance from the University of Dundee.

Santiago Carbó-Valverde is Professor of Economics at the Universidad de Granada (Spain). He is also the Head of Financial Studies and Executive Director of the Observatory of Financial Digitalization of Funcas Foundation. He has published articles in peer-reviewed journals such as *Review of Economics and Statistics, European Economic Review*, *Scientific Reports-Nature*, *Review of Finance*, *Journal of Corporate Finance*, *Journal of Money, Credit and Banking*, *Journal of International Money and Finance*, *Journal of Banking and Finance, European Urban and Regional Studies*, *Journal of Productivity Analysis*, *Review of Network Economics*, *Annals of Regional Science*, *European Financial Management and Spanish Economic Review*. He interacts frequently with the press and media and publishes a weekly article in the newspaper El Pais. He holds a

B.A. in Economics (Universidad de Valencia, Spain), and both a Masters in Banking and Finance and Ph.D. in Economics from Bangor University.

Pedro J. Cuadros-Solas is assistant professor at CUNEF (Madrid-Spain). He has been visiting scholar at Bangor Business School (Bangor University, UK) and the University. of St. Andrews (UK). His research interests lie in corporate finance, underwriting, reputational banking and financial digitalization. His research work has been published in international journals such as the *Journal of Corporate Finance*, *Journal of Financial Stability*, *Plos-ONE* and *Global Policy*as well as in books edited by Springer-Palgrave. Among others he has presented at conference including FMA,WEAI and the Federal Reserve banks of Atlanta and Philadelphia. He holds a Ph.D. in Economics from the University of Granada (Spain).

Walter Gontarek is the Chairman & CEO of Channel, a London based, technology-enabled provider of working capital to global companies. He is also Visiting Academic Fellow at Cranfield University where he lectures on financial markets, regulation, ethics and FinTech. He has invested into FinTechs and served on the boards of financial services and FinTech firms, currently serving as the chairperson of Wiserfunding. He holds a B.B.A. (Loyola), M.B.A. (NYU Stern) and a doctorate in finance (Cranfield). He may have a financial or other interest in firms or technologies mentioned within this article. The author is grateful to those individuals and firms that contributed to the article. Any errors remain with the author.

Timothy King is a Senior Lecturer in Finance, Banking and Innovation and Director of the Centre for Quantitative Finance at the University of Kent. His research is in the areas of banking, FinTech, Corporate Governance and Corporate Finance, and he has published in journals including *Journal of Corporate Finance*, *British Journal of Management*, *Journal of Financial Research*, *Journal of Financial Stability*, *Annals of Operations Research*, *Economics Letters and International Review of Financial Analysis*. He holds a Undergraduate degree in Business Studies and Economics, Masters degree in Banking and Finance, and a Doctorate in Banking and Finance—all from Bangor University.

Dimitrios Koutmos is currently an assistant professor at Texas A&M University—Corpus Christi (USA) with research specializations in asset pricing, banking, blockchain technologies, computational finance, derivatives and risk management. His research on blockchain-based cryptocurrencies has been quoted in financial news outlets and received recognitions for their impact. He holds B.S. and M.S. degrees in Finance from Fairfield University (USA) and a Doctorate in Finance from Durham University (UK).

Rossella Locatelli is a Full Professor of Banking in the Department of Economics, University of Insubria, Varese (Italy). She graduated in Economics and Banking Science from the Università Cattolica del Sacro Cuore, where she was a researcher until 1998. She has also been manager of CreaRes, the Business Ethics and Social Responsibility Research Centre, and is currently manager of CRIEL (Center for Internationalization of Local Economies). She serves as a member of the Supervisory Board of Darma SGR (in receivership) and, more recently, Chair of the Board of Directors of BF S.p.A, listed at Borsa Italiana, and member of the Board of Directors of Banca Intesa Sanpaolo, where she is Chair of the Risk Committee. From March 2016 to February 2019 she has served as president of ADEIMF (Associazione dei Docenti di Economia degli Intermediari e dei Mercati Finanziari). Her research interests concern governance, risks and management items in banks, insurance and financial intermediaries and financial regulation.

Tiago Loncan is a Lecturer in Finance and Chancellor's Fellow at the University of Strathclyde. His research interests are in the areas of international finance and economics, corporate financial and investment decisions, foreign direct and portfolio investments, political economy of finance and emerging markets finance. He holds a B.Sc. in Economics from the Federal University of Rio Grande do Sul (Brazil), a B.Sc. in International Business from the Pontifical Catholic University of Rio Grande do Sul (Brazil), and M.Sc. degrees in Economics from the University of Bologna (Italy) and Business Management from the Federal University of Rio Grande do Sul (Brazil), and doctorate in Finance from the University of Strathclyde.

Mr. David McNulty is a Research Associate working on the TECHNGI research project in the School of Business & Economics at Loughborough University's School of Business and Economics. His current research interests are in regulatory technologies and how these might best be deployed to assist in the future regulation of financial institutions. He has significant industry experience working in the accounting, finance, and management functions of several small and medium sized enterprises (SMEs), along with related professional qualifications. He also holds a first-class honours degree in International Accounting from the University of Northampton, and a master's degree with distinction in Finance from Loughborough University.

Alistair Milne is a Professor of financial economics at the School of Business & Economics at Loughborough University. Previously Reader in Banking and Finance at City University of London and has also held positions at the Bank of England, the University of Surrey, London Business School, HM Treasury and the national statistics office of Malawi. In recent years his principal research has been on bank balance sheet management and regulation, and its relationship to banking performance, monetary transmission and financial stability; and on the network economics of financial infrastructure, including retail payments and securities and derivatives clearing and settlement. He has also worked on a variety of other issues in financial risk management, liquidity risk, central banking, financial regulation, housing markets, development finance and macroeconomics. He is the author of *The Fall of the House of Credit* (Cambridge University Press, July 2009) which is a comprehensive single volume account of all different dimensions of the global financial crisis and has been a regular media commentator on the crisis and the response by policy makers. He is also a frequent speaker at policy and industry conferences. Since 2005 Alistair has been an annual research visitor at the Monetary Policy and Research Department of the Bank of Finland. He has been a consultant to the Houses of Parliament, the Financial Services Authority, the European Commission, and to several private sector institutions and trade bodies.

Anna Omarini is a Researcher with Tenure in Financial Markets and Intermediaries in the Department of Finance at Bocconi University (Italy) where she is Course Director for the undergraduate course FinTech for digital transformation in banking, and the graduate course Bank and Fintech: vision and strategy. She is a member of the Faculty and Knowledge Group in Banking and Insurance, at SDA Bocconi School of Management. Anna's expertise is in bank strategy and management, digital banking, FinTech, open banking and payments. She is the author of several articles, papers and books which examine issues related to these fields. Anna is a reviewer, editorial board member for several journals, and member of numerous associations, organisations and scientific committees, and speaker and chairperson in conferences. She graduated in Business Administration with specialisation in Banking and Financial Markets from Bocconi University, and obtained an ITP (International Teachers Programme) degree at the Stern Business School, New York University. She has also been an independent board director at banks and other financial institutions.

Daniele Angelo Previati is a Full Professor in Financial Markets and Institutions at the Department of Business Studies of the University of Rome III, and fellow of SDA Business School, Bocconi University, Milan. He took his degree in Business Studies at Bocconi University in 1980. Nowadays he is President of the Italian Association of University Teachers of Banking and Finance, ADEIMF http://www.adeimf.it/. He has been teaching Banking and Finance topics for 40 years, with a particular focus on bank management, strategy and organization within the financial services industry, including areas such as e-finance, FinTech, alternative finance and crowdfunding—all with specific reference to creative and cultural industries. His main research interests relate to various perspectives on bank management: human resources management, intellectual capital, organizational change, stakeholder management, reputation/reputational risk, operational risk, internal and external communication, alternative finance, sustainability and finance, and financial literacy. He has published widely, in academic and professional journals and books and has also acted as a consultant for various banks and for the Italian Central Bank on organization design and human resources management.

Ornella Ricci is an Associate Professor in Banking and Finance within the Department of Business Administration at the University of Roma Tre. She has research interests in insurance, banking and financial markets and has published in journals including the *Journal of Corporate Finance*, *Journal of Financial and Quantitative Analysis*, *Journal of Financial Stability*, *Journal of Banking and Finance*, *Economics Letters, European Journal of Finance*, and the *Journal of International Financial Markets*, *Institutions and Money*. She teaches in related areas including the Economics of Financial Intermediaries and Corporate Finance.

Francisco Rodríguez-Fernández is a Professor of Economics at CUNEF Business School (Spain). He is a senior economist in the

Fundación FUNCAS and coordinator of the Observatorio de la Digitalización Financiera. He has been and still is, in some cases, an advisor and consultant for public institutions such as the World Bank, the European Central Bank and prestigious international consulting firms. He is also a visiting researcher at New York University, Bangor University and the Federal Reserve bank of Chicago. He has authored more than 150 articles and publications on the financial system, and published in journals including *The Review of Economics and Statistics*, *Nature-Scientific Reports*, *European Economic Review*, *Journal of Corporate Finance*, *Review of Finance*, *Journal of Money*, *Credit and Banking*, *Journal of Financial Stability*, *Journal of International Money and Finance*, *Journal of Banking and Finance*, and the *Journal of Financial Services Research.* He holds a Ph.D. in Economics and Business Studies from the University of Granada and, prior to this, completed postgraduate studies at the Universities of Modena and Bologna (Italy).

Cristiana Schena is a Full Professor in Banking in the Department of Economics, University of Insubria, Varese (Italy). She is interedted in the economics of financiall intermediaries and FinTech. Amongst many leadership roles she is Director of the Research Center on Business Ethics and Social Responsibility of the Department of Economics.

Abhishek Srivastav is Vice President of ESG and Climate Solutions at MSCI. Prior to this, he was a Senior Lecturer in Finance at the University of Edinburgh. Abhishek's research interests are in the areas of banking, FinTech, and climate change. His research has been published in leading journals such as *Management Science*, the *Journal of Accounting and Economics* and the *Journal of Banking & Finance*. His work has also been presented at various Federal Reserve banks and the Bank of England.

Francesco Saverio Stentella Lopes is a senior (type B) researcher at the University of Rome Tre. His research focuses on Banking and Innovation. His work leverages large datasets with the aim of evaluating economic policy and has been published on renowned academic journals. Before his current appointment he worked at the University of Liverpool, Management School and at Bangor Business School. He holds a Ph.D. in Finance from Tilburg University and from the University of Rome Tor Vergata.

Alessandra Tanda is an Assistant Professor in Financial Institutions at the Department of Economics and Management, University of Pavia. She received her Ph.D. in Financial Markets and Institutions in 2013 from

Cattolica University of Sacred Hearth (Milan) with a project on bank capital. her main research interests include FinTech, the financial structure of financial and non-financial firms and the corporate governance of financial intermediaries.

Jonathan Williams is Professor of Banking and Finance at Bangor University where he served as Head of Bangor Business School between 2016 and 2020. He is Co-Director of the Institute of European Finance, Chair of the European Association of Teachers of Banking and Finance, and Editor of World Banking Abstracts. His main research interests are in empirical banking. His earlier research considered the efficiency and productivity of banking and policy issues on competition and deregulation like bank privatisation. Recently, his research agenda has included banking union, negative interest rate policy, and family firms. Presently, he is investigating executive remuneration and corporate governance at banks, and FinTech.

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CHAPTER 1

Introduction

Timothy King, Francesco Saverio Stentella Lopes, Abhishek Srivastav, and Jonathan Williams

FinTech has garnered the interest of the public, industry practitioners, regulators, researchers and policy makers worldwide. Its disruptive and transformative potential transcends country borders and is having real impact on the way financial services are provided. FinTech is forcing

T. King (✉)
University of Kent, Kent, UK
e-mail: t.p.king@kent.ac.uk

F. S. Stentella Lopes
University of Rome, Rome, Italy
e-mail: fstentellalopes@os.uniroma3.it

A. Srivastav
University of Edinburgh, Edinburgh, UK
e-mail: abhishek.srivastav@ed.ac.uk

J. Williams
Bangor University, Bangor, UK
e-mail: jon.williams@bangor.ac.uk

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existing financial institutions to adapt. Consequently, financial institutions are investing and collaborating with those innovative start-ups who threaten traditional banking models.

An amalgamation of ‘finance’ and ‘technology’, FinTech continues to capture the imagination and interest of consumers of all ages, financial sector firms, governments, regulators, supranational agencies and standard setters worldwide. The word FinTech broadly refers to technological innovations applied to the finance sector and the word has gained entry to major dictionaries over the last few years—albeit no single definition exists. The Merriam-Webster dictionary defines FinTech as ‘products and companies that employ newly developed digital and online technologies in the banking and financial services industries’. As you, the reader, will come to learn throughout this text, FinTech firms have been grabbing headlines worldwide and for good reasons. For example, in November 2020, Chinese FinTech firm Ant Group was very close to an initial public offering (IPO) with an estimated value at listing of $37 billion United States (U.S.) dollars, only for regulators to intervene merely days before it was to begin trading. Similarly, in April 2021, Coinbase a major cryptocurrency exchange underwent a successful listing on Nasdaq with an initial market capitalization exceeding $50 billion U.S. dollars. This made Coinbase’s listing the biggest new US stock market entrant since Uber (itself major disruptor in another sector) in 2019. Other areas of FinTech have also attracted much international attention, such as, blockchain and cryptocurrencies, which have been sources of excitement, miscomprehension and concern—almost in equal measures among various stakeholders.

Against this backdrop, this tome provides you, the reader, with a thorough overview of FinTech across multiple geographies and a framework to understand the historical, current and future impacts of disruptive financial technologies for businesses and society. Although FinTech is dramatically transforming the nature of financial services and financial intermediation, its current and future impacts are largely uncertain. For instance, in many jurisdictions regulatory bodies and policy makers are starting to take a keen interest in developments, with recently implemented and future regulations expected to have a big impact on FinTech. For example, European regulators have been advancing new legislation designed to encourage ‘open banking’, which is anticipated to dramatically transform the nature of financial services by providing a more competitive financial industry landscape in which traditional financial services providers like banks are forced to compete with innovative start-ups and non-traditional industry players. Such changes may increase consumer choice and lower prices but also could undermine financial stability.

Across ten chapters this book will help answer the question is disruptive technology a force for good? As will be explained, on one hand, disruption, especially during times of heightened uncertainty, can represent a positive force for change that challenges established norms, improves efficiencies and helps to increase social and economic prosperity. On the other hand, technological disruption can have negative implications, for instance, concerns over risk management in FinTech firms and over the environmental impact of Bitcoin. Yet dear reader, as you will come to learn, disruption is often associated with both positive and negative effects, or, what we refer to later in this book (in Chapter 10) as 'light' and 'dark' sides. One salient example of this apparent 'double-edged sword' is the effect of increased competition in the market for funeral services in Germany during the 1990s.[1] In this case the entry of new digital entrants into the industry led to aggressive pricing strategies that focussed on low prices but at the expense of a more personal, and arguably sensitive, service. Moreover, a strong online marketing focus by these industry 'disruptors', forced many 'traditional' industry players to follow suit. The net result was a fall in the average cost of funeral services at the expense of a more personal and more reputation-based service.

While the term FinTech has only really gained prominence since the Global Financial Crisis (GFC) of 2007–2009, you will discover in this chapter and subsequent chapters, and come to appreciate that FinTech is not a new phenomenon. Instead disruptive technology, applied to financial, banking and insurance sectors, has origins much earlier. More recently, in the latter half of the twentieth century, revolutionary technologies, such as the invention of the World Wide Web, were a catalyst of the now fully realized and so-called 'digital revolution'. This crucial technology, which has its direct origins in a networked messaging system to facilitate communications between nuclear scientists worldwide, which itself utilized a United States (U.S.) government platform operational since the 1960s and then simply known as the 'internet', has come a long way since it was invented by computer scientist Sir Timothy Berners-Lee in 1989 while working at the European Organization for Nuclear Research (CERN). As the world increasingly realized its potential to disrupt societies and economies, the internet of things (IoT) has evolved from humble roots to become a key enabler of the Fourth Industrial Revolution, and a delivery channel for many of the FinTech developments we are experiencing today.

The slightly provocative title of this book, *Disruptive Technology in Banking and Finance: An International Perspective on FinTech*, aims to highlight the fact that FinTech, almost by definition, encompasses the concept of 'disruption'. Across ten chapters this book provides an in-depth treatment as to how FinTech, and related concepts such as BigTech, InsurTech and RegTech, among others, are disrupting the finance, banking and insurance sectors. This book shows how traditional players, or 'incumbents' are increasingly facing new challenges from disruptive technological innovations. For example, as discussed in Chapter 4, the Fourth Industrial Revolution (technological innovation) is transforming business models and enabling new ways of communication and information sharing in the insurance sector. As explored in Chapter 7, one challenge being faced by traditional banking intermediaries relates to the emergence of so-called new Challenger Banks, which are disrupting the banking sector by focussing on the digital delivery of more streamlined and customer-focussed banking and financial services. These Challenger Banks either offer the same digital solutions and products as traditional incumbent banks or specialize in specific products or services.

The book has been written in such a way so as to build a framework in which FinTech can be better understood from the perspectives of the main drivers and enablers of technological disruption in the banking, finance and insurance sectors, while considering the GFC and the recent Covid-2019 pandemic. It is our intention that the 'tool-kit' and framework we develop in this book will itself be a driver and enabler of further 'innovation'—in this case a desire to expand your reading further and become involved, or further involved, in the exciting FinTech industry and revolution.

1.1 FinTech: Covid-19 and the Global Financial Crisis (GFC)

The world fundamentally changed in the year 2020. On 31 December 2019, the World Health Organization (WHO) first reported the existence of a new and serious virus caused by a newly discovered coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

(World Health Organization, 2020).[2] This virus, now commonly known as Covid-19, has spread rapidly across the world with seemingly no regard for country borders and continues to impact countries in all regions—emerging and developed alike. At the time of writing in spring 2021, the Covid-19 pandemic continues to impact economies and societies worldwide. It is widely thought that its effects will be long-felt and deep, and undoubtedly form the basis of much interdisciplinary future study and research. Even before the Covid-19 pandemic, FinTech had been radically transforming the nature of economies and societies across the globe. As we will discuss throughout this book, the pandemic has already acted to accelerate some pre-existing FinTech trends as well as creating areas of new growth and innovation. The trend is towards a more 'digitalised', decentralized and borderless world, which, arguably, makes the future potential of FinTech even more significant.

1.2 Organization of Chapters in This Book

The remainder of this chapter offers a short overview of the topics covered by each of the ten chapters.

Chapter 2: *A Historical Perspective on Disruptive Technologies*. This chapter sets the scene by providing the reader with historical context, and a framework to understand current and future Fintech directions. It explores the origins of the ongoing FinTech revolution by examining the evolution of FinTech from its early stages in the late 1860s until today, and finally by discussing future directions.

Chapter 3: *A Taxonomy of FinTech Innovation*. This chapter builds on the theoretical framework established in this chapter, to convey the excitement and buzz surrounding FinTech, while demystifying some of the typographies and processes within FinTech. It offers detailed discussions of the various FinTech technologies and their applications and potential. It is organized in two main parts. First, the chapter outlines the importance of technological innovation in driving economic change through the discussion of several seminal works that shed light on the role of technological and financial innovations as driving forces of economic growth. The second part of the chapter uses data on filed FinTech patents to identify key areas of FinTech development. Four main categories of FinTech are identified and explored.

Chapter 4: *Cryptocurrency Mining Protocols: A Regulatory and Technological Overview*. The chapter focuses on cryptocurrencies and digital currencies. Beginning with a background to the digitalization of money, their origins are explored, as well as current and future applications. Current issues, such as regulatory concerns are also explored in the first half of the chapter. The second part examines blockchain technologies and the algorithms employed to secure and validate cryptocurrency transactions.

Chapter 5: *The Development of InsurTech in Europe and the Strategic Response of Incumbents*. This chapter introduces InsurTech as an increasingly important area of digital innovation that is transforming key processes and business models in the insurance industry. Just as FinTech is radically transforming the banking and finance sector, new technology-advanced entrants are challenging and collaborating with incumbents in the insurance sector who so far have largely struggled to adapt to their entry and new technologies. This chapter discusses such issues in the context of the European insurance sector, providing a detailed treatment as to how technological innovation is strongly impacting all phases of the insurance value chain, providing new opportunities and posing new risks.

Chapter 6: *FinTech and Banking: An Evolving Relationship*. Given the degree of overlap between FinTech and Banking, this chapter lays the foundation of how these two streams are inter-related. It discusses how FinTech is disruptive to the banking sector, while also explaining that a collaboration between the two has the potential to yield social welfare benefits. The final part of the chapter puts forward likely scenarios for future banking and financial services providers, and how relations between FinTech and banking will continue to evolve in the future.

Chapter 7: *FinTech Cultures and Organizational Changes in Financial Services Providers*. Building on Chapters 4 and 5, this chapter offers a sociological perspective on how the development of innovative technology results in the transformation of financial institutions. It discusses how FinTech cultures emerge, linked to organizational designs, and enable and/or constrain a financial institution's capacity to operate and compete successfully. One of the key areas of discussion is how banks are responding to outside FinTech threats through open innovation and collaboration, which are serving to enhance the extent and quality of banks' product offerings and customer service.

Chapter 8: *Digital Disruption: How the Financial Services Landscape Is Being Transformed*. This chapter gives a practitioners' perspective on how FinTech is shaping financial sectors and economies worldwide. Written by a leading practitioner, Dr Walt Gontarek, the chapter draws his insights as well as those from other leading practitioners to deliver industry-led insights into the main challenges faced by incumbent financial institutions, reporting on the digitalization of several financial services sectors before exploring the role of key stakeholders, including the regulator.

Chapter 9: *FinTech and Regulation: From Start to Boost—A New Framework in the Financial Services Industry. Where is the Market Going? Too Early to Say*. This chapter discusses the role of regulation and supervision in the European banking and financial sector. It begins by offering an insight into the heavily regulated nature of the banking sector, before discussing the regulatory concerns of how FinTech can affect banking institutions. It explores recent regulatory initiatives, including the introductions of the General Data Protection Regulation (GDPR) and Payment Services Directive 2 (PSD2) in Europe. Moreover, key policy discussions and reports are introduced to the reader, facilitating understanding as to how regulations may evolve in the future. The chapter concludes by exploring the challenges regulators will face in the future as to how best to balance innovation, financial stability and customer trust.

Chapter 10: *Bigger Fish to Fry: FinTech and the Digital Transformation of Financial Services*. Building on discussions of regulations in the banking and financial sector, as well as how and to what extent to regulate FinTechs from Chapter 8, this penultimate chapter provides a comprehensive economic analysis of regulatory policies and initiatives designed to support FinTech start-ups. It makes the crucial point that although regulatory policies can deliver benefits, to date they have lacked coherence. From this perspective, the chapter calls for policy makers to deliver policies that focus on the broader and more significant challenge of digital transformation using digital technology to address market and organizational failures across financial services, taking into account governance challenges that undermine digital transformation of finance.

Chapter 11: *Conclusion: FinTech—A Perfect Day or Walk on the Wild Side?* The book concludes by examining the 'light' and 'dark' sides of FinTech through the lens of the supranational regulatory agencies responsible for monitoring the impact of developments in market structure on the stability of the global financial system. A goal of this chapter is to review and synthesize some of the key discussions from prior chapters as to how FinTech is challenging incumbent financial institutions and identifies benefits and risks associated with the democratization of financial services. Finally, the chapter outlines the state of current knowledge of