



**DEPARTMENT OF
SOCIOLOGY AND WORK SCIENCE**

THE DIGITAL TRANSFORMATION OF FINANCIAL SERVICES MARKETS AND INDUSTRIAL RELATIONS –

Exploring FinTech development in Denmark, Estonia, the Netherlands
and Sweden

BENGT LARSSON AND BERTIL ROLANDSSON (EDS.).



Authors: Anna Ilsøe, Kadri Karma, Trine P. Larsen Bengt Larsson, Alex Lehr, Jaan Masso, Ilona Pavlenkova and Bertil Rolandsson

Type of publication: “Working papers – Department of Sociology and Work Science”
Nr 1, 2022

ISBN 978-91-87876-49-3

Content

Acknowledgement.....	4
Summary:	5
Chapter 1: Introduction	6
Research design and disposition	8
Chapter 2: Putting FinTech development into context	11
FinTech – the technological dimension	11
Regulatory contexts and challenges	13
FinTech, industrial relations and effects on employment	17
Chapter 3: Sweden	25
Actors on the Swedish banking and finance market.....	25
The size, composition and integration of the Swedish FinTech industry	25
The implication of FinTech for traditional banks – competition and co-operation	28
Implications of regulatory structures for Banks and FinTechs	31
Obstacles for utilizing new financial technology in FinTechs and banks	34
Collective organization and employment relations in Swedish FinTechs	35
Chapter 4: The Netherlands	41
Actors on the Dutch banking and finance market	41
The size and composition of the Dutch FinTech industry	42
The implication of FinTech for traditional banks – competition, blurring, co-operation.....	45
Trends in employment and work in the financial sector.....	49
Collective organization and employment relations	52
Chapter 5: Estonia	59
The Estonian case.....	59
Overview of the Estonian FinTech industry	61
The implication of FinTech for traditional banks.....	66
Implications of regulatory structures and innovation for banks and FinTechs.....	67
Organizational obstacles for FinTechs and banks.....	69
Collective organization and employment relations in Estonian FinTechs	71
Concluding remarks.....	72
Chapter 6: Denmark	75

Introduction to the Danish case	75
Key actors on the Danish banking and finance market and workforce composition	75
The size and composition of the Danish FinTech industry	77
The role of tech hubs for Danish FinTech: facilitator and relation maker	80
Partnerships between traditional banks and FinTech companies: innovation, scale and technological challenges	83
Employment relations in Danish FinTechs: framework agreement and employers' association.....	85
Summary and reflections.....	89
Chapter 7: Discussion and conclusions.....	93
Transformation of financial markets – Disruption or coepetitive interdependence?	94
Consolidation of the FinTech Sector – from start-ups to scale-ups?.....	99
The emerging formation of FinTech employment relations?.....	100
Concluding remarks and recommendations.....	105

Acknowledgement

This research was funded by the European Union. We would like to thank UNI Europa, the Nordic Financial Unions, and in particular the project co-ordinators Morten Clausen, Vasilka Lalevska and Simon Jernberg. We would also like to thank the steering group, Paul Suilen, FNV, Ella Sjödin, Finansförbundet, Carin Hallerström, Nordic Financial Unions and Cristina Lorenzo Burgos, CCOO, for investing their time and efforts in reading and discussing our findings with us. Finally, we would like to thank Associate Professor Oskar Engdahl at the Department for Sociology and Work Science, University of Gothenburg, for ensuring the quality of the report by providing us with valuable input and comments. Professor Bengt Larsson and Associate Professor Bertil Rolandsson have contributed equally as editors for this report.

Summary:

The recent expansion of FinTech companies supplying digitally sophisticated products and services on the financial markets is repeatedly linked with different ideas of digital disruption. The development is said to challenge traditional banks and their “one-stop-shop” business models and value chains, integrating a wide range of products under one “roof”. FinTechs thus emerge as a threat to conventional businesses models in the financial markets, and thereby also raise concern for the types of jobs that employees in traditional banking and finance may face in the future (Abassi et al., 2021; Rego, 2018). Previous research on this development often focuses on the innovation of new businesses. By investigating the broader institutional conditions addressing industrial relations in the FinTech sector, this report also provides knowledge about aspects conspicuously absent from many previous studies. This is crucial to our understanding of how different institutions shape the future labour market and the way FinTech companies and other financial actors acquire the skills needed to develop. The report draws on the analysis of four country cases (Denmark, Estonia, the Netherlands and Sweden) all characterized by pervasive digital transformation of financial services.

The report confirms an extensive digital transformation of financial services in all four countries studied, but our findings still suggest that FinTech companies do not necessarily disrupt existing businesses – at least not in a radical fashion. As the FinTech niche in all four countries appears to consolidate and influence the emergence of a new business ecology – in which conventional banks continue to play a key role – our analysis rather suggests that the development consists of an intense and innovative differentiation of market services. FinTechs primarily position themselves as partners to established businesses, providing technical solutions or even ideas that are bought by banks and thus co-opted or integrated through strategic partnerships (cf. Brandl and Hornuf, 2020; Hornuf et al., 2020). They also forge a position as intermediaries between the bank and the customer, utilizing open banking solutions based on customer and account-information from traditional banks. In doing so, they are shaping both a possibility to add new services, and for customers to utilize and get an overview of services from different actors on the market (cf. Lomachynska, 2020).

Contrary to studies describing how digital services destroy job opportunities (Brynjolfsson and MacAfee, 2014; Umans et al., 2018), the report depicts a development that increases demand for new skills, urging us to look further into what types of jobs will be available to employees in banking and finance in the future (Abassi et al., 2021; Rego, 2018). At present, the rapid growth makes it difficult to provide a definitive answer as to what exactly these skill requirements will be. Our report nevertheless finds that that policymakers, business associations, and FinTech communities are more concerned with a lack of education and competence development satisfying demands for new combinations of tech and financial skills, than with the risk of job losses in the sector at large.

Chapter 1: Introduction

Bertil Rolandsson and Bengt Larsson

This is the final report from the project *How FinTech affects the financial sector and what the effects are on collective bargaining in the European financial sector*, which was supported financially by the European Commission. The project was led by Morten Clausen at UNI Europa in co-operation with Nordic Financial Unions (NFU) and University of Gothenburg (SE). The project team included researchers from the University of Copenhagen (DK), Radboud University (NL), and the University of Tartu (EE). The project's objective was to improve understanding of the impact of FinTech companies on the European finance sector in relation to industrial relations. The overall issues explored by the project were therefore to what extent global and European FinTech trends affect the European financial sectors, and how these impact skill requirements and employment relations.

In previous research, digital technologies have often been depicted as driving dramatic changes in markets and employment relations. New technological solutions may disrupt established market relations when challenging entrepreneurial firms introduce new business models and force established actors to rethink their business models, competence requirements, and the way they organize work and employment relations (Frey and Osborne, 2017; Susskind and Susskind, 2015). This is also the role digital technologies have been said to play in studies of the banking and financial services markets. Even back in the 1990s, digitalization and the internet emerged as a vehicle for change. The new digital infrastructure paved the way for the expansion of online banking around 2000, leading to the closing down of many local bank branches in many countries (Rolandsson et al., 2020). New digital technologies were also seen as a prime source of disruptive change after the Great Recession in 2008, supporting bank mergers as well as triggering warnings of massive job destruction (Arner et al., 2016; cf. Lomachynska et al., 2020).

Today, this narrative of disruptive change recurs in many studies of the recent development of financial technology, embraced not only by the traditional incumbents of the financial markets. The development in financial technology is to a significant degree also driven and exploited by new entrepreneurial start-ups in different niches of the financial markets – so called FinTech companies, who provide updated, mobile and innovative and often App-based digital services and AI, often utilizing the emergence of the emerging open banking infrastructure (Breibach et al., 2020; Degryse, 2016; Lomachynska et al., 2020). These new FinTech companies have increased rapidly in number in many countries over the last decade or so, with many scaling up and becoming more established as investments in the FinTech niche increase (Chiu, 2016). By 2013, approximately 27.8 million dollars had been invested in European Fintech companies, a figure which had reached 1,624 million dollars in 2018. Our analyses of the development in Sweden, the Netherlands, Estonia and Denmark in this report indicate that investments in the FinTech sector have continued to increase since then.

The expansion of FinTech companies supplying digitally sophisticated products and services in different niches of the financial markets thereby challenge traditional banks and their “one-stop-shop” business models and value chains, integrating a wide range of products under one “roof”. As investments are increasing, the development raises concerns for the survival of conventional

business models in the financial markets. Echoing studies addressing more general implications of the digital transformation of the labour market (Brynjolfsson and MacAfee, 2014; Umans et al., 2018), such changes nevertheless also raise questions as to what types of jobs will be available to employees in traditional banking and finance in the future (Abassi et al., 2021; Rego, 2018; Rolandsson et al., 2020).

In this report, we address this development by analysing the development of FinTech companies, their interaction with the traditional actors, and their employment relations in four countries: Denmark (DK), Estonia (EE), the Netherlands (NL) and Sweden (Swe). We selected these countries because all four of them are small open economies characterized by a high level of digitalization (European Commission, 2021). Although they are not all strictly speaking Nordic countries, they are part of a northern European hemisphere characterized by intense digitalisation and openness to international trade, but nevertheless display variation in terms of collective bargaining and relations between the parties on the labour market. Some of the countries have a very strong tradition of industrial and employment relations, whereas Estonia, for instance, relies on less robust arrangements. This variation makes it possible for the report to discuss the importance of the industrial relations context and traditions.

The aim of the report is to contribute to a deeper understanding of whether and how the emergence of FinTech companies affects the markets for financial services and products, as well as employment relations in the sector. We focus on how FinTechs provide business models able to transform financial services and foster a new and dynamic field of businesses, comprising a variety of intense activities forged by, amongst other things, technological development. However, we aim to move beyond earlier research that has primarily addressed different digital innovations and business opportunities (Arner, 2016; Cai, 2018; 2021). By also investigating the broader institutional conditions addressing employment relations, the report provides knowledge about aspects conspicuously absent from many previous studies, but which are crucial to our understanding of how different institutions shape the way companies are able to acquire the skills needed to develop. The following analyses are shaped by some general research questions guiding the analyses of the four country cases of Denmark, Estonia, the Netherlands and Sweden: How can we characterize national FinTech development, and which factors are facilitating or hindering this growth? How can we understand the relationship between the traditional incumbent actors and the new challenger firms in the FinTech niche? What do skill requirements and staffing look like in the FinTech niche, and how do employment relations differ from the wider financial sector? To what extent do conventional employer associations and trade unions play a role in these employment relations?

While answering these questions, the report recognizes that the intense nature of technological development currently gives us grounds to be cautious. Rather than making definite claims on how the FinTech development should be understood, we discuss some tendencies and possibilities for the future. We set out to be sensitive to the interplay between different FinTech markets and national institutional conditions, while also focusing on a somewhat neglected aspect of the FinTech development, i.e. its effect on employment relations.

Research design and disposition

This is an explorative report drawing on qualitative case studies of FinTech development in Denmark, Estonia, the Netherlands, and Sweden, aiming to provide indications on where the growth is heading. Empirically, the report is based on both desk research and primary material: first, we have collected public and organisational reports and policy documents, as well as information from the internet, providing information on national level FinTech development, the regulatory context, the existence and relations between organizations and communities in the field, and employee characteristics and employment relations in the FinTech niche. Certain databases comprising statistical information, have also been used when needed. As there are also joint EU developments on the regulatory and policy areas, we have also collected documents relating to that level. For details regarding which specific documents and data were used, see the reference list for each country case study.

Second, we have conducted in total 38 semi-structured interviews with key actors in the four countries, representing A) traditional banks, B) established FinTech companies, FinTech associations, hubs and communities, and C) trade union and/or employer association representatives. The choice of respondents varied somewhat between the national case studies, depending on the type of information about actors' positions and experiences that we were able to gather through desk research. An important delimitation of the qualitative empirical studies is that the main focus has been on FinTech companies within payment and credit services, with less focus being given to InsurTech, RegTech and Crypto-Currency companies (see Chapter 2 for definitions). In order to keep the respondents' identities confidential, we only give a general overview of the four main categories of respondents per country in table 1. The interview data was used both to cement, complement and deepen our understanding of the information gathered through desk research. All interviews were conducted on the basis of a joint semi-structured guide developed by the research team. Depending on which actor the respondent represented, some themes were covered in greater depth, while others were covered more briefly. As the guide was fairly comprehensive, most of the interviews lasted around one hour.

Table 1. Number of interview respondents representing different key actors in country

	DK	EE	NL	SE	TOTAL
Banks	*	2	3	4	9
FinTechs/FinTech associations	6	2	2	3	13
Trade unions/Employer organisations	4	4	5	3	16

* Two of the Swedish interviewees represented a bank with activities in both Sweden and Denmark.

The structure of the empirical analyses in the country case studies draw on similar themes, while also allowing for differences in emphasis and empirical detail, depending on the data and issues stressed in the empirical data analysed for each country. Thus, even though we have treated matching empirical topics by following a similar structure and disposition, we hope that differences in national contexts, developments, alliances, and consequences thereof, becomes visible through the case studies.

The report is divided into three parts. The first part contains this introductory chapter and a following chapter providing the reader with a background to the FinTech development. Chapter 2 puts FinTech development into context, by discussing the four countries and the technologies,

regulatory developments, and some employment relations issues, as well as the industrial relations context of the four countries studied. This chapter is based on previous research studies. The second part of the report consists of four chapters presenting each country case studies, and the empirical analyses of FinTech development in Sweden, the Netherlands, Estonia and Denmark. The final part of the report consists of a concluding discussion in which we summarize the results from the empirical country case studies, and discuss their implications as regards FinTech development in these countries. In this chapter, there is a specific emphasis on the FinTech driven transformation of the financial markets, the consolidation of the FinTech niche, and the signs of an emerging formation of FinTech employment relations in these countries.

References

- Abbasi, K., Alam, A., Du, M. (Anna), & Huynh, T. L. D. (2021). FinTech, SME efficiency and national culture: Evidence from OECD countries. *Technological Forecasting & Social Change*, 163, 120454. <https://doi.org/10.1016/j.techfore.2020.120454>
- Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The Evolution of FinTech: A New Post-Crisis Paradigm? *Georgetown Journal of International Law*, 47(4), 1271.
- Breidbach, C. F., & Maglio, P. (2020). Accountable algorithms? The ethical implications of data-driven business models. *Journal of Service Management*, 31(2), 163–185. <https://doi.org/10.1108/JOSM-03-2019-0073>
- Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company
- Chiu, I. H.-Y. (2016). FinTech and Disruptive Business Models in Financial Products, Intermediation and Markets — Policy Implications for Financial Regulators. *Journal of Technology Law and Policy*, 21(1), 55–112.
- Degryse, C. (2016). *Digitalisation of the economy and its impact on labour markets* (Working Paper 2016.02). ETUI: European Trade Union Institute. Retrieved from ETUI: European Trade Union Institute website: <https://www.etui.org/publications/working-papers/digitalisation-of-the-economy-and-its-impact-on-labour-markets>
- European Commission. (2021). *Digital Economy and Society Index (DESI) 2021. Thematic chapters*. Retrieved from <https://ec.europa.eu/newsroom/dae/redirection/document/80563>
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting & Social Change*, 114 (January), 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>
- Lomachynska, I., Maslennikov, Y., & Yakubovska, M. (2020). Infocommunication Tools of Unconventional Monetary Policy. *2020 IEEE International Conference on Problems of Infocommunications. Science and Technology (PIC S & T)*, 737–740. <https://doi.org/10.1109/PICST51311.2020.9467922>

- Rego, R. (2018). *Digitalisation and Restructuring: Which Social Dialogue?* Lisbon, Portugal: DIRESOC. Retrieved from DIRESOC website:
https://repositorio.ul.pt/bitstream/10451/37324/1/ICS_RRego_DIRESOC_Portugal-country-report.pdf
- Rolandsson, B. (Eds.) (2020). *Digital Transformations of Traditional Work in the Nordic Countries* (540th ed., Vols. 1, 2020:540). Copenhagen: Nordic Council of Ministers. DiVA. <https://doi.org/10.6027/temanord2020-540>
- Susskind, R., & Susskind, D. (2015). *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. Oxford: Oxford University Press.
- Umans, T., Kockum, M., Nilsson, E., & Lindberg, S. (2018). Digitalisation in the banking industry and workers subjective well-being: Contingency perspective. *International Journal of Workplace Health Management*, 11(6), 411–423.
<https://doi.org/10.1108/IJWHM-05-2018-0069>

Chapter 2: Putting FinTech development into context

Bengt Larsson and Bertil Rolandsson

To provide the reader with background information regarding FinTech development, the following chapter will introduce three prominent themes in previous research. In doing so, the chapter aims to deepen our understanding of the context and enable us to consider to what extent FinTechs reflect a broader change in how work is organized within the financial sector. The chapter starts by describing the role of digital technologies and continues by providing a brief description of the most important regulations, before examining industrial relations and employment.

FinTech – the technological dimension

The centrality of digital technologies is undisputed when it comes to the businesses we describe as “FinTech companies” (or FinTechs). The term “FinTech” is an abbreviation of “financial technology” and is, of course, also used in traditional banking and financial companies. The term, however, is particularly applicable to new challenger companies that are utilizing and drive the digital transformation (Alt and Puschmann, 2012). In this report, FinTechs are firms that use different types of software or hardware to facilitate financial services, such as bill payment, investment, crowdfunding, retail banking, or the use of cryptocurrencies. They often emerge as being smaller or more flexible than banks, or any other traditional financial institutions (Hsu, 2018). In brief, the use of new, rather sophisticated network technologies, enabling these companies to bypass these traditional financial institutions, explains why they appear to be more flexible business units.

Being somewhat more specific, a set of different digital technologies simply allow FinTechs to organize themselves as *intermediaries*, developing and facilitating services in a broader ecosystem of actors sharing data with each other, involving traditional banks and insurance companies. In this ecosystem, the traditional actors have specialized their business and reduced their in-house services (outsourcing), providing opportunities for FinTechs to set up businesses undertaking tasks that were previously performed in-house (Puschmann, 2017). As high-tech companies, taking advantage of technologies allowing them to bypass the traditional actors, however, they also emerge as vehicles for innovation, able to continually develop and provide new financial services between customers and primarily banks.

The technological transformation of financial services

We should point out that opportunities to innovate and set up intermediary businesses in between customers and traditional financial services started to emerge when financial service providers introduced hybrid client interaction and customer self-services (Deutsche Bundesbank, 2016; Nüesch et al., 2015; Pickens et al., 2009). The introduction of digital networks and the World Wide Web back in the 1990s is thus crucial to our understanding of how this broader business ecology has been able to emerge. Research, however, describes how the development of today's

technologies, involve big data, the internet of things and cloud computing said to enable new products, services, processes and business models etc.

If we look at research on the most recent wave of services, referred to as FinTech 3.0 (or even 3.5)¹, these studies often identify crowdfunding and blockchain as two particularly prominent technologies (Alt and Puschmann, 2012; Cai, 2018; 2021). Crowdfunding is a technology, based on different types of peer-to-peer networks, closely tied to the business models we associate with FinTechs. A number of studies explore how crowdfunding facilitates a variety of activities based on mediation of financial resources on Internet-based platforms without involving standard financial intermediaries (Mollick, 2014; Schwienbacher and Larralde, 2012). Based on Belleflamme et al., (2015) we may distinguish two types of crowdfunding technologies, fostering different forms of fundraising and offers in return: (i) investment-based crowdfunding, and (ii) reward- and donation-based crowdfunding that do not provide monetary reward. (i) Investment-based crowdfunding includes equity-based, royalty-based and lending-based crowdfunding (e.g. peer-to-peer lending). Funders in these cases emerge as investors in innovation projects or campaigns that may provide them with monetary benefits. The investment-based form of crowdfunding is closely tied to FinTechs acting as entrepreneurs able to set up a business by-passing standard financial intermediaries and avoiding expensive registration requirements. They may, for instance, avoid complicated regulation requirements and reduce transaction costs, while setting up services based on pre-ordering or profit sharing (equity crowdfunding) (Belleflamme et al., 2014). Wei and Lin (2016) also describe how entrepreneurial FinTechs draw on the market mechanisms of P2P (Peer-to-Peer) lending between platform-mandated posted prices and contract interest. The second form of crowd funding is less significant to the actual business and described as (ii) reward- and donation-based crowdfunding that does not provide monetary reward. Sponsors may, however, be rewarded a token in return (e.g. a T-shirt or a discount on products).

Blockchain, constituting the second most prominent technology, then serves trust and transparency by enabling users to validate and track transactions and stored information in linked blocks (Cai, 2018). In line with previous description of crowdfunding, blockchain draws on peer-to-peer networks that transfer value between participants without an intermediary, but it also records transaction information in a block added to prior transaction information. Based on this self-generated chain of blocks the technology is able to offer distributed governance, able to substitute centralized agents or traditional financial intermediaries that normally maintain trust and governance. The stress on distributed governance, enhancing transparency and trust, is further underscored by close links to the development of the cryptocurrency Bitcoin (Cai, 2021), and it is also one of the main reasons it is said to have the potential to disrupt how the global financial system works and change the nature of investment (Fanning and Centers, 2016; Pollari, 2016).

There has been limited research into how blockchain changes the way companies organize their staff and their businesses (Cai, 2021). However, there are studies describing how blockchain transforms management and accounting. Involving other technologies such as cloud computing, these studies also describe how blockchain may make it possible for corporations to outsource

¹ FinTech 1.0 refers to the modern use of new technology during the first period of financial globalization up until the 1960s. FinTech 2.0 refers to the move from analogue to digital technologies between the 1960s and the 2000s. FinTech 3.0 involves emerging new players innovating financial technologies (Arner et.al., 2015).

overheads and the authentication of traded goods as well as crowdsource innovation. They may then also eliminate middle managers and outsource functions engaged in, for instance, accounting (Nowinski and Kozma, 2017; Scott et al., 2017; Tapscott and Tapscott, 2017). New applications, involving different forms of artificial intelligence are also linked with blockchain (sometimes justifying the term Blockchain 3.0) (Burgess and Colangelo, 2015). However, research often concludes that this type of advanced blockchain technology is in its infancy (Cai, 2018).

Digital enhancement of financial intermediaries

FinTechs are, of course, also linked with additional technologies. For instance, some studies had been carried out regarding mobile payment in emerging markets in Asia and Africa. Studies on artificial intelligence (AI) also investigate a range of subjects and technologies, involving for instance robot advisory as future technologies (Altus, 2018; Cai, 2018). Finally, we should also mention cloud computing as an important technology, with implications for how companies organize themselves. Cloud computing depends on networked servers hosted on the Internet, enabling distributed developers or peers to collaborate, store, manage, share and process data, while developing a variety of solutions. This is not a new technology, but over the past few decades, cloud computing has enabled distributed modes of working within the financial sector that cut costs as it enables financial business to outsource a set of functions, including storage and crowdsourced innovation. At the same time, cloud computing also raises regulatory concerns for security and how it is possible to govern the use, reliance and development of software (Gai et al., 2018).

No matter which technology we examine, or the associated implications, they all support FinTechs as intermediaries in different ways. In the case of crowdfunding, we may state that the technology supports intermediary activities closely tied to the way FinTechs act as entrepreneurs, innovating and forging new business models. Intermediary activities in the case of blockchain are associated with technologies enabling FinTechs and their clients to engage with distributed governance and trust. In both cases, peer-to-peer networks become platforms for mediation, making it possible to transfer value between participants without the involvement of conventional financial intermediaries. Cloud computing also provides opportunities to mobilize widespread and complex combinations of human and technological resources, enhancing market-driven innovation. This is often done together with other financial actors (e.g. conventional banks) in the broader so-called “ecologies”, but it also enables employers to outsource parts of their workforce, for instance software developers (cf. Cai, 2018), and foster complex regulatory conditions (Gai et al., 2018).

Regulatory contexts and challenges

By acting as intermediaries, or by creating dis-intermediation, on financial markets, FinTech companies are operating in a rather complex regulatory context. Financial technology is used in an increasingly wider range of services and products that encompass not only core financial activities, such as payments, but also ancillary activities that are more ‘non-financial’ in nature (EBA, 2019). Whereas the former may be subject to both European and national regulation, the latter may be largely unregulated. This variation in regulatory context relates to the varying kinds of companies that develop and use financial technology, and who together with the advanced digital infrastructure make up an “ecology” on the financial markets (cf. Arner et al., 2017; Bogers

et al., 2019; Lomanchynska, 2020). Before reviewing some of the challenges of FinTech regulation discussed in contemporary research, we will therefore elaborate on the varieties of FinTech-related businesses and operational areas.

To reduce the complexity of the FinTech ecology, while bringing some nuance into the often-used distinction between traditional banking (the incumbents on the market) and new challenger FinTech-firms, we want to introduce a classification that also separates out TechFin and RegTech actors.

Traditional banking and finance companies are typically large established companies producing a wide range of – often bundled – financial products. The main actors provide one-stop comprehensive services and build up long-term trust-based customer relations, targeting broad customer groups (Lee and Shin, 2018). These institutions, particularly banks, perform the important financial function of maturity transformation. That is, they convert short-term funding into long-term loans. The rules regarding fractional reserve requirements also give them an advantage in that they can ‘create’ money and liquidity for the economic system, and thereby make profit not only from fees, but from the interest margins as well (Navaretti et al., 2018). The development in financial technology is, of course, utilized by these traditional or incumbent actors on the financial markets – either in-house, by owning (joint) FinTech companies, or through outsourcing. This allows them to improve business efficiency, reduce costs of financial products and services through standardization, and improve both risk assessments and the individualization of products with lower fees and improved functionality (Románova et al., 2018).

However, as is well known, the development of financial technology has also led to an influx of new actors onto the market that complement and compete with the traditional banking and finance companies. These market-challengers fit into at least three categories: FinTech companies, TechFin companies and RegTech companies.

FinTech companies (or FinTechs) are to a large extent relatively recent start-ups or SMEs. As they often are quite niche, and offer unbundled services, there are various business models among them. They act either as intermediaries or as dis-intermediaries on the market, in the latter case by providing platforms that match, e.g. borrowers and lenders, directly without intermediation. They tend to attract younger and wealthier customers than the traditional actors, and they base their customer relations on ‘automatic machine-based trust’, rather than on long-term relationship built trust (Lee and Shin, 2018; Navaretti et al., 2018, p.18).

TechFin companies are ‘non-financial firms, (such as technology, e-commerce and telecommunications companies) entering financial services businesses’ (Zetsche et al., 2018, p.395). They are usually large well-established BigTech companies that expand into finance based on existing customer relationships, and the large amounts of data they have acquired from them. In contrast to FinTech companies which specialize in being financial (dis)intermediaries in narrow financial services areas, by collecting, acquiring or analysing existing data, TechFins are more data intermediaries. Like the traditional banking and financial companies, they have very broad groups of customers, which is their main asset when moving into finance. In the classification below, we do not separate out InsurTech companies that are part of the insurance industry, using advanced digital technologies from FinTech companies, even if that is sometimes the case. To the extent

financial technology is used in the insurance business, we classify such companies under the heading of FinTech, whereas the aspects of InsurTech that are non-financial (e.g. GPS tracking of cars), is outside of the scope of this paper.

RegTech-companies are firms that provide technological or automated processes to perform monitoring, compliance and reporting related to existent regulation in the area of banking and finance (Arner et al., 2017). RegTech-companies – and RegTech operations within traditional banks and financial companies – are developed as a reaction to the increasing masses of data that have to be reported to regulatory authorities (e.g. in relation to know-your-client and anti-money laundering regulation, or capital assessment and stress test requirements), but also helps improving risk assessment and other problems in advance. RegTech companies thus operate mainly with either traditional banking and financial companies, or FinTech- and TechFin-companies as their customers.

The three categories of companies (FinTechs, TechFins and RegTechs) are generally quite niche and provide unbundled services. In accordance, they seldom fall under the same specific sets of regulation, and do not compete with all of the services and operations of the traditional banking and finance companies. Therefore, it makes sense to distinguish between different areas of operation, such as currencies, payments, deposits and lending, investment management, crowdfunding, financial advice and insurance. Not all of the companies using and producing services based on financial technology are covered by the same set of regulatory rules, as different regulations are applicable for different services – e.g. the directives on e-commerce (2000/31/EC), distance marketing of consumer financial services (2002/65/EC), electronic money (2009/110/EC), the anti-money laundering directive (2018/843/EU), payment services (2007/64/EC and 2015/2366/EU), etc. (Mansilla-Fernandez, 2017; Manta, 2018). There is as a result no simple answer to the question of which regulation covers FinTech. It depends on which services they produce and in which area of finance they operate.

Regulatory developments and challenges

Even if there is a strong focus in the debate on how alternative finance, that is FinTech, TechFin and RegTech companies, are challenging traditional banking and financial firms, it is worth noting that the former are still much smaller than the latter, and that, with the exception of TechFin, they are generally domestic actors (Demertzis et al., 2018). Accordingly, many of the regulations concerning them are national. In addition, as many are not core finance companies, they avoid applying for banking licences because of the associated compliance costs, and since their services and products are rather of ‘ancillary/non-financial nature’. Many such companies are therefore not strictly subject to financial regulation (EBA, 2019; cf. Navaretti et al., 2018; Vives, 2017). Despite this, there are, of course, EU policy and regulatory initiatives which concern them, as they do the wider sector: e.g. the European Commission’s (EC) Capital Market Union initiative, aiming for increased cross-border financial integration; the EC Consumer Financial Action Plan; the EC Cyber security strategy; the EC digital single market strategy; the General Data Protection Regulation (GDPR), the EC FinTech Action Plan (European Commission, 2018); the EC anti-money laundering directive (2018/843/EU); and the European Banking Authorities (EBA) FinTech Roadmap (EBA, 2018) aimed at mapping current authorization and licensing approaches for FinTech companies in order to present recommendations regarding the need to adapt the EU financial services legislation.

The regulations that are of most significance for the current FinTech development in the EU are probably the EU Payment Service Directives (PSD1 and PSD2)², aiming to establish efficient markets for payment services in the European Economic Area (Románova et al., 2018). PSD2 allows non-financial companies ('Third Party Payment Providers') to provide access to financial services for bank customers. On this basis, FinTech companies and stores/vendors can access customers' payment accounts and initiate payments and bank transfers for them. This means that the banks in effect lose the monopoly on their customers' data, in that customers may give FinTech or TechFin companies the right to retrieve account data from their bank. Thereby this regulation has stimulated new actors to create innovative solutions for payment, savings, lending and other financial services. However, PSD2 also harmonizes consumer protection and has increased the requirements on website authentication and electronic seals in communication between financial services companies.

So, what are the main regulatory challenges associated with the expansion of FinTech and FinTech-related new companies? There are a number of risks and problems related to FinTech development and new actors on the financial markets. Some of them are said to be the risks of growth in 'shadow banking', risks related to cyber security and data protection, risks related to the use of technical models for predictions and risk assessment, and risks for inaccurate pricing or customer discrimination or exclusion on the basis of race or gender owing to biased algorithms, problems related to taxation of FinTech companies (Románova et al., 2018; Vives, 2017; Zetzsche et al., 2018).

The major challenge for the future seems to be which regulatory approach to take to address these risks and problems. The tricky part will be striking a balance between competition and financial stability, and between security and protection for data and customers. On the one hand, the main actors are asking for a level playing field, which would imply stricter regulatory measures taken against the new challengers on the financial market. On the other hand, not all disruption on the market is seen as bad disruption from a consumer/customer perspective, since they may benefit from improved quality and efficiency leading to lower costs (Demertzis et al., 2018; Románova et al., 2018).

At the national level, the trend is towards avoiding a principles-based approach to regulating, instead experimenting with more flexible case-by-case regulation such as restricted licences, special charters or exemptions, or even experimental forms of regulation in terms of 'regulatory sandboxes', 'piloting exercises' and 'innovation hubs' (EBA, 2018; Claessens et al., 2018; Zetzsche et al., 2017). The latter two approaches create controlled environments ('safe spaces') for innovative new technologies testing. Thereby new products can be tested in a monitored way without risking 'punishment' by regulators. A number of European countries started such

² The aim of PSD is to increase pan-European competition and participation in the payments industry. The purpose is to provide for a level playing field by harmonizing consumer protection and the rights and obligations of payment providers and users. The PSD2 directive explicitly aims to create a more integrated European payments market, making payments more secure and protecting consumers (Directive 2015/2366/EU; cf. Románova et al., 2018).

regulatory sandboxes a few years back (UK 2016, NL 2017, CH 2017), and others are under way or have recently initiated projects heading more or less in this direction (DK, ES, IE, LU, NO, SE, and the EU). The EBA FinTech Roadmap (EBA, 2018) sets out a program to monitor and analyse these developments.

FinTech company relations and effects on employment

Turning to our third theme, the industrial relations context, we should point out that research investigating how FinTechs affect the labour market is scarce. Looking more broadly at the financial services in the EU28, however, we can state that this sector has a relatively large proportion of young and highly educated employees compared to other sectors generally, and the gender representation is quite balanced (Eurofound, 2016; 2019). As for workplace size, there are more employees in large and SME enterprises compared to the means of all sectors, and relatively fewer employees in micro-companies (1–9 employees).

Employment in the European sector of banking and finance generally (NACE³ 64 and 66) decreased by approximately 4% between 2010 and 2018, a period during which the number of companies fell by 25%, mainly as a result of mergers (Eurofound, 2019). There are, of course, differences in the size of the sector between countries, and the growth in employment varies between countries and subsectors. There has been a slight decline in employment in core banking activities (particularly NACE 64.19), whereas ‘auxiliary’ activities (particularly NACE 66.10 and 66.30) have seen a rise in employment. Divergences between countries are shown by Holtgrewe et al. (2017), who find that the UK is leading FinTech development, whereas the strongest ‘normalization’ of financial services digitalization and the most ‘optimistic’ evaluation from trade unions on this development is found in the Nordic countries. By contrast, there were more ‘defeatist’ opinions in Austria because of ongoing rationalization, whereas Italy was somewhere in between, in that they seemed to be already through the worst part of cost-cutting rationalizations.

New financial technologies are said to have led to a shift towards distance/online banking, an increase in collaboration and outsourcing, but also increasing competition from new challengers, not only within FinTech and TechFin companies, but also pure online banks, often called neo-banks (Eurofound, 2019). If one adds to this the regulation following the financial and economic crises at the end of the first decade of 2000, a number of overlapping consequences for employees and the sector overall have been discussed – hard evidence of which exists for only a number of these, however:

- Automation of some jobs and services may lead to substitution of employees with robots, or at least a decline in the employment of certain groups: e.g. customer advisors (Coralie and Fuensanta, 2018; Dølvik et al., 2020).
- Digitalization of services may lead to less interaction with clients, and sometimes even with colleagues. The effect might be ‘job polarization’, in the sense that there is increased standardization of tasks for some groups and increases in autonomy and requirements for problem-solving for others (Dølvik et al., 2020; Coralie and Fuensanta, 2018). There is

³ Nomenclature of Economic Activities is the European statistical classification of economic activities.

also an increase in ‘virtual work’, although this varies widely by country owing to regulations and technological access (Sanz de Miguel et al., 2020)

- There has been an increase in part-time work (it doubled in the period 1998–2014), and time-pressure is said to increase within working hours (Coralie and Fuensanta, 2018; Eurofound, 2019).
- There are tendencies towards downsizing and the closure of some branches, resulting in redundancies and a decline in employment, particularly in core banking (Beuker et al., 2019; Eurofound, 2019), and for smaller banks, savings banks or credit unions, and local branches (Coralie and Fuensanta, 2018; Holtgrewe et al., 2017).
- There is an increase in outsourcing from traditional banks and an improved market for consulting firms (Eurofound, 2019).
- There is a tendency towards paycuts, and higher employee churn in new ‘low-cost’ banks in some countries (Coralie and Fuensanta, 2018).
- New regulations and the accompanying documentation requirements lead to higher administrative costs and the replacement of administrative staff with staff more highly skilled in risk analysis and compliance (Dølvik et al., 2020).
- The stronger focus on higher skills, qualifications and even an entrepreneurial mindset leads both to changing recruitment strategies and a need for continuous training and professional development (Dølvik et al., 2020; Coralie and Fuensanta, 2018).
- Trade unions may be challenged both by new companies ‘escaping’ collective agreements, and there is a risk that competition over members and organisational domains increases between unions (Holtgrewe et al., 2017).
- There is a risk for low degrees of unionization, a lack of union representation, and thereby also uncertain employment and working conditions, in small start-ups – e.g. if staffing with young local students or young entrepreneurs (Coralie and Fuensanta, 2018).

Industrial relations in Banking and finance

According to Eurofound (2016), around 44% of the firms or establishments in the financial services sector in the EU 28 had official employee representation bodies, which was fairly high compared to other sectors. As in most sectors, however, the national level industrial relations in banking and finance are very much shaped by the general differences in industrial relations traditions and institutions across Europe (Eurofound, 2019; cf. Furåker and Larsson, 2020). While there is relatively high union density in the Nordic countries in the sector, it is more moderate in many central western and southern countries, and moderate to low in central and eastern European countries. Collective bargaining coverage and differences between multi and single bargaining practices vary in the EU 27 as illustrated in table 2.

Table 2. Collective bargaining coverage and collective bargaining level in banking

	Collective bargaining coverage				Information not available
	More than 90%	51–90%	25–50%	Less than 25%	
Single-employer bargaining sole or prevailing level	NL	CY, HR, SK	HU, IE, MT, PL	LT, RO, UK	BG, LV
Multi-employer bargaining sole or prevailing level	AT, BE, FI, FR, IT, SI	DE, DK, EL, ES*, LU, PT, SE	CZ		
No collective bargaining	EE				

Source: Eurofound (2019, p. 46).

There are almost 100 trade unions active in the sector in the EU27. Approximately two-thirds of these are affiliated to UNI Europa, the European umbrella organisation in private services. On the employer side there are around 70 employer associations identified in banking, approximately half of them affiliated to the European Banking Federation (EBF), whereas seven are members of the European Savings and Retail Banking group (ESBG), and 14 are members of the European Association of Co-operative Banks (EACB). Not all national employer associations are, however, active in collective bargaining since they are more trade or business associations than proper employer organisations.

In a majority of countries, at least one trade union and one employer organisation take part in government consultations practices, whereas in some countries none of these, or just one of the employer organisations, has such access to policymaking arenas. As discussed by Holtgrewe et al. (2017) there are, however, big differences in social partner involvement in policy initiatives regarding the digitalization of services (innovation, infrastructures and regulation). While there is little influence from social partners in central eastern and southern Europe, in the UK the influence is said to be through various councils and initiatives from industry leaders, and in the Nordic countries there is a wider variety of bi- and tripartite discussions and consultations.

In addition, there is considerable fragmentation and pluralism in industrial relations in the sector in many countries. That is, multiple organisations compete over representation, which relates to the existing specialization of business activities, size, business models and the legal standing of companies, as well as a multitude of occupational groups within the sector (Eurofound, 2019). This has certain effects for the representation in the European level sector social dialogue (ESSD) committee in banking (established in 1998), which is co-ordinated by UNI Europa on the trade union side, and EBF, ESBG and EACB on the employer side. As in many sectors, there is no perfect congruence of trade union and employer association membership with the limits of the sectoral NACE-code classification of sectors. Not all of them have members in all segments of the sector, and some have members outside of the sector, e.g. in other private services. However, the organizations in the dialogue cover the major players and their representativeness and capacity to negotiate on the European level is deemed good. From the 13 texts (outcomes) produced jointly by the social partners in ESSD since the establishment in 1998 (table 3), we find that they consist

mainly of soft tools (declarations and tools) and rules of procedure. There are no binding agreements, and only one agreement (the guideline) was related to follow-up procedures. It seems that there was rather high activity in the early years up to 2005, followed by a decade of no outcomes, and again an increased number of outcomes since 2015. Thematically, a number of the outcomes touch on issues at least indirectly related to FinTech development, such as digitalization, telework, training etc., however, there seem to be few that explicitly discuss the growth of the FinTech niche on the finance markets.

Table 3. Outcomes produced in ESSD Banking

Joint Declaration on Remote Work and New Technologies	2021
Joint Declaration on Employment Aspects of Providing Financial Services Including Guidance	2020
Joint Declaration on the Impact of Digitalisation on Employment	2018
Joint Declaration on Telework in the European Banking Sector	2017
Joint Declaration: Conclusions & Recommendations of the Lifelong Learning/Enlargement Joint Project	2015
Rules of Procedure of the Sectoral Social Dialogue Committee for Banking	2015
Join Declaration EU Bank Social Partners' review of the joint statement of 2005 on employment & social affairs in the European banking sector: some aspects related to Corporate Social Responsibility (CSR)	2014
Guidelines: Employment and social affairs in the European banking sector: some aspects related to CSR	2005
Joint Declaration on Lifelong Learning in the Banking Sector	2003
Tool: Study on IT Employability in the European Banking Sector	2001
Joint Opinion: IT Employability in the European Banking Sector	2001
Rules of Procedure: Banking	1999
Joint Declaration: Europe's new banks – The "non-bank" phenomenon – Conference, 18 November 1999. Joint conclusions by the European Social Partners in the Banking Sector	1999
Joint Opinion: Common statement between the banking federation of the EU, the European saving banks group, the European association of co-operative banks and Euro-FIET on the European commission Green Paper on a "Partnership for a new organisation of work"	1998

Source: EC Social Dialogue Texts Database (European Commission, n.d.)

References

- Alt, R., & Puschmann, T. (2012). The rise of customer-oriented banking—Electronic markets are paving the way for change in the financial industry. *Electronic Markets*, 22(4), 203–215. <https://doi.org/10.1007/s12525-012-0106-2>
- Altus. (2018). Artificial intelligence: The evolution of financial advice. Retrieved from <https://www.altus.co.uk/insights/artificial-intelligence-evolution-financial-advice>

- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech, RegTech, and the Reconceptualization of Financial Regulation. *Northwestern Journal of International Law & Business*, 37(3), 371-414.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, 29(5), 585–609.
<https://doi.org/10.1016/j.jbusvent.2013.07.003>
- Belleflamme, P., Omrani, N., & Peitz, M. (2015). The economics of crowdfunding platforms. *Information Economics and Policy*, 33, 11–28.
<https://doi.org/10.1016/j.infoecopol.2015.08.003>
- Beuker, L., Franssen, M., Kirov, V., & Naedenoen, F. (2019). *Digitalisation and Restructuring: Which social dialogue? Synthesis Report*. Sofia - Liège: Diresoc. Retrieved from: http://diresoc.eu/wp-content/uploads/2019/04/Diresoc_WP1_Transversal_Analysis-1.pdf
- Bogers, M., Sims, J., & West, J. (2019). What Is an Ecosystem? Incorporating 25 Years of Ecosystem Research. *Academy of Management Annual Meeting Proceedings*, 2019(1), 1–29. <https://doi.org/10.5465/AMBPP.2019.11080abstract>
- Burgess, K., & Colangelo, J. (2015). The Promise of Bitcoin and the Blockchain – Bretton Woods 2015. *Consumers Research*. Retrieved from <https://www.scribd.com/doc/296289646/Bretton-Woods-2015-White-Paper>
- Cai, C. W. (2018). Disruption of financial intermediation by FinTech: A review on crowdfunding and blockchain. *Accounting and Finance*, 58(4), 965–992.
<https://doi.org/10.1111/acfi.12405>
- Cai, C. W. (2021). Triple-entry accounting with blockchain: How far have we come? *Accounting and Finance*, 61(1), 71–93. <https://doi.org/10.1111/acfi.12556>
- Coralie, P., & Fuensanta, M. (2018). Digitalisation and Artificial Intelligence: The New Face of the Retail Banking Sector. Evidence from France and Spain, in K. Jaehrling (Ed.), *Virtuous circles between innovations, job quality and employment in Europe? Case study evidence from the manufacturing sector, private and public service sector*. Working Paper No. 6: halshs-01884121, HAL.
- Claessens, S., Frost, J., Turner, G., & Zhu, F. (2018). FinTech credit markets around the world: Size, drivers and policy issues. *BIS Quarterly Review*, (September 2018), 25–49.
- Demertzis, M., Merler, S., & Wolff, G. B. (2018). Capital Markets Union and the FinTech Opportunity. *Journal of Financial Regulation*, 4(1), 157–165.
<https://doi.org/10.1093/jfr/fjx012>
- Directive 2000/31/EC. (2000). *Directive on Electronic Commerce*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/eli/dir/2000/31/oj>
- Directive 2002/65/EC. (2002). *Directive on Distance Marketing of Consumer Financial Services*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/eli/dir/2002/65/oj>

- Directive 2007/64/EC. (2007). *Directive on Payment Services in the Internal Market*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32007L0064>
- Directive 2009/110/EC. (2009). *Directive on the Taking-up, Pursuit and Prudential Supervision of the Business of Electronic Money Institutions*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0110>
- Directive 2015/2366/EU. (2015). *Directive on Payment Services in the Internal Market*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015L2366>
- Directive 2018/843/EU. (2018). *Directive on the Prevention of the Use of the Financial System for the Purposes of Money Laundering or Terrorist Financing*. European Parliament and Council of the European Union. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L0843>
- Deutsche Bundesbank. (2016). *Bank office report 2015 – development of the bank office network in 2015*. Frankfurt (am Main), Germany: Deutsche Bundesbank Eurosystem. Retrieved from: <https://www.bundesbank.de/en/tasks/banking-supervision/documentation/bank-office-report-2015-623042>
- Dølvik, J. E., Alasoini, T., Hedenus, A., Ilsøe, A., Larsen, T. P., Steen, J. R., & Rolandsson, B. (2020). Digitalization of Services – A Diverse Sector. In B. Rolandsson (Eds.), *Digital Transformations of Traditional Work in the Nordic Countries* (pp. 50–82). Copenhagen: The Nordic Council of Ministers. Retrieved from <http://www.diva-portal.org/smash/get/diva2:1502452/FULLTEXT05.pdf>
- EBA. (2018). *The EBA's FinTech Roadmap: Conclusions from the consultation on the EBA's approach to financial technology*. European Banking Authority. Retrieved from: <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/1919160/>
- EBA. (2019). *EBA Report on FinTech Regulatory Perimeter, Regulatory Status and Authorisation Approaches in Relation to FinTech Activities*. European Banking Authority. Retrieved from: <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2551996/>
- European Commission. (2018). *FinTech Action plan: For a more competitive and innovative European financial sector*. Retrieved from https://ec.europa.eu/info/publications/180308-action-plan-fintech_en
- European Commission. (n.d.). Social dialogue texts database [Online Database]. Retrieved from Employment, Social Affairs & Inclusion website: <https://ec.europa.eu/social/main.jsp?langId=en&catId=521>
- Eurofound. (2016). *Establishment Characteristics and Work Practices: Financial Services Sector*. Dublin: Eurofound. Retrieved from: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1645en6.pdf

- Eurofound. (2019). *Representativeness of the European Social Partner Organisations: Banking Sector*. Dublin: Eurofound. Retrieved from: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19010en.pdf
- Fanning, K., & Centers, D. P. (2016). Blockchain and Its Coming Impact on Financial Services. *The Journal of Corporate Accounting & Finance*, 27(5), 53–57. <https://doi.org/10.1002/jcaf.22179>
- Furåker, B., & Larsson, B. (2020). *Trade Union Co-operation in Europe: Patterns, Conditions, Issues*. Basingstoke: Palgrave Macmillan.
- Gai, K., Qiu, M., & Sun, X. (2018). A survey on FinTech. *Journal of Network and Computer Applications*, 103, 262–273. <https://doi.org/10.1016/j.jnca.2017.10.011>
- Holtgrewe, U., Gasparri, S., Ilsøe, A., Kirov, V., Ramioul, M., Sharma, A., ... Verycken, Y. (2017). *Shaping Industrial Relations in a Digitalising Services Industry – Challenges and Opportunities for Social Partners*. Vienna: ZSI-Zentrum.
- Hsu, S. (2018). FinTech. In *A Dictionary of Business and Management in China* (1st ed.). Oxford: Oxford University Press.
- Lee, I., & Shin, Y. J. (2018). FinTech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35–46. <https://doi.org/10.1016/j.bushor.2017.09.003>
- Lomachynska, I., Maslennikov, Y., & Yakubovska, M. (2020). Infocommunication Tools of Unconventional Monetary Policy. *2020 IEEE International Conference on Problems of Infocommunications. Science and Technology (PIC S&T)*, 737–740. <https://doi.org/10.1109/PICST51311.2020.9467922>
- Mansilla-Fernández, J. M. (2017). Institutions. *European Economy – Banks, Regulation, and the Real Sector*, (2017.2), 41–50.
- Manta, O. (2018). Financial Technologies (FinTech), Instruments, Mechanisms and Financial Products. *Internal Auditing & Risk Management*, 52(4), 78–102.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1–16. <https://doi.org/10.1016/j.jbusvent.2013.06.005>
- Navaretti, G. B., Calzolari, G., & Pozzolo, A. F. (2018). FinTech and Banking: Friends or Foes? *European Economy – Banks, Regulation and the Real Sector*, (2017.2), 9–39. Available at: https://european-economy.eu/wp-content/uploads/2018/01/EE_2.2017-2.pdf, and <http://dx.doi.org/10.2139/ssrn.3099337>.
- Nowiński, W., & Kozma, M. (2017). How Can Blockchain Technology Disrupt Existing Business Models? *Entrepreneurial Business and Economics Review*, 5(3), 173–188. <https://doi.org/10.15678/EBER.2017.050309>
- Nüesch, R., Alt, R., & Puschmann, T. (2015). Hybrid Customer Interaction. *Business & Information Systems Engineering*, 57(1), 73–78. <https://doi.org/10.1007/s12599-014-0366-9>

- Pickens, M., Porteous, D., & Rotman, S. (2009). *Scenarios for Branchless Banking in 2020*. Washington, D.C.: CGAP, Department for International Development (DFID). Retrieved from: <https://www.cgap.org/sites/default/files/CGAP-Focus-Note-Scenarios-for-Branchless-Banking-in-2020-Oct-2009.pdf>
- Pollari, I. (2016). The Rise of FinTech: Opportunities and Challenges. *JASSA The Finsia Journal of Applied Finance*, 2016(3), 15–21.
- Puschmann, T. (2017). FinTech. *Business & Information Systems Engineering*, 59(1), 69–76. <https://doi.org/10.1007/s12599-017-0464-6>
- Romãnova, I., Grima, S., Spiteri, J., & Kudinska, M. (2018). The Payment Services Directive II and Competitiveness: The Perspective of European Fintech Companies. *European Research Studies Journal*, XXI(2), 3–22.
- Sanz de Miguel, P., Arasanz, J., Frías, C., Jørgensen, J. C., Navrbjerg, S. E., Papouschek, U., ... Moniz, A. B. (2020). *Final Report: Exploring the contribution of social dialogue and collective bargaining in the promotion of decent and productive virtual work*. DeepView. Available at: https://drive.google.com/file/d/1JrHgEDU9swF4KM5H74gOJ0-u_hptKIXK/view
- Schwienbacher, A., & Larralde, B. (2012). Alternative Types of Entrepreneurial Finance. In D. Cumming (Ed.), *The Oxford Handbook of Entrepreneurial Finance* (pp. 370–391). Oxford: Oxford University Press.
- Scott, B., Loonam, J., & Kumar, V. (2017). Exploring the rise of blockchain technology: Towards distributed collaborative organizations. *Strategic Change – Briefings in Entrepreneurial Finance*, 26(5), 423–428. <https://doi.org/10.1002/jsc.2142>
- Tapscott, D., & Tapscott, A. (2017). How Blockchain Will Change Organizations. *MIT Sloan Management Review*, 58(2), 10–13.
- Vives, X. (2017). The Impact of FinTech on Banking. *European Economy – Banks, Regulation and the Real Sector*, (2017.2), 97–105.
- Wei, Z., & Lin, M. (2016). Market Mechanisms in Online Peer-to-Peer Lending. *Management Science*, 63(12), 4236–4257. <https://doi.org/10.1287/mnsc.2016.2531>
- Zetsche, D. A., Buckley, R. P., Arner, D. W., & Barberis, J. N. (2018). From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance. *New York University Journal of Law & Business*, 14(2), 393–445.
- Zetsche, D. A., Buckley, R. P., Barberis, J. N., & Arner, D. W. (2017). Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation. *Fordham Journal of Corporate & Financial Law*, 23(1), 31–103.

Chapter 3: Sweden

Bengt Larsson and Bertil Rolandsson

Actors on the Swedish banking and finance market

In addition to banks, the Swedish financial sector consists of a number of companies performing important functions in the financial system. In 2019, these additional companies employed some 95,000 employees, which is approximately 2% of the Swedish Workforce, and contributed approximately 3.8% of Swedish GDP (Swedish Bankers' Association, 2020a). Nevertheless, new emerging services and actors, as well as the intense growth in financial technology in recent decades, have changed the structure of the market for the customers and employees in this sector.

In 2019/2020 there are around 125 different banks active on the Swedish market (Swedish Bankers' Association, 2020a; Finansinspektionen, 2020a). There are three major Swedish banks (SEB, Svenska Handelsbanken and Swedbank), who together with the largest Nordic financial group, Nordea, dominate the lending market in Sweden – even if they have lost some market share to retail banks in recent years. Beside these major banks, who all have extensive foreign operations, there are four large retail banks (Skandiabanken, SBAB Bank, Länsförsäkringar Bank and Landshypotek Bank), 59 local savings banks, and 59 branches of foreign banks (the largest of which are Nordea Bank, Nordea Hypotek, Danske bank, Danske Hypotek and DnB NOR bank).

In addition to the banks, there are a number of other financial companies under the supervision of the Swedish Financial Supervisory Authority (SFA): securities companies, leasing companies, mortgage lenders, credit market companies, and companies that together constitute the niches in which the major FinTechs primarily operate; consumer credit companies and neobanks (e.g. Klarna, Qliro, Northmill), and payment service companies (e.g. Bamboora, Trustly, Loomis, Nokas and Kivra). In recent years, the FinTech consumer credit companies make up a segment that has grown particularly rapidly (Finansinspektionen, 2020a). Among these companies are Klarna, which in 2017 received a banking licence and was thereby upgraded to the second highest category of financial supervision, i.e. “medium-sized and large credit institutions” (Finansinspektionen, 2020b).

Besides the companies under the supervision of SFA, there are also a number of smaller payment services providers who are exempt from authorization, but still have to register as “registered payment providers”. In addition, there are a number of FinTechs who are providing ancillary services that are “non-financial” in nature, and although they are not required to register or supervision, they are also part of the financial sector.

The size, composition and integration of the Swedish FinTech industry

The FinTech companies make up a particularly volatile segment of the financial sector, but there are indications that the Swedish FinTech market is currently in a consolidation phase. During 2000–2020, over 500 FinTech companies started up in Sweden, of which 450 were still in operation in 2019 (Ingram Bogusz and Andersen, 2020). Being the capital of Sweden, Stockholm is the obvious FinTech centre in the country, harbouring almost 400 of these companies (Gromek, 2018; Invest Stockholm, 2019). The fact that a decreasing number of companies enters the market,

while the existing companies expand, is one indication that the FinTech segment is consolidating. The continuing and rather rapid increase in numbers of employees in the sector and in its contribution to GDP (Ingram Bogusz and Andersen, 2020), further confirms that this business domain is about to consolidate. The number of FinTech employees has also increased from around 300 in 2000 to somewhere between 6000 and 10,000 in 2018, and over 95% of the member companies of the Swedish FinTech Association surveyed in 2020 stated that they were currently expanding their operations and needed to recruit new staff (Swedish FinTech Association, 2020; 2021).

The majority of Swedish FinTech companies are nevertheless rather small. On average, they had just below 40 employees in 2016, and in 2020 approximately 60% of the Swedish FinTechs employ fewer than 10 staff. However, approximately 30% of the employees in the sector work in companies with more than 200 employees (Ingram Bogusz and Andersen, 2020). There thus exist a few fairly sizeable FinTechs, spearheaded by the credit institution Klarna, with around 3,500 employees. Another rising star during the 2010s was payment company Izettle, which employed almost 500 staff in 2019, before being integrated into the Paypal family⁴.

Looking closer at the workforce, the staff in Swedish FinTech companies is male dominated. Only around 25–35% are women, although the in recent years (Gromek, 2018; Ingram Bogusz and Andersen, 2020). Most staff are highly educated, with economics, finance or management-educated staff making up around 40% of the workforce, and individuals with an engineering/IT education accounting for around one-third. Around one-third of staff have been recruited from within the banking and finance sector, and another third originate from the software/IT sector. The majority have 5–10 years career experience prior to being recruited, and most are recruited from Sweden, with around 20% coming from abroad.

As for the niches that Swedish FinTechs occupy, one study from Ingram Bogusz and Andersen (2020) states that credits, payments, and infrastructural services are the largest niches, with approximately 15% of the FinTech companies operating in these areas. Asset management companies have a slightly lesser share of the companies, followed by consultants, data, insurances, and RegTechs in descending order.

Although some FinTechs are “born global”, a common trait is to start the expansion nationally, and then expand to the Nordic countries before going global (Swedish FinTech Association, 2020). The larger FinTechs have a tendency to broaden their services as they grow, and there are examples of well-established FinTechs partnering up with new start-ups or sister companies to provide new services and products. There is, however, a trade-off in doing so: it is often more beneficial to scale up existing services, than expand into new areas, since that creates complexities that make a company “slow on its feet”, as one interviewee from the FinTech sector explained. The problem with this is that the Swedish market is rather small, which is why the EU strategies of improving the EU internal market for financial services are considered to be important for Swedish financial actors (Ingram Bogusz and Andersen, 2020). Another important strategy for FinTechs, enabling

⁴ See Izettle webpage: <https://www.zettle.com/se>

them to expand, is to partner up with banks or BigTechs/TechFins who already have a large customer base.

Facilitating factors for FinTech growth in Sweden

The growth of the Swedish FinTech sector is related to high levels of investment, which in terms of investment/capita in 2014–2015 outstripped both the UK and Germany. In addition, Sweden has a high proportion of programmers and system developers, and is often portrayed as a very innovation-friendly country (Finansinspektionen, 2017a; Gromek 2018; Ingram Bogusz and Andersen, 2020; Omberg, 2020). The FinTech development in Sweden is related to the early adaptation of new technologies in both the banking sector and among consumers in general.

Important technology milestones in banking were the establishment of the first internet bank in 1996, the personal digital identification system BankID in 2003, and the mobile payment system Swish in 2012. All of these were established by traditional banks, which today generally have a high level of digitalization, as seen in the European context (Riksbanken, 2017; 2019b; Swedish Bankers' Association, 2019). As in the UK, online lending and FinTech payment services, and investment/crowdfunding platforms developed quite early, with payment, lending and investment/crowdfunding platforms. Actors such as Klarna (est. 2005), Trustly (est. 2008), iZettle (est. 2010), Trustbuddy (est. 2010–2015), Lendify (est. 2014) and Tessin (est. 2014) are some examples of forerunners in Sweden that have been successful in establishing these types of businesses (Bertsch and Rosenvinge, 2019; Riksbanken, 2019b; Swedish FinTech Association, 2020).

On the consumer side, Sweden has long benefited from high levels of internet and smartphone access, with a widespread use of credit cards and digital payments. In 2018, only 10% of Swedes used cash to make their latest purchase, and around 90% of those with smartphones used the BankID app for digital banking services (Riksbanken, 2019b; Swedish Bankers' Association, 2020b). Another factor creating opportunities for FinTechs is that customer mobility in traditional banks is high. Many are customers of more than one bank, and it may seem less of a big step to use FinTech services in combination with traditional bank services (Bankföreningen, 2019a).

This development in digital payments made the Swedish central bank feel compelled to prepare for a cashless society by launching a project to introduce the first digital state currency, e-krona, based on block chain technology to guarantee general accessibility and a strong trust base for digital payments (Riksbanken, 2019a). If established, the e-krona would likely stimulate the FinTech sector further, since it would make FinTechs less dependent on the traditional banking sector and reinforce the opening up of the value chain of traditional banking in line with the open banking development advocated by the EU digital strategy (cf. Swedish FinTech Association, 2020).

Integration of the FinTech Community

In recent years there has been a trend towards an integration of previously more informal networks and communities in the FinTech sector. There are, of course, still smaller informal networks linked together by joint “workplaces” – physical or platform-based ones, such as WeWork, Antler, etc., and looser networks based on shared educational backgrounds or courses taken at Stockholm Business School or Hyper Island, “which also connects parts of the community”, as stated by one

interviewee from the FinTech sector. However, a number of formal organizations have lately emerged with the ambition to integrate FinTech companies in a community, increase the sharing of experiences, and mediating contacts with relevant actors such as authorities, or financiers and consultants. They also distribute information to members as well as create events and network meetings to support FinTech companies.

The Swedish FinTech Association is one of the most active organizations, established in 2017 to strengthen the FinTech community and create a voice for FinTechs in relation to authorities and politicians. In 2020, the association had approximately 75 member companies. The Swedish FinTech Association takes part in dialogue and consultation processes both with Swedish authorities, such as the Financial Supervisory Authority, The Ministry of Finance, The Swedish Central Bank, the Swedish Consumer Agency, and with the European Commission. It also liaises with The Swedish Bankers' Association (SBA), politicians engaged in the FinTech business, and FinTech hubs in Nordic and other European countries.

FINDEC, Stockholm's FinTech Hub, is another organization, started up in 2018, aiming to support their members accessing the wider eco-system of actors that is of relevance to them: e.g. financiers, consultants, banks, big companies and trading organizations, and authorities, nationally as well as internationally. They also share information and know-how with their members, and help match actors with each other. FINDEC targets start-ups up to a size where they "grow out" of the hub, while remaining as network contacts. At the outset in 2018 they had approximately around 50 members, and at the beginning of 2021 around 130.⁵

In 2020, the Swedish Central Bank also supported the creation of a BIS Innovation Hub (BIS, 2020) for the Nordic–Baltic area in Stockholm; this will be created in collaboration with Denmark, Iceland and Norway. The aim of the hub is to identify and analyse critical trends in technology, develop technologically developed utilities improving the functioning of the financial system, and arrange events to promote the exchange of views and knowledge-sharing (Finance Committee's Report, 2020; Riksbanken; 2020).

These organized communities also facilitate communication and integration with similar communities abroad – particularly in the Nordic countries, but also in the EU and beyond. In addition, representatives for these FinTech community organizations are often included in reference group constellations both in Sweden and in Europe. They interact and are invited to events with, for example, the Bankers' Association and the Financial Supervisory Authority, and there are also representatives involved in the EU consultation processes.

The implication of FinTech for traditional banks – competition and co-operation

One main assumption about FinTech development is that the traditional banks are facing a new kind of competition from FinTech firms. Although the big banks still play a crucial role in providing the basis and stability of the system, it is no longer a given that they provide the best package of services to their customers, or that the one-stop-shop business model of large banks –

⁵ <https://findec.co>

providing all services to a customer – will endure. The Swedish Bankers’ Association does also state that their members must be sensitive to the fact that the choice of service provider will become more and more specific in relation to which products or services customers demand (Swedish Bankers’ Association, 2019a). In addition, FinTech development increases competition between traditional actors. An important example of this is the success of the open banking platform provided by Tink (est. 2012). Their product made it possible for customers to access information about accounts and financial transactions in one place while using different financial actors, thereby making it easier to use a range of financial services from different providers.

The traditional banks, with the Swedish Bankers’ Association at the forefront, explicitly declare a positive view on the open banking trend. Along with interviewed bank representatives they state an appreciation for the opening of the value chain in banking for competition and specialization through platform-based services. The reason is that this meets the demands from customers, and this development “will make sure that the most competitive products are provided to the end-customer, in every product category” (Swedish Bankers’ Association, 2019a, p.46). The new FinTech challengers do then play an important role for banks in pushing them to stay open to innovation, and thus direct the whole sector towards the continual development of modern technology. As challengers, they shoulder an important role in pushing the banks to keep up with the demands of customers and innovate their business models. At the same time, FinTechs also emerge as actors that supplement the banks with services or products that they have difficulties in providing – as stated by a bank representative:

What FinTechs come up with is usually their thinking around a specific problem, or a specific area where there is a potential to offer a new service based on components from the bank. Sometimes it can be the [...] that the bank itself sees that this is needed but has no incentive to make that change. Because in fact, that implies that you disrupt yourself, or that you compete with an existing service. [...] [But] we need to make this change to keep up in the future [...] Where there is a revenue potential or really room for improvement. That is how I see FinTechs driving the change, based on what the user needs; in areas where banks may not be able to do it.

The quoted interviewee underlines that FinTechs have a complementary function. As the FinTech business is becoming more mature and consolidated, the banks have also changed their views and strategies in relation to the FinTech business. They are engaging increasingly more with each other, forging what sometimes emerges as an ecology of business, where the relationship between them is becoming more entangled, involving both co-operation and competition between old and new actors. As stated by the Bankers’ Association this development together with the technological development has forced all actors on the market to invest even more in innovation and co-operation (Swedish Bankers’ Association, 2017). One interviewed representative from the FinTech sector gives this description of the change:

Three or four years ago, or so [...] the banks kept a bit more distance, and thought more like: “Well, yes, we’ll see if they can compete with us; they probably will not be capable of that.” While now, there is much more of a willingness to collaborate, and to find the right company to collaborate with.

Today, the emergence of an ecology of collaborating banks and FinTechs is crucial, providing yet another indication of a consolidating business. The increasing exchange of information and openness to new ideas is also well illustrated by the Swedish Bankers’ Association, establishing

the Swedish API Forum in 2019, as an arena for discussing open banking and how to create functioning API solutions subsequent to the second EU payment services directive PSD2 (Swedish Bankers' Association, 2019b). In fact, Swedish banks and the Bankers' Association, having previously referred to FinTechs as challengers and potential competitors, today regard them more as resources necessary when they encounter another wider and more concerning development related to BigTechs/TechFins stepping into the banking and finance market (Swedish Bankers' Association, 2019a). A representative for a big bank elaborated on this change:

...twenty years ago it was banks competing with banks. And then, ten years ago you had banks that competed against banks, but also [...] with different types of FinTechs that started to come up. But today, it is rather the case that [...] banks co-operate with FinTechs. [...] FinTechs have an agenda that is to a greater extent collaborative than directly competitive. [...] It does not have to be collaborative-oriented in the entire value chain, you may collaborate with the bank on infrastructure but are competitive in the distribution chain, for example. [...] The competitive situation now, for both banks and other smaller FinTechs, is perhaps rather the somewhat larger BigTechs, and giants like Google and Amazon and Facebook and Apple.

Despite this emerging climate of co-operation between traditional banks and FinTechs, co-operation is not always easy. There are a number of organizational and regulatory obstacles for Swedish banks to partner up with FinTechs. In part these difficulties have to do with banking secrecy, which means that everything has to be done in-house, because of the banking regulation. Banks are subject to many compliance regulations, and they are generally risk-averse, which makes the onboarding of FinTechs and their products or ideas complicated. Such constraints may, according to some interviewees, come as a bit of a shock for FinTech staff entering bank organizations, with their more complex development processes and regulations.

Keeping up with the competition while blurring the boundaries between banks and FinTechs

By partly being a driving force behind FinTech development, traditional actors like the banks are also blurring the boundaries between traditional actors and FinTechs. The traditional banks have been driving the development towards digitalized and internet-based services for a long time, and they are active developers and users of FinTech, besides providing the foundation for many FinTech products and services. There is, of course, also a development in and between the big banks in trying to stay ahead of the market. One example of such ongoing projects is the P27 Nordic Payments project, in which six Swedish, Danish and Finnish financial banks are working to develop a new integrated Nordic payment infrastructure for real-time payments within and between the Nordic countries (Swedish Banker's Association, 2020a).

To keep up with FinTech competition, banks are nevertheless moving into areas in which they have not previously been active; for example, by offering subscription services on their customer platform that provide customers with proposals for cheaper electricity and electricity contracts. In our interviews with representatives from banks, it is evident that they have to meet customer demand to combine in-house services with services based on open banking, new technological solutions, and digital user interfaces. They have to meet their customers "where they are", and one example of that is how they are forced speed up the process of supplying loan commitments through digitalized and automated administrative functions. As regards staffing, this development means that units working with open banking and robotics have expanded within the traditional banks as well.

Looking at the development beyond the national scene, banks in Sweden are also contributing to the development of Artificial Intelligence (AI) and international standards in the sector. The first wave of using AI technologies is already happening in some of the banks, in areas such as compliance, chat bots in customer service, routine customer queries and integrated sophisticated machine-learning techniques such as risk-assessments and detecting financial crime and fraud targeted at customers (Swedish Bankers' Association, 2020b, p.43).

Besides developing their own FinTech units, products and services, an important strategy for traditional banks in meeting the challenges and opportunities from new FinTech companies is to buy them. Or rather, to buy their ideas and adjust them to products or services which they can integrate in the bank's own product line or customer interfaces. This is in many cases an easier solution than to partner up with FinTech firms in co-operation, because of the complex regulatory structure delimiting the possibilities for co-operation for a bank. One bank representative explains:

...when there is a FinTech company that has come up with a good smart solution, they are usually bought. So that you actually buy the product, you buy the idea. Precisely because we have a hard time writing agreements [...] you [would] have to write an incredible amount; legal agreements. Which means that the FinTech company would not be able to deliver what you really need. Then it is easier to buy the idea. And so one implements according to all the rules, in the old systems.

By buying ideas, the quoted interviewee points out that they may avoid difficulties linked with demands for agreements and the awareness of legal preconditions. However, finding good ideas is also time-consuming. The traditional banks are not just waiting for new FinTech start-ups to come knocking on their door with their services, but there is a rather active "scouting" for new ideals and possible product or services solutions. This is focused predominantly on the Swedish and Nordic countries, but also the Baltic area, India and beyond. In order to capitalize on new ideas and technologies to develop customer services and products, some of the big banks have also developed their own FinTech hubs and invest in certain new start-ups – similar to large card issuers having their own Accelerator programmes.

Implications of regulatory structures for Banks and FinTechs

The issue of how the operations of FinTech-companies' products and services are covered by existing regulation is an important one. As noted by the Swedish FinTech Association (2020), existing regulation is difficult to comprehend for start-up companies developing new technical solutions and business models. For them, the existing regulations often represent an overcomplicated "patchwork", creating difficulties by slowing them down and generating costs for hiring legal consultants. In particular, the Swedish central bank, the Financial Supervisory Authority, and the Bankers' Association point to uncertainties linked with the demarcation between licence-required and non-licence-required operations, which makes it difficult even for the authorities to manage whenever they encounter the types of new business models and technological solutions that are typical for FinTechs (Finansinspektionen, 2017a; Riksbanken, 2017; Swedish Bankers' Association, 2020b). The Supervisory Authority also acknowledges that the lack of knowledge of how to address these types of regulatory complexities among smaller FinTechs is a competitive disadvantage on the market (Finansinspektionen, 2017a).

There are also some areas shaped by rapid technological development where it is particularly hard to understand which principles apply. When the Financial Supervisory Authority in 2017 organized open discussions with representatives from companies working with FinTech, three such areas were emphasized: cloud-based services, the use of block chain, and AI (Finansinspektionen, 2017a). From the point of view of the Supervisory Authority, the underlying problem fostering difficulties for FinTechs engaged with all these areas is the lack of joint regulatory standards in Europe, and the fact that no one has so far addressed the need to create a joint licence for crowdfunding:

The lack of a common European regulatory regime for crowdfunding creates barriers for cross-border expansions of successful crowdfunding services. What is considered a regulated activity in one country cannot be passported to another country without burdensome legal requirements, if at all, due to prohibitions. (Finansinspektionen 2017b, p.2)

Advocating technology-neutral regulation

Both the Swedish Financial Supervisory Authority and the Banker's Association emphasize the need for a level playing field in both national and European markets, when discussing FinTech. The general principle advocated is technology-neutral regulations. That is, the same regulations should apply to all actors, regardless of whether they are AI-based or more traditional (Finansinspektionen, 2017b; Swedish Bankers' Association, 2017; 2019a). The main principle advocated is "same services, same risks, same rules and same supervision" (Swedish Bankers' Association, 2020b, p.2). One issue facing the Banker's Association in this regard is that some services, particularly crowd-funding platforms, have less stringent regulations compared to other financial companies (Swedish Bankers' Association, 2020b, p.13f). This kind of reasoning is also put forth in the interviews with representatives for banks: that banks must comply with stricter regulations and tougher supervision, giving FinTechs a competitive advantage:

We have had to develop our products so that we still follow all legislation under the Financial Supervision Authority. And that is why it also takes much longer to develop the products than it does for a FinTech company not subject to the Swedish Financial Supervisory Authority. [...] They do not have the same regulations at all regarding anti-money laundering, so they do not have CFT-rules [Combating the Financing of Terrorism] either. So, there is a huge difference. We must have much stricter control over what money goes through our systems than a FinTech company does.

The Banker's Association states that banks are the institutions that secure the trust in the system as a whole, and that it's necessary to avoid the risk that confidence-damaging activities from newcomers may affect trust in banks. This is also highlighted in interviews with bank representatives:

Our banking licence is very important, but perhaps the most important thing we have is the customer, and their trust. [...] That we are trusted to handle their money. That they trust that we do things in the correct and proper way. They trust that money is not laundered in the bank's environment. [...] Both [from] consumers and companies. Extremely important. It's like a big part of our brand.

The problem according to the banks is that they as incumbents on the market may become a kind of "back-end distributor" for companies with which they have no contractual relationship. And as

the newcomers with fewer regulatory requirements, in term of capital, liquidity governance, and risk processes, and subject to less supervisory monitoring e.g. in terms of AML/CFT principles, the banks may be impacted by other actors' dealings (Swedish Bankers' Association, 2017; 2020b). Such issues are, naturally, not limited to the national-level financial system, and the Banker's Association and the Financial Supervisory Authority consequently advocate technology-neutral legislation across Europe (Swedish Bankers' Association, 2020b, p.6).

It's important to note in this context that representatives for the Swedish FinTech community also argue for technology-neutral regulations. However, they also point out that the existing rules actually make it harder for newcomers in the business; the regulation is said to be constructed on the basis of the incumbents' business models and technology. One representative from the FinTech sector states that: "Legislation and regulations are built around these old big banks, and it is very difficult as a new type of actor, with a new type of service or product, to come in and compete on the same terms."

Sandboxes vs innovation centre and knowledge hubs

Internationally, sandboxing has been one way to deal with many of these regulative complexities, making it easier for FinTechs to experiment with new technological solutions and business models in a supervised environment. Also in Sweden, both the FinTech business and venture capital companies investing in the sector have requested this kind of safe environment, allowing them to experiment with technologies and business models (Finansinspektionen, 2017a). However, after investigation, the Swedish Financial Supervisory Authority has rejected such measures for several reasons. First, the SFA is not tasked with facilitating competition, which is the case, for example, for some of their counterparts in other countries (Finansinspektionen, 2017a). Secondly, they argued that any derogation from regulations would constitute a problem for competition, and that there already exist licensed financial activities with lower entry rules – such as payment service activities and lending not related to mortgage loans. Thirdly, by pointing out that there is no obligation for them to intervene in activities "if an established breach of the rules is minor or excusable and the company rectifies the deficiency" (Finansinspektionen, 2017a, p.25), the Authority also claims that there is already some leeway for actors eager to experiment with new financial technologies and business models.

The Swedish solution was instead to increase information and knowledge, so that FinTechs could test their products in communication with the Supervisory Authority. They established an innovation centre at the SFA in 2018, to initiate dialogue with FinTechs and arrange seminars and information sessions (Finansinspektionen, 2017a). Unfortunately, this innovation centre has not made a great impression in the Swedish FinTech community. Few have been in contact with the centre, and those who have have received weak feedback (Ingram Bogusz and Andersen, 2020).

The traditional banks with the Bankers' Association at the forefront, however, support this focus on increased information and dialogue before a sandbox (Swedish Bankers' Association, 2017). They also support the Swedish Financial Authority's suggestion that sandbox regulation should be harmonized across Europe, and that innovation hubs are preferred over experimental sandboxing activities:

We would recommend an “innovation hub-scheme”, a framework that provides instructions on what is best practice and to enhance communications between supervisors and innovators of all sizes. It is difficult to find solutions that suit all parties, hence innovation hubs in contrast to sandboxes can be a platform to help all innovators to reduce their time to market whilst maintaining the level playing field (Swedish Bankers’ Association, 2020b, p.28).

Obstacles for utilizing new financial technology in FinTechs and banks

Besides the difficulties relating to regulation, mobilising a wide range of resources (including both funding and recruitment of the right competences), are said to foster even greater challenges for many FinTechs (Ingram Bogusz and Andersen, 2020). As for recruitment, a survey from the Swedish FinTech Association reported that two-thirds of the member companies needed software developers – the staffing category which is the hardest to fill (Swedish FinTech Association, 2020). One aspect of the problem is that competent employees are changing jobs quite rapidly, particularly software developers. Still, finding staff with both technical and financial skills is rather difficult, and over 50% of the companies stated that they are now either recruiting workforce from abroad, outsourcing some of the technical competences with the support of recruiting companies, or hiring consultants for projects with shorter timespans. The interviews with representatives for the FinTech sector confirmed these recruitment issues – and solutions:

The type of skills that the FinTech industry requires: [...] that you have a tech background or that you are an engineer or programmer or developer, but also have an understanding of the financial industry and the financial systems. That combination of educations does not exist in Sweden today, and that means that you may instead outsource your technical department, and place it abroad.

The quoted interviewee refers to the lack of opportunities for education within the domain. Against this background, the Swedish FinTech Association also states that it would be beneficial if new educational programmes in financial engineering were to be introduced at Swedish universities, and they point to the Lithuanian programmes as a role model. A strengthening of such connections between the sector and the universities is also suggested in the state-commissioned report by Ingram Bogusz and Andersen (2020) . In addition, it has been suggested that simplifying the regulations regarding employee stock options could make it easier for the business to recruit the skilled staff they need (Ingram Bogusz and Andersen, 2020; Swedish FinTech Association, 2020).

Another problem that many of the smaller FinTechs face is difficulty in accessing parts of the financial infrastructure, such as bank accounts, Swish and BankID, since the banks function as gatekeepers (Ingram Bogusz and Andersen, 2020; cf. Swedish FinTech Association, 2021). As discussed above there is a forum for dialogue between banks and FinTechs in discussing API solutions, but from the FinTechs side of things, things develop rather slowly, and it appears difficult to find standardized solutions for them. Open banking functions are still missing in both large insurance and pensions companies. Crypto currency companies experience particular difficulties in accessing banks, as they may not even be accepted as bank customers, or by authorities not accepting digital signatures. In addition, some companies had difficulties arranging insurance. As asset insurances are a requirement for being licensed by the supervisory authority, this could be a major obstacle. A few actually stated that given these challenges they have now turned to the international banking market, instead of trying to set up in Sweden (Ingram Bogusz and Andersen, 2020).

Turning to the banks' perspective, they also see issues regarding regulations which are an obstacle to fully utilizing the potential of financial technology. As for the internal environments of banks, some interviewees expressed a difficulty in being tied up in complex systems, based on old programs in COBOL. These systems are often good at handling, for instance, transactions quickly, but may be problematic in communication with the types of mobile applications increasingly used today. In addition, some of the access problems reported by FinTechs apply for some members of the Banker's Association. To the Banker's Association, this is a reason for them to support further developments of open banking, but they also emphasize that this is dependent on the development of better digital (pan European) identification solutions, and a harmonization of technical standards. However, a key condition for this is, according to the Banker's Association, that customers have a sound understanding of data sharing:

There is a risk that customers who “click a box” on terms and conditions for a service do not fully understand what this would mean with regards to their data being shared and used by another actor. We have seen many examples of this in the past. For example, when a third party (prior to PSD II as regards payment initiations) asks the customer to log-in to his/hers accounts to do payments or put together a financial overview, through so-called screen scraping, the customers are usually not aware that they have opened up the full access to their internet bank to the third party. (Swedish Bankers' Association, 2020b, p.38).

This quote illustrates that it is crucial to figure out how to address a rather complicated awareness problem among customers. Related to this issue, the Banker's Association also highlights the need for improved digital literacy among their customers, and that this needs to be developed in co-operation with state authorities, so that educational efforts and information can become “channel- and technology-neutral” (Swedish Bankers' Association, 2017, p.11).

Collective organization and employment relations in Swedish FinTechs

Trade union membership density across the entire financial and insurance sectors in Sweden have over the last decade been near to the mean for the private sector: around 65% of the employees in the sector are union members. The collective agreement coverage in the sector is slightly higher, with around 70% of employees in the banking sector being covered. The reason that these figures are higher is that all employees are covered if a company is a member of an employer organization signing the agreement, irrespective of whether or not the employee is a union member . Since FinTechs also may be considered to be part of the Tech sector, we might note that trade union membership figures for engineers engaged in tech are comparable to those in financial and insurance (Eurofound 2019; Kjellberg, 2019a; 2019b).

The situation in FinTech businesses is rather different. When checking available membership lists at Swedish employer organizations, we only found eight of the over 180 member companies of the Swedish FinTech Association and Findec. One of these FinTechs was a member of the Swedish Banking Institutions' Employer Association – which is the largest employer association in the banking sector, signing collective agreements with the largest trade union in the Swedish financial sector, Finansförbundet. The remaining seven were members of the IT and Telecom-companies subdivision of Almega – the employer organization for the Swedish service sector, which signs collective agreements with Unionen, the largest trade union in the private sector, representing

white-collar workers across the private sector. Two of the companies belonging to employer organizations were large (approx. 500–650 employees), one was smaller (approx. 120 employees), one had slightly below 50 employees, and the remaining five companies were small businesses (approx. 5–10 employees).

Since we couldn't find membership lists of all subdivisions of Almega, these figures aren't robust, but they indicate that around 5–10% of the FinTech companies are members of an employer association. Based on the fact that these companies cover approximately 1200 employees, an informed guess would be that somewhere around 12–20% of the employees in Swedish FinTechs are covered by collective agreements – whether or not they are members of a trade union. Still, we should consider these figures to be speculative, as they are based on information from the internet. In this context it is also important to highlight that the total number of employees in the sector is uncertain and depends on how we define what a FinTech company is – something that becomes increasingly difficult as the boundaries between banks, established financial services and FinTechs are blurred.

When interviewing representatives for FinTechs and trade unions, it seems that there is a mutual lack of knowledge, and even disinterest. The FinTech representatives state that they have few contacts with trade unions and employer organizations. The FinTech community actually seems a little uncertain about what benefits the social partners could bring them. Many of the FinTechs are small and have no collective agreements, but rather work “in their own way”, which is not to say that they mistreat their staff. They state that they cannot do that, since their employees know their worth and would resign if they were unhappy with working conditions. In more established companies at least, employers must take care of their staff, according to interviewees from the FinTech sector:

We do not have a collective agreement today, and this is not something that has been requested by anyone either. As we see it, we do not really see any need. We try to have conditions that should be absolutely as attractive as if you had a collective agreement, and we handle the staff in the same way. There it's no such thing as foul play, in any way. We have a pension plan that reflects an ITP1 [Collective agreed pension plan], and we have insurance. And then, another part of it is to have a dialogue going on [...] with our employees. [...] I have worked within the banking agreement, I have also had agreements on the real estate side with Almega, so I'm used to working with those organizations, but it feels very far away for us.

As regards salary levels, the company which this respondent represents tries to benchmark wages and finds that ongoing recruitment keeps them aware of the applicable salary levels. Although they do not have a collective agreement, they still offer the 30 days in line with the collective agreements in the sector. However, they do acknowledge that some staff might struggle to stop working at the end of the day, which is said to be typical for employees in tech firms. Still, employees have their own demands on having leisure time, and relatively young staff have clear expectations on also having fun at work. In addition, as mentioned by one interviewee, employees may have fairly high expectations of getting to work on interesting and important projects. If they are not happy with the products or organisations, they will have no problems moving on, because of their expertise.

The high turnover in the sector forces at least the larger FinTechs to work on their corporate culture to retain employees – who generally know their worth. A representative from a medium-sized FinTech states that they try to keep a dialogue going with employees, and also make things as transparent as possible to them. When asked about continuing professional and skills development, that is said to be something very much taken care of by the employees on their own initiative. However, the company has created an empowering-coach role to support employees in their development, and tries to organize cross-team learning, to expand and develop competencies.

Representatives for the FinTech communities also confirm that FinTechs do not consider that there is much need for collective agreements, at least not for smaller FinTechs. They don't have a typical structure, with things often being rather entrepreneurial and chaotic – in comparison to more established FinTech companies. The Swedish model of industrial relations is said to be more applicable to “old types of industries; that is, manufacturing companies”. FinTechs find that the sectoral trade union Finansförbundet seems to be more focused on traditional banks, and they are uncertain as to which employer association would best suit FinTechs.

Representatives for trade unions seem to largely confirm this picture. The lack of interest in trade unions is attributed to the fact that FinTechs employ young and highly educated people, and more software programmers, as compared to traditional banking, finance, and insurance companies:

Usually, it is much younger people who work in FinTech companies. And they do not know what requirements you should have regarding how occupational pensions and the like should be paid. Clearly, if you come out newly graduated and you are between 20 and 25 years old, then you only see the final figure on the salary spec. down there, and think “this is awesome”. So, we have a hard time catching up with these employees, to get help with pressure from below to get a collective agreement. Because, young people are immortal, and think that: well I have a great salary. [...] We have an important role to inform them that you have to think ahead: remember to be part of the unemployment insurance fund; remember that you should have income insurance; remember that you must pay into an occupational pension. [...] Which means that we are often perceived as square.

In this quote a union representative emphasizes that they struggle with how to address the new and young category of FinTech employees. Rather than being members of their union, this category of employees was thought to better fit in another trade union, which represents self-employed persons often working in the Tech business. A representative from one of the unions also stated that they refer FinTech companies who want to join unions to another union. However, a representative from that other union stated that they considered this category of companies and employees to be the responsibility of the first union. Naturally, none of these unions would reject requests from employees to join their union; they do not say no to having FinTech employees as members. Still, there seems to be some hesitancy regarding employees of FinTechs. The fact that these two Swedish unions reached an agreement to jointly address uncertainties surrounding the admission of new groups on the labour market further confirms that this is a challenge that they take seriously. Since FinTechs are such a small part of the banking and finance labour market we can, however, point out that employees in this sector face a risk of being perceived as less interesting to the unions – and to recruit members in these companies might not even be in the best interest of their current members, since the employees in these small start-ups are at a higher risk of being unemployed.

At the same time, trade union representatives in the banking finance sector also see a need to replenish their gradually decreasing membership base, and perhaps take inspiration from the development in some sectors where trade unions are acting increasingly more as a service organization, offering help with negotiations or other services needed by employees. In addition, the Danish development (see chapter 6) in establishing an employer organization for FinTechs and signing a collective agreement with their sister organization may inspire Sweden and awaken an interest in FinTech employees in the Swedish unions.

References

- Bertsch, C., & Rosenvinge, C.-J. (2019). FinTech credit: Online lending platforms in Sweden and beyond. *Sveriges Riksbank Economic Review*, (2019:2), 42–70.
- BIS. (2020). *BIS Innovation Hub to expand to new locations in Europe and North America* [Press Release – Online]. Retrieved from <https://www.bis.org/press/p200630a.htm>
- Bogers, M., Sims, J., & West, J. (2019). What Is an Ecosystem? Incorporating 25 Years of Ecosystem Research. *Academy of Management Annual Meeting Proceedings*, 2019(1), 1–29. <https://doi.org/10.5465/AMBPP.2019.11080abstract>
- Eurofound. (2019). *Representativeness of the European Social Partner Organisations: Banking Sector*. Dublin: Eurofound. Retrieved from: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19010en.pdf
- Finansinspektionen. (2017a). *FI's role regarding innovation* [Online]. Retrieved from: https://www.fi.se/contentassets/d3cd30fe473d4a7995f0c38209ddb7f1/fintech_report_engny.pdf
- Finansinspektionen. (2017b). *Finansinspektionen's response at the webb-survey, to the Commission Consultation on FinTech* [Online]. Finansinspektionen. Retrieved from Finansinspektionen website: https://www.fi.se/contentassets/6ff715b42b0342cf99ae9046930f3617/eusvar_fintech.pdf
- Finansinspektionen. (2020a). *Bankbarometer [Bank barometer]*. [Online]. Retrieved from: <https://www.fi.se/contentassets/ed24e65bc14a450cb7c38d315a14a6c4/bankbarometern-12-november-2020.pdf>
- Finansinspektionen. (2020b). *Tillsynskategorisering av svenska kreditinstitut och utländska kreditinstituts svenska filialer för 2021*. Retrieved from: <https://www.fi.se/contentassets/0ba815d50b964a128b20e961f86da9ce/tillsynskategorisering-kreditinstitut-filialer-2021.pdf>

- Finance Committee's Report [Finansutskottets betänkande]. (2020). *Ändring i riksbankslagen till stöd för samarbete med internationella organ* (2020/21:FiU7). Retrieved from: <https://data.riksdagen.se/fil/74CCF52C-8734-45FE-85DA-B6671161B5E5>
- Gromek, M. (2018). *Stockholm FinTech Report 2018*. Stockholm: Stockholm School of Economics. Retrieved from: <https://www.hhs.se/en/outreach/sse-initiatives/documents/stockholm-fintech-report-2018/>
- Hagberg, J., Hauff, J. C., Elliot, V., Magnusson, J., & Nilsson, J. (2021). *Försäkringsbolaget i de digitala ekosystemen – nya former av intermediering*. Gothenburg, Sweden: University of Gothenburg. Retrieved from <http://hdl.handle.net/2077/69707>
- Ingram Bogusz, C., & Andersen, J. V. (2020). Svensk fintech. En kartläggning och analys av sektorn, dess innovationskraft och utmaningar [Swedish fintech. A mapping and analysis of the sector, its innovative power and challenges]. *Tilväxtanalys, PM 2020:20*. Retrieved from: https://www.tillvaxtanalys.se/download/18.4edb065c1770000029e12acf/1611139766297/PM_2020_20_Svensk_fintech.pdf
- Invest Stockholm. (2019). *Stockholm Fintech Guide* [Online]. Retrieved from: <https://www.investstockholm.com/globalassets/invest/reports/stockholm-fintech-guide.pdf>
- Kjellberg, A. (2019a). *Den svenska modellen i fara? Fack, arbetsgivare och kollektivavtal på en föränderlig arbetsmarknad. Statistik och analyser: Facklig medlemsutveckling, organisationsgrad och kollektivavtalstäckning 2000-2023*. Lund: Lund University. Retrieved from: https://lup.lub.lu.se/search/ws/files/90259432/Svenska_modellen_i_fara_Reviderad_2021.pdf
- Kjellberg, A. (2019b). Kollektivavtalens täckningsgrad samt organisationsgraden hos arbetsgivarförbund och fackförbund. *Studies in Social Policy, Industrial Relations, Working Life and Mobility (Lund University), 2019, Nr. 1*. Retrieved from: <https://lup.lub.lu.se/record/384bb031-c144-442b-a02b-44099819d605>
- Omberg, M. (2020). *FI's syn på finansmarknadens utveckling – med fokus på teknik och innovation*. Presented at the Swedish FinTech Association, Stockholm on 19th February 2020. Retrieved from: <https://www.fi.se/contentassets/a2c846e97b4e4863886a19c9cf07f8c3/malin-omberg-swefintech-arsmote-2020-02-19.pdf>
- Riksbanken. (2017). *FinTech – increasingly rapid interaction between financial operations and technological innovation* [Online] (FINANSIELL STABILITET 1/2017). Retrieved from: <https://www.riksbank.se/globalassets/media/rapporter/fsr/fordjupningar/engelska/2017/fintech--increasingly-rapid-interaction-between-financial-operations-and-technological-innovation-article-in-the-financial-stability-report-may-2017.pdf>
- Riksbanken. (2019a). *Finansiell infrastruktur i teknisk förändring [IN DEPTH - Financial infrastructure in technical change]* (FINANSIELL STABILITET 1/2017). Retrieved

from:

https://www.riksbank.se/globalassets/media/rapporter/fsr/fordjupningar/svenska/2019/finansuell-infrastruktur-i-teknisk-forandring-fordjupning-i-finansiell-stabilitetsrapport-2019_1.pdf

Riksbanken. (2019b). *Payments in Sweden 2019* [Online]. Retrieved from:

<https://www.riksbank.se/globalassets/media/rapporter/betalningsrapport/2019/engelska/payments-in-sweden-2019.pdf>

Riksbanken. (2020). *Remiss – Förslag till ändring i riksbankslagen [Referral—Suggestions for change to Riksbank Act]* (No. Dnr 2020-00113). Retrieved from

<https://www.riksbank.se/globalassets/media/ovrigt/bis-innovation-hub/remiss--forslag-till-andring-i-riksbankslagen.pdf>

Swedish Bankers' Association. (2017). *Discussion Paper on the EBA's approach to financial technology (FinTech)* (Position Paper – Ref. 2017/09/006 and EBA/DP/2017/02).

Retrieved from: <https://www.swedishbankers.se/media/3573/eba171106.pdf>

Swedish Bankers' Association. (2019a). *Competition in the Swedish Banking Sector*. Retrieved from:

<https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/2/502/1568187196/competition-in-swedish-banking.pdf>

Swedish Bankers' Association. (2019b). Svenskt API-forum [Swedish API Forum]. Retrieved

from: <https://www.swedishbankers.se/fraagor-vi-arbetar-med/betalningar/svenskt-api-forum/>

Swedish Bankers' Association. (2020a). *Banks in Sweden*. Stockholm. Retrieved from

https://www.swedishbankers.se/media/4617/2005_banks-in-sweden_2019_en03.pdf

Swedish Bankers' Association. (2020b). *Consultation on a new digital finance strategy for Europe / FinTech action plan – Swedish Bankers' Association's Response* [Position Paper – SBA 2020/06/26]. Retrieved from:

<https://www.swedishbankers.se/media/4699/sba-respons-to-consultation-on-a-new-digital-finance-strategy-for-europe-20200626.pdf>

Swedish Fintech Association. (2020). *Fintech rapport 2020. Möjligheter och utmaningar för en ny bransch [Fintech report 2020. Opportunities and challenges for a new industry]*

[Online]. Retrieved from: <https://www.swefintech.se/fintech-report-2020>

Swedish Fintech Association. (2021). *Fintech rapport. En växande bransch trots utmaningar [Fintech report. A growing sector despite challenges]* [Online].

https://www.swefintech.se/_files/ugd/3734a1_f20811cc4e1c42d89fc201e915128a2e.pdf

World Economic Forum. (2016). *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution* [Online]. Retrieved from

https://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

Chapter 4: The Netherlands

Alex Lehr

Actors on the Dutch banking and finance market

The banking and finance industry in the Netherlands is an important part of the country's export oriented, open economy, with assets that represent a value of roughly three to five times the Dutch GDP (van Kempen, 2021). The total number of businesses registered in the financial services sector⁶ has been slowly increasing in recent years and is currently just under 100,000 (CBS Statline, n.d. a). Roughly 90% of these companies are single-employee, private limited companies (CBS Statline, n.d. a), while there currently exist 400 public limited companies within the entire sector. About 85% of businesses in the sector are active in banking, including 285 of the 400 public limited companies, while insurance companies and pension funds constitute approximately 0.6% of businesses, with the remaining businesses active in other types of financial service provision (Ibid.).

The Dutch banking market is relatively large, and relatively concentrated (DNB, 2015), with a Herfindahl index slightly above 0.2 (DNB, n.d. a). The sector is dominated by a small number of large domestic banks: ING, the (co-operative) Rabobank, and ABN AMRO, combined with the somewhat smaller BNG Bank, NWB Bank and Volksbank group account for roughly more than 90% of all assets (banken.nl, 2020). There are, however, a number of smaller banks active in the market, some of which are branches of foreign banks, such as Citibank (HQ Ireland), Argenta (HQ Belgium), Commerzbank (HQ Germany) and DHB (HQ Turkey). The concentrated structure of the Dutch banking market is the result of numerous mergers in the 1980s and 1990s (Ibid.) and a consolidation of the market position of the largest banks after the 2007–08 global financial crisis. In total, there are about 40 traditional banks active, which are partially subdivided over multiple subsidiaries.

Dutch banks generally offer a broad range of banking services, primarily oriented towards the domestic market but also with a substantial international orientation (CFI, 2020). Retail banking (e.g. card payments and mortgages) and corporate banking are the most important activities for Dutch banks, with a more limited role for investment banking and private banking (van Kempen, 2021). The banks' role in financing business is very important, in particular for small and medium-sized companies (Ibid). Although traditional loans remain the primary mode of financing for companies, other more flexible forms of finance such as leasing and factoring are gaining popularity (Ibid.)

The central bank of the Netherlands (De Nederlandsche Bank [DNB]) is part of the European System of Central Banks (ESCB) and functions as an independent central bank, supervisor and resolution authority in order to safeguard the stability and reliability of the financial system (DNB, n.d. b). The DNB is a member of the Social and Economic Council of the Netherlands (Sociaal-Economische Raad [SER]) and the Central Economic Commission (Centraal Economische

⁶ Using the SBI 2008 standard for the classification of economic activities, which is in this case equivalent to NACE (rev. 2) sector K 'Financial and Insurance activities'.

Commissie [CEC]), which provide important platforms for policy influence. In its regulatory task, the DNB co-operates with the Netherlands Authority for the Financial Markets (Autoriteit Financiële Markten [AFM]), an independent administrative body whose board is appointed by the Ministry of Finance (AFM, n.d.). While DNB is responsible for prudential supervision (i.e. supervising a business's ability to meet its financial obligations), AFM is responsible for conduct supervision (i.e. supervising a business's conduct by means of inspections, enforcement and the transfer of standards). Both of these regulatory bodies regulate the admission of financial service providers to the financial market.

There are several important business associations active in representing the interests of business in the financial market. Most prominent is the Netherlands Association of Banks (Nederlandse Vereniging van Banken [NVB]), which represents the collective interest of Dutch banks and banks that are active in the Netherlands, and whose membership covers all major banks. NVB is a member of the European Banking Federation and the main cross-national peak employers' organization, the Confederation of Netherlands Industry and Employers (VNO-NCW, n.d.). In 2015, a separate employers' organization (Werkgeversvereniging Banken [WVB]) associated with NVB was established. WVB specifically represents the labour market interests of the small and medium-sized banks, for instance through involvement in negotiations on the sectoral collective agreement which, after the five largest banks switched to company-level collective agreements in 2000, only covers these smaller banks (with a combined employment of over 4,000 staff). Both NVB and WVB operate exclusively in banking, i.e., NACE 64.10 (Eurofound, 2019). By contrast, the Dutch United Payment Institutions (Verenigde Betaalinstellingen Nederland [VBIN]) is a business association founded in 2012 that represents the new, non-banking financial service providers and payment institutions that have emerged after the introduction of PSD2, which includes many FinTech companies.

There are three main trade unions active in the sector: FNV Finance, CNV Vakmensen and De Unie, which are tied to the three main trade union federations in the Netherlands, i.e. the 'socialist' FNV, the 'Christian-democratic' CNV, and the 'white-collar and skilled-technical professionals'-oriented VCP. Each of the three main trade unions active in the sector cover the entire finance sector and has a domain that also extends beyond it. In practice, the three unions all roughly target the same membership domain within the banking sector and are hence *de facto* in competition over members.

The size and composition of the Dutch FinTech industry

There is no independent registry data on the exact number of FinTech companies in the Netherlands. Holland FinTech (see below) reported over 430 companies to be active in the Netherlands in 2018 (Holland FinTech, n.d. a), with over 370 registered members in 2018 (Holland FinTech 2018) and 400 registered members in 2021 (Holland FinTech, n.d. b). A report for the Ministry of Finance by EY Advisory lists the figure for 2019 as 635 (van der Kroft et al., 2019). These figures include companies that employ very heterogeneous business models, including, for instance, 'regtech', 'insurtech' (insurance-related services), 'pensiontech' (pension-related services) and cryptocurrencies, which leaves roughly less than half which could be classified under a narrow definition of FinTech. Hence, an informed "ballpark" estimate of the number of narrowly defined FinTech companies in the Netherlands would be around 200–300. FinTech activity is

regionally concentrated around Amsterdam in particular, and more generally in the so-called Randstad area that covers the four major cities Amsterdam, Rotterdam, Den Haag and Utrecht. However, there are also smaller ‘hubs’ in other regions (van der Kroft et al., 2019).

Similar to the traditional banking market, the FinTech market is characterized by a small number of large companies and a large number of smaller companies (FinTech Aera, 2020). Major payment service providers, such as Buckaroo, Adyen, and Mollie, are successful, also internationally. The market concentration in the FinTech sector is also reflected in investment, with a handful of companies attracting a large portion of all investments (Ibid.). Mergers with, and acquisitions by, incumbents in the market are also common (FinTech Aera, 2020). Indeed, many ‘FinTech’ services are also in-house products of traditional banks, such as the popular direct money transfer app Tikkie provided by ABN AMRO. Note should be taken of the importance of lending, in particular P2P lending for FinTech in the Netherlands (Claessens et al., 2018; Holland FinTech, 2018) and the importance of financial service provision to SMEs.

In terms of active businesses, the FinTech market appears to be consolidating. After an initial period of strong market growth, the number of start-ups is reported to be decreasing, and the number of partnerships and acquisitions is expected to increase (Ibid.). Growth of the market, however, is generally expected to continue, as are profits (van der Kroft et al., 2019). A 2020 study by Holland FinTech (see below for a description of this organization) and FinTech Aera (a European Think Tank dedicated to the advancement of FinTech) reported that the 20 fastest growing companies together employed almost 4,000 persons in 2019, a 25% increase compared to 2018 (FinTech Aera, 2020), though again it should be noted that not all sampled companies can be narrowly defined as FinTech. Most companies have a small number of employees, but the major players are sizeable, e.g. Adyen employs over 1,700 people worldwide, Mollie and Bunq each have well over 100 employees. EY Advisory reports that in 2019, 52% of FinTech employees work in companies with 10 or fewer employees, and 3% of businesses employ more than 250 employees (van der Kroft et al., 2019). Employment seems to be increasing rapidly, with 85% of businesses in 2019 indicating that they intend to expand their workforce (Ibid.). The rapid growth of the market appears at present to be limiting the degree of competition that FinTech companies experience, but as the market consolidates, competition may increase, as illustrated by the following quote by the CEO of a relatively large and well-established FinTech company:

The market is growing [...] even if we do nothing, we gain 10 per cent revenue, in a manner of speaking. Everybody, all across the board. [...] [But] there will be more competition [in the near future] because at some point, we cannot all just keep growing.

[Facilitating factors for FinTech growth in the Netherlands](#)

The adoption rate of FinTech among consumers and SMEs in the Netherlands is among the highest in world (EYGM Ltd., 2019). The Netherlands boasts a comparatively good physical and digital infrastructure. In part due to its small size and small domestic market, the country is very internationally oriented, and also very well connected globally. Favourable legislation for financial sector oversight, a favourable tax climate and strong entrepreneurial support from the government are conducive to a healthy climate for tech start-ups, and also make the Netherlands an attractive location for large tech companies, with European headquarters or offices being set up by companies such as IBM, Microsoft and Google (FinTech Aera, 2020). With a relatively large

financial sector, a fast and compact (digital) infrastructure, and the generally high adoption rate of new technologies, the Netherlands therefore offers good conditions for the development of FinTech activity (Heinink, 2020). This is aided by eight well-connected regional innovation hubs. Amsterdam in particular has the ambition to become the FinTech capital of Europe. The comparatively high level of education in general, and in particular the presence of good (technical) universities, contribute to a large pool of suitable personnel (van der Kroft et al., 2019), with some 250,000 tech workers reported in Amsterdam alone (NFIA, 2020). The focus on digital literacy in the educational system, and strong language abilities, in particular English, are also important factors (Ibid.).

On the consumer side, widespread digitalization is certainly aiding FinTech activity, with 98% of households having (usually high-speed, broadband) internet access which ranks the Netherlands top within the EU-28. The country is also one of the leading countries in mobile internet usage and online purchasing in Europe. In 2018, 84% of individuals were already using their smartphones to access the internet, and 80% reported making online purchases (Eurostat, n.d. a; Eurostat, n.d. b). This is further aided by the large-scale adoption of technological developments in financial services in general. For example, cash payments are increasingly rare as contactless card payment and payment via mobile applications such as banking apps are very prevalent (Holland FinTech, 2018; van Kempen, 2020). Online banking is heavily promoted by FinTechs and traditional banks (de Best, 2021). In 2018, more than half of all e-commerce payment transactions were carried out via the bank transfer system iDEAL, which allows for the online use of debit cards and is supported by all Dutch consumer banks (Ibid.). Consequently, the adoption rate of FinTech is very high. This also extends to the adoption of FinTech by SMEs, for whom FinTechs may be an attractive alternative to fulfil their financing needs compared to traditional banks, financing from the latter potentially being harder to obtain due to regulatory pressures.

Overall, as illustrated by the following quote of a CEO of a relatively large FinTech company, the Netherlands is regarded as a very good environment for FinTech start-ups and scale-ups compared to other countries:

[...] we have a very different e-commerce landscape than the rest of Europe. We are used to paying online etc. We have a good infrastructure [...] and smaller businesses can really make a difference here. [...] FinTech can thrive easier, it's easier to gain consumer confidence, and that makes developments faster and more flexible. [This] implies that [...] traditional banks don't have the perks that they would have [for instance] in Germany, [where] banks may be more inclined to develop FinTech services themselves and more easily dominate the market than in the Netherlands.

Integration of the FinTech Community

The FinTech community is jointly fostered and represented by Techleap.NL (formerly StartupDelta), a public-private partnership initiated and funded by the Dutch Government in 2015, with the Dutch royal Prince Constantijn acting as special envoy. Its activities include the provision of knowledge and training programmes on the recruitment, retention & training of personnel (including the maintenance of the job board), upscaling and internationalization, and capital and investment; fostering connections through peer and expert networks (including the maintenance of the 'start-up finder' and 'science finder' webtools); and collaboration with government, university and academics towards developing industry-relevant technology (techleap.nl, 2022).

Another important organization that fosters and represents FinTech activity is Holland FinTech. This membership-based organization with varying revenue-based membership fees was founded in 2014. It primarily advertises itself as a network/ecosystem, providing a platform for engagement with the FinTech network, the sharing information and expertise, and the attraction of personnel. It regularly organizes events and publishes relevant news and reports. Though not classifiable as a business interest association in the traditional sense, there are some indications that Holland FinTech is increasingly taking on collective interest representation tasks, for instance by lobbying at the sectoral and national level.

The aforementioned business association VBIN is also important for the collective representation of FinTech interests. VBIN represents non-banking payment service providers, which includes payment institutions (enterprises holding DNB-issued licences for specific payment services), and exempt payment service providers (enterprises which are exempt from the licence requirement and are registered as such by DNB), in particular the new market entrants that emerged with the introduction of PSD2. VBIN represents its members in the national and European context through deliberation with regulatory agencies, ministries and other stakeholders, while also functioning as a network platform for its members that provides information and education on market and legal developments (de Koning, 2018). Some FinTechs are also members of Betaalvereniging Nederland, an association for all payment service providers, including traditional banks. Depending on the specific services they provide, FinTechs may also belong to a number of other business associations.

The implication of FinTech for traditional banks – competition, blurring, co-operation

The entrance of FinTech start-ups on the financial market is clearly associated with increased competitive and disruptive pressures for traditional banks (cf. banken.nl, 2018). Yet, despite an apparent initial apprehensiveness, the attitude of traditional banks and their collective interest organizations is generally positive towards FinTechs. In very general terms, the relationship between traditional banks and FinTech companies may be summarized as follows: whereas banks require co-operation with FinTechs to ensure sufficient innovation, FinTechs require access to the banks' clients as a customer base. This positive attitude of traditional banks towards FinTech is summarized in the following quotes by representatives of both a banking interest organization and a representative of one of the major banks:

The [FinTech] development was initially viewed as a threat [...] I think this hype has passed. [...] [most of the] FinTech businesses are now actually customers, partners and suppliers of the big banks. Only [a small share] directly compete with the business model of the banks. [...] Nowadays, the development of new value chains [in banking] is about mixing and matching with [external] parties that are the best technological fit. It is now less obvious to develop completely integrated value chains like banks did in the 1970s.

The FinTechs have found that even if they have an incredibly good technical platform, without access to the market, things become complicated. [...] Our perspective is not one of competition but of finding and shaping win-win situations. [...] We are all part of an ecosystem and it is much more relevant to have a good position within that ecosystem rather than trying to outcompete everybody, because that will not be successful anyway.

The FinTech companies seem to generally echo these sentiments. However, they also partially interpret the current co-operative situation as less the result of strategic choices by the traditional banks, than a recognition by the banks that they simply ‘missed the boat’ and lost out to the FinTech companies in the development and provision of digital payment services. Hence, partnerships may simply have become a necessity for FinTechs and traditional banks alike, as, for instance, illustrated by the following quote from the CEO of a larger FinTech company:

[regarding certain payment services] I think that banks have accepted that they have lost this competition, and therefore now view [FinTechs] differently. [...] [There is competition], but I also have to rely on banks for our business activities. [...] We also need good relationships with the banks. The banks simply have a different role now.

Nevertheless, Dutch banks were early to develop digital banking services and foster widespread card payments, thereby likely paving the way for the FinTech in the first place. Other factors inhibiting the banks must also be considered, in particular regulatory and cost pressures. Banks are argued to find it increasingly difficult to maintain a sufficiently profitable business model. Low and even negative interest rates which cannot be passed on to consumers have a negative impact on the bottom line; banking fees for the consumer are generally lower than in other countries and cannot easily be raised. Regulatory pressures also require substantial investments. These pressures are summed up in the following quote by a banking interest organization representative:

[...] Banks are paying negative interests to the central banks, but cannot pass on these costs to their customers. [...] [banking fees as an earnings model] is traditionally less developed than in other countries, our fees are therefore lower than abroad. [...] Regulatory pressures [...] create massive costs and require massive investments. Add to that that some large fines have been handed out [to the banks]. [...] Only after all these things have been taken care of, the remaining earnings can be invested in innovation. This is further complicated by legacy IT systems, which makes innovation and digitalization more costly for traditional banks.

Hence, within this context, there may be limited room for investment in R&D. That is not to say that the traditional banks are not actively working on the in-house development of FinTech services. The major banks, in particular ING, are in fact investing heavily in this, and have been able to develop several very successful FinTech services, partially through subsidiaries (e.g. ABN AMRO’s Tikkie). However, co-operation with FinTechs and the acquisition of FinTechs that developed successful technologies can be welcome strategies to remain relevant in a market that is becoming increasingly driven by digital technology. In this context, the additional transaction costs are often seen as sufficiently low to favour external partnerships over in-house development. This strategy also externalizes the risk of investment, as banks can cherry pick already developed and proven concepts rather than develop their own. Co-operation with FinTechs may also in particular benefit the smaller traditional banks looking to increase their market share with very limited capacity for in-house technological developments. While such banks may, on the one hand, have the most to fear from the competition of neobanks, on the other hand co-operation with FinTechs offers them fresh strategies to take on the competition with the big banks that dominate the Dutch banking market. This is, for instance, illustrated by the following quote from a representative of one the smaller, foreign-owned banks active on the Dutch market:

Unlike [a major traditional bank], we do not have a large development team. [...] These tasks have been outsourced to our partners. [...] So, we collaborate with FinTechs. [...] This is how we always view it: where are the smart opportunities for partnership? Instead of trying to invent everything ourselves.

Indeed, the primary source of concern regarding competition for traditional banks may not so much be directed towards FinTech companies, but towards *big tech* companies that are looking to move in on financial service provision. These companies already have large, established customer bases with accompanying vast amounts of data. They can leverage their size, near monopoly position and international operating domain. Particularly worrying to the traditional banks may be that these big tech companies are not dependent on financial service provision as a means of generating profits, as they already have other established business activities. This may well allow them to compete at sharper rates than the banks due to their profits generated with these other activities, thereby possibly driving the traditional banks out of the market. This worry about competition from big tech companies is reflected in the following quote from a banking interest organization representative:

[our member banks] tell me ‘the biggest threat is big tech’. Even if just because their earnings model is outside the domain of financial services, [so] the[ir] financial services do not need to make a profit. [...] [Big techs] are also making steps towards delivering ID services, a role that traditionally seemed to be the prerogative of banks. [...] The banking sector has achieved a lot in the past decades regarding [...] banking infrastructure etc., but big techs can create this type of infrastructure much faster [...] Whereas hundreds, even thousands of banks need to agree regarding certain infrastructure, the Googles and Facebooks of this world can simply enforce a standard. And use their vast financial reserves and customer bases.

Regulatory drivers and barriers

Regulation and supervision are core issues that set the stage for both competition and co-operation between banks and FinTech companies. There have been concerted efforts to improve the regulatory climate for FinTech. The Dutch Central Bank (DNB) and the Dutch Authority for the Financial Markets (AFM) have established the InnovationHub, a platform that provides guidance to new market entrants; and a ‘regulatory sandbox’. The ‘regulatory sandbox’ offers bespoke solutions within the scope offered by the law for financial service companies who cannot reasonably meet extant specific policies, rules or regulations for a pre-set period, judged on a case-by-case basis (DNB and AFM, 2016; Holland Fintech, 2018; cf. Zetsche et al., 2020). It is currently not clear how extensively this option is used and whether this offers sufficient opportunities for FinTech companies to develop their business. In any case, regulatory pressure continues to be seen as a burden on existing companies and a barrier to entry for new ones (Fintech Aera, 2020). Supervisory regulatory authorities have also been reported to lack adequate knowledge and co-ordination (Roland Berger GmbH, 2016). Hence, traditional banks and FinTechs alike would welcome the relaxing of regulatory pressures. At the same time, there is some recognition of strict supervision as necessary, and perhaps even contributing to the success of FinTechs.

Consequently, regulation and supervision in general may be said to have a dual role. On the one hand, they may be seen as limiting both banks and FinTech companies in their business practices and even their ability to co-operate. But at the same time, regulation and supervision also contribute positively to their business activities and potential for co-operation, for instance by

reducing uncertainty and contributing to consumer confidence. In this sense, regulation can be both a driver and a barrier to innovation. This tension is echoed by banks and FinTech companies alike.

The banks, for instance, are looking for a more level playing field with the FinTech competitors, a position that can be summarized as ‘same risk, same rules, same supervision’ (e.g. NVB, 2020). While they increasingly welcome and even foster FinTech companies, they also appear to remain wary of being outcompeted due to being subject to more stringent and extensive regulation and supervision. As mentioned on behalf of the banks by a banking interest organization representative, the sentiment may be characterized as follows:

You do not need to protect us, but you do need to provide us with the opportunity to compete on equal footing. [...] We are well aware that, in light of our banking licence and our [societal] role, we need to be subject to more stringent regulation. But not all our activities are part of the ‘core’, so they are not a direct threat for our financial stability [...] Wouldn’t it be good to get a bit more leeway there?

FinTechs, for their part, report substantial administrative and financial burdens associated with licensing fees and supervision (Jongmans, 2020). Indeed, FinTechs are reporting that they find these regulatory pressures quite challenging, as, for instance, illustrated by the following quote from the CEO of a relatively large FinTech company:

I think that a lot of financial regulation is quite limiting. And cost-increasing. [...] Quite a lot of financial regulation makes the process more difficult than necessary.

However, it is important to note that not all FinTech companies are subject to the same regulatory regime. In principle, all payment service providers require a licence from DNB, but under certain conditions smaller payment providers obtain an exemption. Moreover, some of the services simply fall outside the domain that would require licensing. While such arrangements reduce regulatory pressures for some FinTech companies, there is some doubt whether these exemptions are always justified and sustainable. This is, for instance, illustrated by the following quote from the CEO of FinTech company which falls outside the DNB licensing requirement:

[responding to the proposition that high consumer confidence in the financial sector contributes to the success of FinTech in the Netherlands] Yes, I think so, too. But whether that confidence is justified, is another question. Everything is very well regulated in the Netherlands, but companies such as ours are not covered by the regulations and supervision. The question is whether that is justified.

Regulatory and supervisory pressures not only create costs, but can also be barriers to co-operation between banks and FinTech companies. For banks, it can be difficult to form partnerships, as they ultimately remain responsible for ensuring that their business activities and services conform to strict regulations, even if those activities and services are in co-operation with external partners. Regulatory pressures, including GDPR, also limit the traditional banks’ ability to ‘outsource’ activities to FinTech companies. There have recently also been a number of instances in which banks were given substantial fines for violations of anti-money laundering and trade restriction regulations. In general, there is also still increased attention and awareness of the societal role of banks following the 2008 crisis and subsequent government bailouts. These factors contribute to

banks generally taking a relatively risk-averse stance when it comes to forming partnerships. FinTechs, in turn, are faced with substantial regulatory requirements that impede their ability to form partnerships with banks. The following quote from the CEO of a large FinTech company illustrates how this can frustrate co-operation:

[...] When you are looking to co-operate with a [traditional] bank, you are treated as high-risk, like your [business] processes are not in good order. [...] [But] we have a licence; we are under regulatory supervision. So, we are not a high risk [as a partner] for the banks at all.

To some extent, there is also the feeling that the Netherlands is sometimes stricter than other European countries in their implementation of regulations and supervision, which may limit the attractiveness of the Netherlands as a location for FinTech activity. This is, for instance, illustrated by the following quote from the CEO of a relatively large FinTech company:

[...] Regulation should be very much harmonized within Europe, but the interpretation of regulation by the DNB is always stricter than in the rest of Europe. [...] This is hurting innovation.

Trends in employment and work in the financial sector

It would be very premature to draw unambiguous conclusions about the causal impact of the emergence of FinTech on the organization of work in the banking sectors. Nevertheless, a number of interesting trends can be identified. For one, there has been a structural decrease in employment within the financial sector since the mid-2000s (CBS Statline, n.d. b; van Uitert and Kalkhoven, 2018). The number of physical branch locations of banks has also decreased substantially: whereas in 2004, the three largest banks had almost 2,500 branches, this number was down to fewer than 900 and has since decreased further (BNR, 2017; NOS, 2019). To some extent, these trends may be attributed to restructuring following the global financial crisis. However, it seems relatively uncontroversial to also link this decline to the increased digitalization of banking services, as, for example, illustrated by the following quote from a representative of a major traditional bank:

[...] We are witnessing a shift in part of the tasks, partially towards those kinds of organizations [i.e. FinTechs], but more importantly due to automatization [...] During the past 10 or 20 years, the number of employees has dropped substantially. But not due to us delivering fewer services, selling fewer mortgages, or providing fewer loans to businesses, if you know what I mean. [...] A large part of th[e] reason is the automatization of many tasks that in the past were performed by employees. And I think this trend will continue. [...] We have a lot of employees in their thirties and forties, who have been here since they finished school and are performing administrative tasks. It might become difficult for them.

However, these technological advances, as well as the increasing regulatory pressures on banks, also create substantial new employment opportunities. Changes in employment in banking may hence be said to be characterized not only by an absolute decrease, but also by the qualitative recomposition of the workforce. There are fundamental changes to the competencies and skills required to work in banking, with growing demand for a highly educated and skilled workforce. For one, technical, analytical and ICT-related skills are increasingly important, as banks work towards the development and maintenance of their own digital procedures and services. As one trade union representative notes, as workplaces, traditional banks appear to be increasingly mimicking tech companies:

When you come to the banks nowadays, they are basically IT companies. It looks just like Microsoft. I mean, I visited Microsoft, and when I visit the new [major traditional bank] campus, it looks exactly the same.

Legislation and regulation are also increasingly forcing the traditional banks to invest heavily in Customer Due Diligence (CDD), Know Your Customer (KYC) and Anti Money Laundering (AML) activities in order to prevent financial crime, including terrorist funding. Such tasks require legal competences as well as certain analytical and research skills. But it should be noted that banks are not only increasingly valuing specific hard skills, but also more soft and transferable skills. A good example of this is Rabobank's focus on 12 'future work skills' in their recruitment and staff development, based on the World Economic Forum 'The Future of Jobs' report: self-reflection, complex problem-solving, agility, service orientation, coaching, storytelling, judgement & decision-making, emotional intelligence, negotiating, collaborating, creativity and networking (Rabobank, n.d.).

Correspondingly, the organization of work within banks is changing. Traditional bureaucratic and formalistic modes of work organization, and the accompanying hierarchical structures, are increasingly being replaced by more horizontal modes of organization. In part, these models originate from the ICT sector, in particular the common use of AGILE working practices. Instead of traditional top-down management with detailed long-term planning, tasks become continuous loops of small projects and employees are trusted to operate with a great deal of autonomy and flexibility. As summarized by a representative of a major bank:

[...] AGILE work is a big thing for us. Many of our groups operate in that way. [...] Vertical mobility is also not as common as it used to be. The number of layers between the top and the bottom of the organization is decreasing. [...] But the opportunities to grow horizontally are increasing.

Implementing these new modes of organization naturally also creates challenges for employees and management, as highlighted in the following quote from a representative of a smaller bank:

[...] We work AGILE [...]. It's still a work in progress, but the contours are there. [...] But the structure needs to be translated into behaviour. One of the things I find important within AGILE teams is that you get responsibilities but [also] the mandates. [...] It doesn't mean you no longer have to consult with the management team, but how? [...] You need to learn to let go [as management], but at the same time provide good support. [...] As manager, you are still responsible for your own department or domain. So, we are right in the middle of that.

Competition and co-operation with FinTech companies may partially have inspired this increasingly lean and flexible mode of organization within the traditional banks, as underlined by the following quote from a representative of a large bank:

[...] Many of these FinTech start-ups can start with a blank slate, so they immediately think 'how can we achieve this with the minimum number of people' [...] [In contrast to traditional banks] they don't have an office building full of people that need to do all kinds of manual tasks, because they have eliminated that from their model.

Combined, these changes have created a very dynamic workplace, with a strong orientation towards high-level skills and competencies. Of course, this requires a workforce that is actually able to thrive within this environment. Hence, despite decreasing overall employment in the financial sector, both FinTech companies and employees partially and paradoxically face a rather tight labour market. This does not yet appear to have led to problematic shortages, but generally makes it challenging to have the right employees in the right places. In light of this, one could expect a substantial degree of employee mobility between banks and FinTech companies. However, this mobility appears very limited, as the differences between banks and FinTechs remain substantial, despite the banks' efforts to modify their organizational structures. In particular the difference in working culture is repeatedly mentioned as impeding the successful transition of employees from banks to FinTechs, as highlighted by the following quote from the CEO of a FinTech company:

They [former banking employees] have applied but we have not hired them. [...] The[ir] corporate culture is really disastrous [for us]. [...] Once they have worked more than five years in that corporate environment, they almost by definition do not fit within our organization. [...] Analytical thinking, problem-solving capabilities, out-of-the-box thinking and ideas for innovation usually aren't really present. They are more used to implementing pre-defined processes.

As multiple interviewees point out, it is not at all surprising that banks may find it difficult to implement lean and flexible working arrangements and a corresponding organizational culture to the extent that FinTech companies are able to, due to differences in regulatory and supervisory pressures, organizational and technical legacy, and sheer size.

Work and employment in FinTech companies

Though systematic evidence is lacking, employees in FinTech companies generally seem to currently be in a good position. Two related factors may be argued to contribute to this. Firstly, employment within FinTech companies is still increasing substantially, in part due to new market entrants, but likely more importantly due to the scaling-up of established FinTechs. Secondly, work in FinTechs generally at least in part requires a highly educated and skilled workforce with very specific skills. This implies that FinTech companies may need to invest heavily in long-term on-the-job training of part of their employees, as described in the following quote from a CEO of a FinTech company:

[...] You really need to be an expert [to work for us]. Well, that takes a lot of time. [...] [But] it really depends on what aspect of the business is considered. It may sound contradictory, but our financial departments and customer service department are not that complicated. But when it comes IT, it's a different story. When we hire someone, that person will have a training period of 8 to 9 months. There are no schools to prepare them for this. That is really an internal thing, and we reserve a lot of resources for that.

FinTechs hence need to compete in order to attract and retain qualified employees. Good employment practices therefore appear to be very important for FinTechs looking to scale-up their activities. While they usually cannot afford to pay the relatively high wages that are paid in banking, they are able to offer other things. Perhaps surprisingly, one of these things is employment security. Despite the Netherlands being a country with a relatively flexible labour market, e.g. a substantial use of temporary and part-time contracts and solo self-employment, FinTech companies appear to refrain from an extensive use of such employment practices. Instead, a quite

conventional approach to employment appears prevalent, including the offering of permanent contracts. Regulatory pressures further strengthen the value of retaining employees as much as possible, as illustrated by the following quote from the CEO of a FinTech company:

[...] We are a [regulated] FinTech with licensing commitments. That means that just about every function in our company is sensitive to integrity issues. We therefore have quite heavy recruitment processes; we require statements of conduct. [...] [And our employees] need to have a lot of knowledge. [...] For most of our core products, and this is also true for most other payment service providers, [temporary/flexible work] is not an option. [...] Of course, there are always external organizations we partner with, and sometimes that is with solo self-employed persons, sometimes as temporary hires, sometimes using external contracts. [...] But that is only a small percentage.

FinTech companies also appear to take efforts to create and advertise a working environment that is geared towards a relatively young, highly educated, urbanite, environmentally and socially conscious workforce. This may include, for example, the provision of social and recreational activities, and an explicit ambition to foster environmental and social sustainability.

Collective organization and employment relations

The entrance of FinTech business on the financial market leads to questions about whether, how and by whom interests in the market should be collectively represented. Interview partners were virtually unanimous in indicating that it is not yet clear how such questions should and will be answered. Nevertheless, the main relevant collective interest organizations, both on the side of businesses and the trade unions, have started to explicitly engage with these questions. A number of challenges in this matter seem to be experienced on both sides. For one, developments are simply of such a recent nature that positions and strategies are still very much unclear and shrouded in uncertainty. Regarding specifically collective *labour market* interests, collective interest representation and collective bargaining is generally organized along sectoral distinctions. FinTech companies, with their activities combining elements of ICT and financial services, do not neatly fit within these existing structures. This is a challenge for both business interest organizations and trade unions when engaging with FinTech, as illustrated by the following quotes from a trade union representative and a representative of a banking employers' organization:

... We as trade unions are organized by sector, which isn't helping when the boundaries between sectors are changing. (Trade union representative).

[In response to the question which organization should represent the collective interests of FinTech companies] [...] This is really a strategic question for the entire organization. [...] We note the blurring of sectoral demarcations that is taking place. How can we deal with that? [...] I cannot [yet] answer this question. (Banking employers' organization representative).

Regarding trade unions specifically, a number of contextual characteristics are important to note. Trade union density in the Netherlands has declined substantially over recent decades, and is currently around 15–18% (CBS, 2019; OECD, 2021). The remaining trade union members tend to be older employees with permanent contracts, and trade unions struggle to attract young people and labour market 'outsiders' (CBS, 2019; Gielen and Floris, 2018; Jansen and Lehr, 2019). Trade union presence and activity at the workplace level is generally also limited, with trade unions instead primarily representing employee interests through collective bargaining and participation

in public policy-making (Keune, Been and Tros, 2020). Collective bargaining coverage, however, remains very high, as collective agreements apply to union and non-union employees alike, implying a substantial free-rider problem in trade union membership. In the financial sector, trade union density is estimated to be around 6% (Eurofound, 2019), and hence below the overall union density in the country. The trend reversal in union membership among ICT staff observed elsewhere (Kjellberg, 2009) also seems unlikely to occur in the Netherlands: a recent cross-sectional survey suggests that the subjective importance assigned to trade unions is among the lowest for those in ICT occupations (Gielen and Floris, 2018).

There are no systematic empirical measurements of trade union density within FinTech companies. However, interview partners from FinTechs and trade unions both indicate that trade union membership in these companies is likely very limited to non-existent. From the perspective of the FinTech companies, their employees are unlikely to be swayed to join ‘outdated’ organizations, as good working conditions and attention to employee voice effectively create little need for trade union representation. As noted by the CEO of a smaller FinTech company:

[Regarding whether there are any trade union members in the company] Nobody. We are not covered by a collective agreement either. [...] Trade unions are necessary in order to steer employers in a certain direction. If that would be necessary for us, we would have done something very wrong. I think the most important thing for tech start-ups is to achieve goals together with their employees, and that makes trade unions unnecessary.

Initial trade union responses to the emergence of FinTech were characterized by concerns regarding its potential negative impact on employment in the banking sector (van Klaveren, 2015). The general perception among trade unions nowadays, however, seems to be that the FinTech trend cannot be reversed and therefore needs to be engaged with. As one trade union representative states:

[...] Being against FinTech [...] is like being against rain. [...] You cannot be against FinTech because it has become a way of life.

However, although trade unions are increasingly treating FinTech as an important issue for the financial sector, it may be argued that this is primarily in order to safeguard the interests of employees in traditional banks. They have not yet developed systematic strategies towards unionizing employees in FinTech companies. The currently strong labour market position and good working conditions thought to be enjoyed by FinTech workers play a role in this. FinTech employees are thought to be in such a good position that collective interest representation is not really necessary, as indicated by the following quote from a trade union representative:

It’s not like they are welcoming us with open arms. [...] People get offered permanent contracts, there is a tight labour market. For those reasons, they do not really have strong incentives to become a trade union member.

Without clear collective grievances to be addressed, trade unions may therefore find it hard to gain members in these companies. The small size and horizontal organizational structures may also contribute to a workplace with good opportunities for employees to have a voice, as noted by a trade union representative:

At the very least, you need some opposing views. Like, the employer wants to do things one way and you want to do it another way, so how can we find a solution. And if you always manage to find that solution together, then the necessity [for trade union representation] is not very high.

The limited resources of the trade unions and the generally relatively small size of FinTech companies also play a role. With trade union membership at a historic low, targeting FinTech companies that number just a few potential trade unions members may not be the most effective use of trade union resources, as illustrated by the following quote of a trade union representative:

[...] We have a tendency to focus on large businesses... how can we engage with [this large number of] very small businesses that are no larger than 5 employees? How can we make it interesting for those companies and their employees? For us, this is really complicated.

As FinTechs are growing in size, they will in any case increasingly feature works council representation, as this is mandated in the Netherlands for businesses with 50 or more employees. This mode of representation may be more appealing to FinTech companies than trade unions, as suggested in the following quote from the CEO of a larger FinTech company:

There really aren't any trade unions for our industry. [...] Works' council may gain some impact, but I expect that they will agree with how we are [already] doing things....

However, there is also a sense that trade union representation may become more worthwhile for FinTech employees in the future, as company sizes increase, labour market tightness decreases and the employee-composition increases in age. All major trade unions express an interest in representing FinTech employee interests and are in the process of developing relevant strategies.

In contrast to employee interest representation, business interest representation may be expected to be more fragmented according to particular interests (Offe and Wiesenthal, 1980), especially as far as product market interests (as opposed to labour market interests) are concerned (Schmitter and Streeck (1999[1981])). The emergence of new collective interest organizations like the FinTech network organization Holland FinTech and the business interest organization VBIN, with relatively narrow membership domains, suggests that this is indeed the case. Currently, these organizations appear to primarily engage with the collective product market, and corresponding regulatory and legislative interests of their members, while also delivering member services such as network access. Whether labour market interests will be aggregated along the same lines is not yet clear. In any case, there appears little overt competition over membership between these newer interest organizations and the collective interest organizations that represent traditional banks. Rather, there is a recognition that the interests of their respective membership will sometimes coincide and sometimes contrast.

It should also be noted that despite low trade union membership, collective bargaining coverage in the sector is at over 95% (Eurofound, 2019), with a mix of single-employer bargaining for the company-level agreements of the big banks and multi-employer bargaining for the sectoral collective agreement covering the remaining smaller banks. FinTech companies, however, are not covered by collective agreements. All interest organizations to some extent recognize that collective agreements may be a way of regulating labour market competition on both sides, but do not appear to have a strong commitment to such a development. Nevertheless, there are some

indications that the present relatively un-coordinated state may need to change in the future, as illustrated by the following quote from a banking employer organization:

What we see is a great deal of fragmentation. But perhaps that is necessary before we can return to more centralization. Because all this fragmentation isn't that great either.

But it remains unclear whether collective agreements will be the mode of achieving co-ordination for FinTech employment relations. An often-mentioned impediment herein is the perceived need for flexibility among FinTech companies, including among their employees, which may be hard to reconcile with a traditional approach to employment relations. Moreover, even if collective agreements become relevant for FinTechs, whether they should be incorporated into the existing collective agreements or fall under a bespoke agreement remains unclear. Some trade unions do see some potential merit in bringing FinTechs under the umbrella of the banking collective agreement, but also recognize that this scenario may be unlikely to garner sufficient support due to the differing interests of the traditional banks and FinTechs. A specific FinTech collective agreement is likely a more realistic alternative, but whether and how this can be achieved remains uncertain. There are also noticeable differences across trade unions regarding their attitudes towards this issue, i.e. there certainly isn't a strong and united push for collective bargaining in the FinTech sector from the trade unions.

The question to what extent co-ordination should take place at the transnational/European level also remains open. On the one hand, it is recognized that FinTechs generally operate on markets, including the labour market, which may require more active co-ordination at the European level. On the other hand, it is noted that there exist very different national cultures which limit the effectiveness of European co-ordination and harmonization.

References

- AFM. (n.d.). *What do we do?* Retrieved from <https://www.afm.nl/en/over-afm/werkzaamheden>
- banken.nl. (2018). Fintechs hijgen banken in de nek, wie hebben de toekomst? Retrieved from <https://www.banken.nl/nieuws/20941/fintechs-hijgen-banken-in-de-nek-wie-hebben-de-toekomst>
- banken.nl. (2020). Marktaandeel. Retrieved from <https://www.banken.nl/bankensector/marktaandeel>
- BNR. (2017). Aantal Bankfilialen Blijft Afnemen. Retrieved from <https://www.bnr.nl/nieuws/financieel/10334390/aantal-bankfilialen-blijft-afnemen>
- CBS. (2019). Ruim 100 duizend minder mensen lid van de vakbond. Retrieved from <https://www.cbs.nl/nl-nl/nieuws/2019/43/ruim-100-duizend-minder-mensen-lid-van-de-vakbond>

- CBS Statline (n.d. a)
<https://opendata.cbs.nl/statline/#/CBS/nl/dataset/81588NED/table?dl=52A32>
- CBS Statline. (n.d. b). Arbeidsvolume; bedrijfstak, kwartalen, nationale rekeningen [Online Database]. Retrieved from <https://opendata.cbs.nl/#/CBS/nl/dataset/84166NED/table?dl=56C94>
- CFI. (2020). Top Banks in the Netherlands. Retrieved from <https://corporatefinanceinstitute.com/resources/careers/companies/top-banks-in-the-netherlands/>
- Claessens, S., Frost, J., Turner, G., & Zhu, F. (2018). Fintech credit markets around the world: Size, drivers and policy issues. *BIS Quarterly Review*, (September 2018), 25–49.
- DNB. (2015). *Visie op de structuur van de Nederlandse bankensector. Stabiliteit en efficiëntie door diversiteit en concurrentie*. Retrieved from <https://www.dnb.nl/media/decerf12/dnb-rapport-visie-op-de-structuur-van-de-nederlandse-bankensector.pdf>
- DNB. (n.d. a). Structuur bankwezen. Retrieved from <https://www.dnb.nl/statistieken/dashboards/structuur-bankwezen/>
- DNB & AFM. (2016). *More room for innovation in the financial sector – Market access, authorisations and supervisions: Next steps AFM - DNB*. Retrieved from <https://www.afm.nl/~profmedia/files/onderwerpen/innovation-hub/publicaties/2016/room-for-innovation-in-financial-sector.pdf?la=en>
- de Koning, S. (2018). Maurice Jongmans (CEO) nieuwe voorzitter Verenigde Betaal instellingen Nederland [Blog]. Retrieved from Onlinepaymentplatform.com website: <https://blog.onlinepaymentplatform.com/nl/maurice-jongmans-ceo-nieuwe-voorzitter-verenigde-betaal-instellingen-nederland>
- Gielen, W., & Floris, J. (2018). *Wie is er nog lid van een vakbond? Inzicht in lidmaatschap, belang en tevredenheid*. CBS | Statistische Trends. Retrieved from <https://www.cbs.nl/-/media/pdf/2018/25/wie-is-er-nog-lid-van-een-vakbond.pdf>
- EYGM Ltd. (2013). *Building the bank of 2030 and beyond* [Online]. Retrieved from <https://digiwisehub.com/download/ey-building-the-bank-of-2030-and-beyond.pdf>
- EYGM Ltd. (2019). *Global FinTech Adoption Index 2019* [Online]. Retrieved from https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/banking-and-capital-markets/ey-global-fintech-adoption-index.pdf
- Eurofound. (2019). *Representativeness of the European Social Partner Organisations: Banking Sector*. Dublin: Eurofound. Retrieved from https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19010en.pdf

- Eurostat. (n.d. a). Households – Type of connection to the internet [online database]. Retrieved from https://ec.europa.eu/eurostat/databrowser/view/ISOC_CI_IT_H/default/table?lang=en
- Eurostat. (n.d. b). Individuals – Mobile internet access [Online database]. Retrieved from https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_ci_im_i&lang=en
- Fintech Aera. (2020). State of the Dutch Fintech Market 2020 [Report]. Retrieved from Holland FinTech website: <https://hollandfintech.com/2020/06/state-of-the-dutch-fintech-market-2020/>
- Heinink, D. (2020). Nederland heeft er met Mollie een unicorn bij – maar de dominantie van Amerikaanse en Chinese techreuzen blijft groot door Europese versnippering [Report]. Retrieved <https://www.businessinsider.nl/tech-mollie-adyen-startups-scale-up-europese-strategie/>
- Holland FinTech. (2018). *Dutch Fintech Navigator*. Retrieved from <https://issuu.com/hollandfintech/docs/dutchfintechnavigator>
- Holland Fintech n.d. a) Dutch Fintech Infographic 4.0 <https://hollandfintech.com/2018/01/growing-number-fintech-companies-netherlands/>
- Holland Fintech (n.d. b) About Us. <https://hollandfintech.com/about-us/>
- Jansen, G., & Lehr, A. (2019). On the outside looking in? A micro-level analysis of insiders' and outsiders' trade union membership. *Economic and Industrial Democracy*, 43(1), 221–251. <https://doi.org/10.1177/0143831X19890130>
- Jongmans, M. (2020). *Letter to the minister of finance on behalf of business association VBIN*. Retrieved from <https://www.vbin.nl/wp-content/uploads/2020/11/201119-Brief-VBIN-MinFin-1.pdf>
- Keune, M., Been, W., & Tros, F. (2020). Ongelijkheid: Ontwikkelingen op de arbeidsmarkt en in de arbeidsverhoudingen. *Tijdschrift Voor HRM*, 23(4), 46–63. <https://doi.org/10.5117/THRM2020.4.KEUN>
- Kjellberg, A. (2019). Kollektivavtalens täckningsgrad samt organisationsgraden hos arbetsgivarförbund och fackförbund. *Studies in Social Policy, Industrial Relations, Working Life and Mobility (Lund University)*, 2019, Nr. 1. Retrieved from <https://lup.lub.lu.se/record/384bb031-c144-442b-a02b-44099819d605>
- NFIA Holland. (2020). The Netherlands Sparks Fintech Revolution. Retrieved from: <https://investinholland.com/news/the-netherlands-sparks-fintech-revolution/>

- NOS. (2019). In vijf jaar kwart minder banken, ouderenbond wil dat servicebalies blijven. Retrieved from <https://nos.nl/nieuwsuur/artikel/2313726-in-vijf-jaar-kwart-minder-banken-ouderenbond-wil-dat-servicebalies-blijven>
- NVB. (2020). Digitaal met de mens central. Banken in de 21ste eeuw. Retrieved from <https://www.nvb.nl/media/3360/nvb-visie-digitaal-met-de-mens-centraal.pdf>
- OECD. (2021). How do collective bargaining systems and workers' voice arrangements compare across OECD and EU countries? [Database]. Retrieved from OECD/AIAS ICTWSS database website: <https://www.oecd.org/employment/ictwss-database.htm>
- Offe, C., & Wiesenthal, H. (1980). Two Logics of Collective Action: Theoretical Notes on Social Class and Organizational Form. *Political Power and Social Theory*, 1, 67–115.
- Rabobank. (n.d.). Knowledge or skills: How do you make an impression as an employee? Retrieved from <https://rabobank.jobs/en/grow-magazine/future-of-work-knowledge-or-skills-how-do-you-make-an-impression-as-an-employee/>
- Roland Berger GmbH. (2016). Barriers to FinTech innovation in the Netherlands, Research Findings – Final Draft. Retrieved from <https://www.rolandberger.com/en/Media/Barriers-to-FinTech-innovation-in-the-Netherlands.html>
- Schmitter, P. C., & Streeck, W. (1999 [1981]). The Organization of Business Interests: Studying the Associative Action of Business in Advanced Industrial Societies. *MPIFG Discussion Paper*, 1999/01.
- techleap.nl. (2022). techleap.nl – What we do. Retrieved from <https://www.techleap.nl/what-we-do/>
- van der Kroft, J., van Gurchom, M., & Sweers, D. (2019). *Dutch FinTech Census 2019*. Dutch Government, Ministry of Finance. Retrieved from <https://www.rijksoverheid.nl/documenten/kamerstukken/2020/07/03/fintech-census-ey-2019>
- van Kempen, P. (2021). The Netherlands' banking sector: Facts & Figures. Retrieved from <https://www.ebf.eu/the-netherlands/>
- van Klaveren, N. (2015). Fintech nekt werkgelegenheid in bankensector. Retrieved from <https://financeinnovation.nl/fintech-nekt-werkgelegenheid-bankensector/>
- van Uitert, K., & Kalkhoven, F. (2018). *Financiële dienstverlening – Factsheet arbeidsmarkt*. UWV - Afdeling Arbeidsmarktinformatie en Advies. Retrieved from <https://www.uwv.nl/overuwv/Images/factsheet-arbeidsmarkt-financiele-dienstverlening.pdf>
- Zetsche, D. A., Buckley, R. P., Barberis, J. N., & Arner, D. W. (2017). Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation. *Fordham Journal of Corporate & Financial Law*, 23(1), 31–103.

Chapter 5: Estonia

Jaan Masso, Kadri Karma and Ilona Pavlenkova

The Estonian case

Estonia provides an interesting case for the study of FinTech companies for several reasons: the early adoption of digital technologies in banking back in the 90s; the wide usage of digital services in the public sector (hence the term “e-governance”); the high contribution of the ICT sector to the economy (7.8% of gross value added in 2020, Eurostat 2022a); the high density of start-up companies: 997 firms or 7.5 per 10,000 inhabitants in 2020 (compared to 2.7 in Latvia and Lithuania and 4.4 in Finland) (Vettik-Leemet and Mets, n.d.), including those that have reached unicorn status (Skype, Playtech, Bolt, Pipedrive, Wise, Zego, Id.me). The number of FinTech companies is also remarkable, sitting at more than 200 (Laidroo et al., 2021), including internationally renowned companies such as Wise. Aside from that, the landscape of industrial relations, collective bargaining and social dialogue is probably one of the least developed in the EU, and especially so in the financial sector (including both the traditional banking sector and FinTechs). As a result, there are negative attitudes towards unions and collective bargaining. Still more common is ignorance, indicating that there are opportunities to raise awareness of the potentials of collective bargaining (Kallaste and Woolfson, 2009).

The following chapter highlights the main developments and situation in the Estonian FinTech sector regarding the relationships with traditional banks, the situation concerning the personnel, competencies and skills needed, and how the latter might be related to the potential for the development of industrial relations.

The Estonian banking sector

The Estonian banking system has developed rapidly since 1991, when Estonia became independent from the Soviet Union. The Estonian banking sector is relatively small, highly concentrated, and has a high share of foreign capital. Large banks in Estonia operate as universal banks, covering a wide range of market segments, while smaller banks concentrate on a specific range of services. Although there are no fully direct banks in Estonia (i.e. those without any branches), several banks offer their products online. Banks represent the most significant part of the Estonian financial sector. Within the last few years, the Estonian banking market has experienced various mergers. New participants have entered the market, one small local bank was closed down, and the branch of one foreign bank is being liquidated. Despite changes in the set of market participants, the number of credit institutions has remained the same. Given the information from the Estonian Banking Association (Eesti Pangaliit, 2020) concerning the first quarter of 2020, the Estonian banking sector comprised 14 banks (including nine licensed credit unions and five affiliated branches of foreign credit institutions), 4,700 employees, 1.98 million private customers and 0.29 million business clients (Eesti Pangaliit, 2020).

The banking sector pays one of the highest wages in Estonia. In 2019, the national gross wage was 1,407 euros, while in finance and insurance it was 2,321 euros, second only to the information and telecommunications sector (2,342 euros). The number of employees in the financial and insurance

sectors has significantly increased: 4,400 in 1989 (0.5% of employees), 7,000 in 1995 (1.1%), 8,200 in 2000 (1.4%), 9,400 in 2010 (1.7%), 12,300 in 2019 (1.8%). That can be partly attributed to the financial services' underdevelopment at the beginning of the transition.

For most of recent history, a majority of the banks' share of capital has belonged to foreign owners (in 2002 this amounted to 86.7%, Luštšik, 2003), mostly Scandinavian (Swedish, Danish, Finnish). Foreign capital has also contributed to the banking sector's stability over the business cycles (e.g. during the Great Recession in 2009). The concentration of the banking sector has also been relatively high (Cuestas et al., 2017), fostering conditions that some claim to be less beneficial for the Estonian FinTech sector (Laidroo et al., 2021). Nevertheless, domestically owned banks, such as LHV Bank, Coop Bank, Inbank and Holm Bank, have emerged during the last decade.

The current structure of the Estonian banking sector was set mainly by events in the late 1990s and early 2000s, as the number of banks dropped sharply after the Asian and Russian crises and the entry into the Estonian banking market of the big Nordic banking groups (Eesti Pank, 2017). Since then, the entire banking sector has been part of the private sector and is primarily owned by foreign banking groups. The structure of assets and liabilities in the Estonian banking sector in recent years has been significantly affected by the considerable participation of foreign banks and the limited development of the local capital market. The banking sector structure remained unchanged for several years before significant changes occurred from 2017 onwards. One of the biggest of these was the creation of Luminor Bank, the third-largest bank in the Baltics (European Commission, 2019) and the merger of its Baltic units. The Luminor head office was founded in Estonia in 2019, and the assets and liabilities of the Latvian and Lithuanian branches of Luminor were consolidated in Estonia. This resulted in the Estonian banking sector becoming much larger (Bank of Estonia – Eesti Pank, 2019).

Among the three largest banks (Swedbank, SEB Bank and Luminor Bank), SEB Bank and Luminor (Nordea) have not seen any significant changes to their total assets and net income from 2008–18. In 2019, Luminor's total assets jumped due to the merger between DNB Bank and Nordea. While Swedbank's total assets slightly declined from 2008–17, its net income experienced significant changes and was even negative in 2009. Nevertheless, since 2011 Swedbank has had a higher return on assets than SEB Bank and Luminor Bank. LHV Group is an Estonian financial company founded in 1999 as an investment firm offering brokerage services and portfolio management services. In 2009 the group established the LHV Pank, becoming the 4th largest bank in Estonia in terms of total assets. In 2020, the banks' total assets were 4.92 billion euros, providing them with a market share of 11.0%. However, the total assets of the domestic banks comprised only 16.2% of consolidated banking assets. The majority of foreign-controlled banks are owned by Nordic banking groups, making the Estonian banking sector dependent on the economies and banking sectors of the Nordic countries (most importantly Sweden). The ratio of consolidated banking assets to gross domestic product for Estonia is as high as 164.2% (Corporate Finance Institute, 2021), indicating fairly high banking sector development. The latter is also shown by the share of non-performing loans remaining over the years at a fairly low level in Estonia (cf. 0.3% in 2020, World Bank, 2022).

Since the 1990s, the Estonian banking sector has been considered technologically advanced, innovative and at the forefront of developing ICT applications and electronic banking services.

The latter concerns the development of Internet banking in particular (Kerem, 2003), but also telephone banking, mobile phone banking and PC banking (Luštšik, 2003). Estonian banks have invested extensively in information technology to facilitate the development of advanced and customer-friendly IT solutions, hosting their own IT departments that can be viewed as major software companies (Kerem, 2003). Hansabank (now Swedbank) started its first offline electronic banking solution Telehansa in 1993, and the first Internet banking services were introduced in Estonia in 1996 (Luštšik, 2004). Back in the early 2000s, all major banks declared e-business as one of the core strategies for future development (Luštšik, 2003). The high penetration of PCs and the Internet have enabled such positive outcomes. The interaction between the telecommunications sector and banking is especially noteworthy because of the joint projects with the mobile communications operators (Kerem, 2003). The technologically sophisticated banking sector has been a positive factor for the later emergence of FinTechs.

Banks in Estonia offer a wide range of financial services, from everyday banking to sophisticated wealth management, and they are also the biggest providers of leasing and factoring services. Banks have played a significant role in creating and promoting e-government solutions. Banks have not only embraced e-ID, encouraging customers to use their ID cards for secure transactions, but they have also helped move the population online by developing and offering high-quality internet banking services. Today, over 99% of all banking transactions in the country are carried out online (Estonian Investment Agency, 2021).

In 2021, Moody's Investors Service affirmed its outlook on Baltic banks as stable. The stable outlook reflects Moody's expectation that the Estonian economy will remain relatively resilient to the impact of coronavirus and will return to robust growth rates in 2021 and beyond. It also reflects the expectation that the government debt burden will broadly stabilize from 2021 onwards as the economy and public finances improve in the wake of the crisis (Corporate Finance Institute, 2021).

Overview of the Estonian FinTech industry

FinTech is a rapidly emerging area of business with an increasing economic impact. In 2017, the total assets of FinTechs were around 427 million euros, or 1.7% of the total assets held by the banks, and sales revenues were around 235 million euros. The number of FinTechs established increased dramatically in 2017 and 2018, and two-thirds of the FinTechs in Estonia are less than four years old. For 2019, the projections of the FinTechs indicated a tripling of their revenues and exports from the previous year (Tirmaste et al., 2019). By the end of 2020, the most recent report on Estonian FinTechs identified 215 companies, an increase of 131 companies compared to the end of 2018, but acknowledged difficulties in identifying FinTech companies (Laidroo et al. 2021).

During the first quarter of 2021, the reported number of FinTech start-up companies was 155, with the total number of employees reaching 1,842 (Startup Estonia). The least change was identified among FinTechs involved in analytics, and the most significant change in FinTechs engaged with deposits and lending. For all types of FinTechs, at least 50% of companies have less than one million euros of assets, indicating that Estonian FinTechs are relatively small. Companies with more than 10 million euros in assets are only found among deposits and lending, payments, and banking infrastructure. The firms with the biggest workforces, assets and turnover during the first quarter of 2021 were Wise, Paxful, Xolo, Monese and Fortumo (Startup Estonia database). Wise

(formerly TransferWise) began as a small start-up solving the problem of international money transfers. Its main selling point was reducing currency conversion and international transfer fees to a bare minimum. Soon, the digital nomads began to use it as an alternative to send and receive payments (currently, the list includes 58 countries and Eurozone, Wise, 2021). Back then, they did not offer a complete digital banking solution, and it took them time to finally provide a complete banking alternative. Fortumo and the award-winning Monese became successful globally, and these companies have significant R&D, engineering, and 24/7 multilingual client service operations in Estonia (Estonian Investment Agency). Startup Estonia (Startup Estonia 2022) is a programme run by the KredEx Foundation (Kredex Foundation 2022), a government institution set up in 2001. It's also a part of the Estonian Entrepreneurship Growth Strategy and the Estonian Research and Development and Innovation Strategy "Knowledge-based Estonia". This initiative is financed by the European Regional Development Fund to the tune of seven million euros. The predecessor to Startup Estonia was the Estonian Development Fund, which launched a national programme for new venture investment in 2006 (Vettik-Leemet and Mets, n.d.).

FinTech products and services can be found within retail, corporate and investment banking, asset management, transaction banking, insurance, crypto finance and several others. Start-up Wise Guys is working with Swedbank to offer its accelerator programme. The programme has mentors specializing in financial services, and the programme curriculum focuses on generating ideas and validation, business development, sales, and fundraising. Another programme available for Estonian FinTechs is Lighthouse Development Program, created by MasterCard and NFT Venture. Lighthouse connects experts with companies through a series of one-day workshops (Tirmaste et al., 2019). *Finantsinspektsioon Innovation Hub* was established as an initiative through which the supervisory authority can liaise with companies applying innovation in the financial sector that would like information from Finantsinspektsioon on the latest solutions, to ask for advice, and to find out about the financial supervisory positions and guidelines on using the solutions. The Innovation Hub works as a partner by helping companies to get over the initial obstacles that may arise when bringing a new idea to life because of the complexity of laws covering the financial sector (Finantsinspektsioon).

Estonia has a favourable business climate and a strong track record as a digital-flagship country. The high IT-literacy levels of its population support the development of FinTechs in Estonia. At the same time, the scarcity of skilled labour and regulatory uncertainties pose some challenges. In this regard, regulatory innovations such as regulatory sandboxes are seen as an excellent solution to ensure that consumers are still protected while ensuring that regulations do not impede innovation (Tirmaste et al., 2019). However, the most recent FinTech 2021 report highlighted that better co-operation with regulators and improved regulation would be the best way to develop Estonian FinTechs; the overall development is quite dependent on the possibilities of solving the regulatory bottlenecks (Laidroo et al., 2021). Limited market size also suggests that most of the FinTechs registered in Estonia are orientated towards international markets and see their potential for growth there. A possible scenario for co-operation and competition with the traditional banking sector, according to the FinTech companies, is to complement the role of the traditional financial institutions, rather than to replace them.

While early Estonian FinTech innovation was in local banks and telcos, e-banking has changed the banking industry. The younger generation does not feel such a personal connection with their

bank compared to their parents and families. The traditional understanding of home bank has now changed to banking at home using apps, as illustrated by one of our interviewees representing an employer organization:

One of the major changes in the last ten years has been understanding the home bank concept. Previously the home bank has been one big institution providing services in different domains. Over time, banking services have been split into various services, niches, and target groups to address clients' specific needs at a specific time. This is where financial technology came into play. I consider the widespread usage of touchscreen mobile phones as a revolutionary moment for FinTech development. It was since then that people had their bank in their phones.

Education and skills for FinTech employees

In Estonia, the availability of a skilled and educated workforce is essential for the competitiveness and development of FinTechs. In the IMD World Talent Ranking 2018, of 63 countries⁷, Estonia came 16th in Investment and Development, 33rd in Appeal, and 31st in Readiness (IMD World Talent Ranking; Tirmaste et al., 2019). There has been progress from previous years because of improvements in worker motivation, attractiveness for highly skilled foreign labour, availability of finance skills, skilled workers at the managerial level, language skills, and an effective education system. Overall, Estonia ranked in 28th place (the top three were Switzerland, Denmark and Norway). Latvia and Lithuania were behind Estonia in 35th and 36th place. An important initiative in Estonia for highly skilled foreign labour is the start-up visa. A start-up visa allows foreign entrepreneurs to settle in Estonia for up to 18 months to establish their company. Anyone who wishes to benefit from this visa must be engaged in the start-up business (Startup Estonia, 2019). The FinTechs also highlighted the importance of the start-up visa during their interviews. Many FinTechs have used the start-up visa and consider it essential for attracting foreign labour. In the first two years of the start-up visa programme, 931 people relocated to Estonia (Startup Estonia, 2019). Alongside the start-up visa, the e-residency programme offers a convenient way for foreign entrepreneurs to establish and run a company by using Estonian digital solutions. However, obstacles to e-residents opening a bank account in Estonia have been raised. FinTechs wanting to employ foreign workers can also benefit from easier access to employees as the Estonian immigration system does not apply immigration quotas to employees being hired for positions in ICT (Tirmaste et al., 2019).

At the same time, in the European Commission's Country Report for 2020, it's pointed out that despite the open environment and support from the government's side, the skills shortages and mismatches persist, causing challenges for the Estonian economy, traditional banks and FinTechs. Firms have had difficulties in finding people with the right skills, including digital skills. In conditions of shortage and high competition for skilled employees, hiring foreign labour could be part of the solution. Still, the lack of knowledge about the appeal of Estonia is a concern (Laidroo et al., 2021). While the education and training system performs well and is equitable, its capacity to respond to labour market needs is limited by high levels of school dropouts and an insufficient

⁷ The performance of countries is assessed in the IMD World Talent Ranking using three factors: 1) The "Investment and Development" factor measures the resources engaged in increasing the home-grown workforce, 2) "Appeal" measures the attractiveness to local and foreign talent, and 3) "Readiness" measures the quality and skills of human resources.

relevance of higher education for the labour market. Participation in adult learning has increased, but the re- and upskilling of the workforce has not kept pace with labour market trends. One of the reasons is that businesses provide limited on-the-job training. The high proportion of ageing teachers is a long-term but ever more pressing challenge for the education system (European Commission, 2020).

Overview of the characteristics of FinTech companies based on registry data

The Estonian Business Registry includes registered companies' annual reports (balance sheets, profit and loss statements) and background information (e.g. form of ownership, number of employees, location, board members) from 1995 till 2019 (as of spring 2021). To study the effects of COVID-19 on FinTechs, we also used the quarterly company-level data from the Estonian Tax and Customs Office on the companies' paid taxes, sales revenue, and the number of employees until the 1st quarter of 2021. We used the list of FinTech companies from Tirmaste et al. (2019) and Laidroo et al. (2021).

The number of economically active FinTech companies (those with sales, labour costs or employees) grew from 19 in 2010 to 59 in 2015 and 130 in 2019. It is harder to judge only based on the business registry data whether these companies could be classified in all of the studied years as FinTechs. For some years, the list of the companies may be incomplete due to entry and exit, i.e. we might not be able to cover FinTechs that have by now ceased business.

The identified FinTech companies are relatively small; the average firm in the study period employed just 11 employees (though the average firm in the economy employed fewer than 10). The maximum number of employees employed by FinTechs was 99 in 2010, 112 in 2015 and 231 in 2019. Thus, the largest FinTech companies grew over time. These numbers do not always reveal all the labour input used, as during labour shortages, companies use different strategies, like subcontracting and having teams abroad. Laidroo et al. (2021) reported, based on the survey, that 33% of employees were working outside of Estonia, e.g. several Estonian FinTechs have established branches abroad, like Wise in London. The total number of employees working in FinTechs increased from 313 in 2010 to 772 in 2015 and 1,780 in 2019. If drawing on the list of FinTechs from the earlier report (Tirmaste et al. 2019), the numbers are 84, 389 and 999, implying somewhat more modest but still substantial developments.

The average annual labour costs per employee changed from 26,800 euros in 2010 to 32,000 euros in 2015 and 74,200 euros in 2019. The latter variable would correspond to the gross wage of 4,636 euros. That number significantly exceeds the average gross wage in that year – 1,407 euros – and the average gross wage in the finance and insurance sector – 2,321 euros – and information and telecommunications – 2,342 euros – indicating that candidates with roughly similar skill sets are sought by FinTechs, traditional banks and IT companies.

In 2019, 18% of FinTech companies were foreign-owned. Estonia has had a very high presence of foreign direct investment (FDI) since the mid 1990s, and the Estonian banking sector is dominated by foreign-owned companies; however, FinTech companies being mostly locally owned may demonstrate the presence of some positive knowledge spillovers from FDI to the local economy.

The average sales revenue per company has not grown much over time – in 2010, 1.85 million euros, in 2015, 1.61 million euros, in 2019, 1.44 million euros – but that is due to the emergence of many new FinTechs, as new firms are typically small and grow over time. The growth in the total sales revenue is remarkable: in 2010, 33.3 million euros, in 2015, 116.5 million euros, in 2019, 187.5 million euros. In 2019, exports constituted 41% of sales (Laidroo et al., 2021, reported the share of exports in sales to be 45%): for a market as small as Estonia, exports are crucial for scaling up operations.

The Estonian economy has been less affected by the pandemic than many other European countries, and the consequences have also been less dramatic if we compare to the Great Recession, when the GDP decline was one of the worst in the whole world (-14% in 2009). In 2020, the GDP of EU-27 fell by -6.4%, but the decline in Estonia was one of the smallest among the EU countries at -3.0% (Eurostat, 2022b). The sectors related to FinTechs performed even better – finance and insurance showed an 8.6% growth rate (+9.9% in 2019), and the information and telecommunications sector 8.6% (+28.8% in 2019).

Survey findings indicated that while for some FinTechs, the COVID-19 induced crises paused expansion plans, the pandemic generally had a relatively low impact on the sector (Laidroo et al., 2021). Data from the Estonian Tax and Customs board showed that across the FinTechs in 2020 as compared to 2019, the average payroll taxes paid by a company increased by 73% (21% in 2019), the number of employees by 49% (the mean number of employees was 8.1 in 2019 and 12.2 in 2020), and revenue increased by 99%. For the whole FinTech sector, payroll taxes paid increased by 14% (+45% in 2019), turnover by 22% (+45% in 2019), and the number of employees increased by 5% (+37% in 2019). These growth rates were fairly similar for the first quarter of 2021 compared to the first quarter of 2020 (trends observed in 2020 seemed to continue in 2021), except for the growth rate of turnover, which saw a +136% increase. Like the IT and banking sectors, the Estonian FinTech sector has thus performed relatively well during the COVID-19 crises. However, our interviews have also highlighted the constraints in growth experienced by the companies due to the pandemic.

The interviews indicated that as a result of COVID-19, some FinTechs had grown more slowly. According to one FinTech representative, it was not possible to travel during the pandemic, and global sales do not work over email and phone as trust is won in face-to-face meetings. Therefore, in 2021 international sales were suspended due to travel restrictions. In addition, the Money 20/20 conference, an important event for meeting new people from all over Europe, was cancelled. (I2 FinTech) The travel ban was also mentioned in the 2021 FinTech Report (Laidroo et al., 2021) as an effect of COVID-19. Besides remote work for employees, there were reported an increase in online meetings with clients, reliance on a remote hiring process and finding alternatives to motivational events being held for employees, and improving internal communication within the company. All the aspects were scored lower than four on a 7-point scale, indicating the mediocre impact of COVID-19 on FinTech companies.

The implication of FinTech for traditional banks

FinTech development has been adding value to traditional bank services. Banks are open for potential co-operation, and two market leaders in Estonia – Swedbank and SEB – are fostering collaboration by providing FinTech specific accelerator programmes.

From the perspective of bank representatives, they focus on their main services and are willing to co-operate with FinTechs, integrating FinTech niche services to the banks' core services. Their attitude towards FinTechs is generally positive, and they regard FinTech services for the most part as complementary to traditional bank services. Some of our interviewees point out that this kind of co-operation is a win-win situation, as FinTechs are attracted to the banks' large customer bases, which would otherwise require heavy investment (particularly in marketing), and banks are interested in additional solutions adding potential value to their products and services. Also, as FinTech services are developed based on clients' needs, one of our interviewees points out that they help improve clients' user experience. Thus, the co-operation between banks and FinTechs is mutually beneficial.

Estonian FinTechs primarily specialize in certain niche solutions, offering cheaper solutions to satisfy clients' needs than traditional banking solutions. According to state authority, payment services are a good example of niche solutions where additional applications are used as interfaces between banks and merchants. One of our interviewees representing the state authority also pointed out that these FinTechs are not competing with traditional banking; they are instead providing additional value. According to another interviewee from one of the FinTechs, choosing a niche has also given them the edge in global competition, as they are focusing on something they are particularly good at while being flexible in doing it. The interviewees also expressed their opinion that banking services will not disappear from the market, and that FinTechs instead create differentiation by opening up new niches. In this way, they can be complementary to each other, as illustrated by one employer organization representative:

FinTech companies have maybe a better front end, an ability to address clients better, finer usability and customer experience, but those same companies use bank information and will probably continue using it.

It's quite a challenge for the banks to develop an infrastructure that can offer services closer to the end consumer. To do so, banks are collaborating with several actors providing services directly to the end-user on the site where the service or products are purchased. One representative of the employer organization pointed out several examples of how banks do so by engaging with FinTechs that develop loan apps that operate as channels and online identity verification.

However, one bank representative underscores differences between banks and FinTechs that need to be addressed in these collaborations. For instance, the latter are oriented to fast growth and burn money much quicker, whereas bank corporations move more slowly and have time to achieve their results. Another critical factor in developing a successful collaboration between traditional banks and FinTechs is to match values and cultures, as this can be an essential basis for effective teamwork between the companies. To make teamwork run smoothly and solidly while developing agile teams within and between the organization and its partner, cultural and organizational issues thus need to be addressed. One interviewee from a bank illustrates the importance of such organizational issues by describing how well they have collaborated with a big Scandinavian

technology company because of mutual understanding and a shared world view; they speak the same language, making the collaboration much easier. While banks have access to a client base and FinTechs have a solution that makes clients' lives easier, interviewees from Estonian banks and FinTechs also underscore the importance of identifying collaboration where they can complement one another.

Implications of regulatory structures and innovation for banks and FinTechs

As Estonia is part of the EU, the regulations are driven by EU-wide initiatives. In March 2018, the European Commission introduced its action plan on FinTech to foster a more competitive and innovative European financial sector. The presented initiatives were aimed at enhancing the supervisory approach towards technological innovation and preparing the EU financial sector to take advantage of the opportunities created by new technologies. In Estonia, the financial market's primary regulator is the Financial Supervision Authority, and its regulatory powers are derived from the Financial Supervision Authority Act §1. In some areas not covered by the Financial Supervision Authority, the activity licences are granted by the Financial Intelligence Unit (Tirmaste et al., 2019).

Estonian regulators state that Estonian laws can be considered technologically neutral: the content of the financial service is the key aspect, not how it is provided. There is no FinTech-specific regulation, so many different laws can apply to FinTech. Banks and creditors are regulated by the Credit Institutions Act and the Creditors and Credit Intermediaries Act. Credit institutions have the exclusive right to receive money from the public for depositing or receiving repayable funds in any other manner. To operate as a credit institution, an activity licence must be obtained from the Financial Supervision Authority. Only licensed banks may use the term “bank” in their business name (Credit Institutions Act, 1999; §4, §6, §12, §13). Payment and e-money service providers are subject to the Payment Institutions and E-money Institutions Act (Tirmaste et al., 2019).

As there are no harmonized EU-wide rules for FinTech companies, several European countries have started to develop their own regulations to govern specific types of FinTech companies engaged in crowdfunding or cryptocurrencies in response to the rapid development of these fields. As stated above, there are as yet no FinTech-specific regulations in Estonia. In September 2016, the Financial Supervision Authority proposed a law to regulate companies involved in offering crowd-funding services. The Ministry of Finance has taken a slow and steady approach to regulating crowd-funding and has not set up crowdfunding-specific regulations. However, in early 2021 it was announced that the fields of crowd-funding and crypto assets would start to be regulated (Suutre, 2021), along with the so-called Best Practice for the crowdfunding industry initiated by Finance Estonia and the law firm Deloitte Lega Estonia (Deloitte Legal and Finance Estonia, 2016).

Cryptocurrency offerings that provide new opportunities for raising capital have undergone fast growth in recent years, raising the question of whether investors are sufficiently protected in Initial Coin Offerings (ICOs). There is no specific law in Estonia that regulates ICOs, but the Financial Supervisory Authority has provided some guidance on the regulatory side of ICOs. In addition, activities related to cryptocurrencies are subject to the Money Laundering and Terrorist Financing Prevention Act (Tirmaste et al., 2019).

In general, the Estonian government has been very supportive of technological innovation, with matching legislation and initiatives for infrastructure to support electronic transactions. Services are based on users having a unique personal identity number, electronic id, and electronic signature, all of which are available on mobile devices.

Both interviewees from FinTechs and the employer organization emphasize that European and regional regulations affect the industry, creating differences in different countries and urging industry players to address the ambiguity. According to a state authority representative, some countries are more flexible to innovative solutions, while others remain inflexible. Estonia, however, has chosen a middle way, where state authorities can make certain expert decisions within the current legislative framework, defined by EU legislation. Those expert decisions are mainly risk management solutions based on internal rules that also need to be in accordance with financial regulations.

The middle way refers to the fact that the alignment with financial regulations can be achieved in diverse ways. In Estonia, a particular solution-based approach is forged. Thereby, companies can present solutions that do not fit into a traditional approach, but still perform the same or outperform currently applicable solutions, to experts who will assess the quality of the solution. Another approach aims to help market players qualify their services, particularly addressing FinTechs which have emerged as a result of real consumer needs and which find it hard to classify the kind of service they offer (compliance issues).

Such measures emerge as crucial due to the growth in the number of financial products and solutions that are not yet regulated. These solutions, sometimes involving AI offering client-specific solutions, are exposed to higher risk levels while providing easier access to saving and investing money and thus need to be protected and regulated. However, one interviewee from a bank highlights that it is essential that the industry also helps minimize the risks of the new developments early on, ensuring that these developments do not abuse the regulatory system.

Estonia, in general, is subject to EU financial regulations. There are no FinTech-specific regulations, but FinTechs need to follow different regulations relevant to their particular field of activity. In the case of crowd-funding, market players have also forged a statement of best practices that can be used as self-regulatory guidance for solid market players, confirming that Estonia is an open and supportive environment for new technological developments.

Technological carriers of present trends and future developments

It is hard to predict the future, especially in the FinTech field where the pace of change is driven on the one hand by exponential technology development and, on the other hand, by changing consumer preferences. Study participants, ranging from Estonian banks to regulators, also stressed that at the moment, the main competitors in banking are still other banks (I3 Bank; I7 Employer Organization). In the future, however, the biggest competitors could be BigTech companies that provide both opportunities and elevated levels of uncertainty.

According to representatives from the employer organization, it is complicated to talk about banking and competition in general, but there are many micro-markets (loans, insurance,

investments etc.) within banking that, ultimately, will also play a part in forging future businesses. The new neobanks will take advantage of this, for instance, when striving to transform the banking sector into app-based banking. Such banks may draw on peer-to-peer lending platforms that connect borrowers and lenders in a novel way, or money transfer platforms providing quick and cheap borderless money transfers.

From a bank perspective, the focus in this development appears to be both on customer experience and digital sales. Interviewees from the bank sector point out that future banking channels are related to customers' use of mobile phones – mobile, video, and process automation. Their aim is to make customer access to banking services easier and to facilitate everything supporting digital sales – machine learning, data science, and modelling.

Other new services also involve transforming traditional payment services into fully-fledged investment services. Investment was previously an elite service, with market access restricted to small private investments. New innovative solutions are, however, about to allow an increasing number of customers access to investment. Once again, though, the Estonian interviewees point out that the development depends on the regulatory framework, which appears to be relatively slow in response to rapid FinTech market developments.

While all our interviewees agree that technology will make it possible to offer a range of innovative services across markets (I6 Employer Organization; I8 State Authority), they also point out that the main limitation in service and convenience development at the moment is data protection. Previously, specific issues concerning information security or technical security limited the user experience; now, one must consider any kind of data protection.

Organizational obstacles for FinTechs and banks

The limited market size suggests that most of the FinTechs registered in Estonia are orientated towards international markets from the start and see their potential for growth there. Still, even if they are not focused on the local market, Estonia is perceived as a good environment for start-up development, as illustrated by an employer organization representative:

When looking at Estonian companies' success in growth, the number of unicorns per capita there is a reason to be proud. We have a capacity to grow; the question is rather how to keep the same pace and the emergence of new companies. [...] People who succeeded with their start-ups are very actively supporting the new ones, investing their resources back in start-ups. This is a very positive aspect.

According to the employer organization, Estonia is different from many other countries where the internal market is a prime target, and international expansion becomes a consideration at a much later stage. One representative from the employer organization also points out that companies in other countries may find it challenging to expand abroad, e.g. due to teams that become too homogeneous, lack of language fluency or demands for a new technological architecture. Estonian FinTechs, however, do not face such problems as they have to address these needs already from the beginning.

Despite the open environment and support from the government, the European Commission's Country Report for 2020 (European Commission, 2020) nevertheless points out that skill shortages and mismatches persist, creating challenges for both Estonian banks and FinTech companies. The workforce's re- and upskilling has not kept pace with labour market trends, partly because businesses have provided limited on-the-job training opportunities.

The trade unions also recognize the training issue, stressing that it is a problem that employers sometimes too easily lay-off employees. According to them, more attention could be paid to retraining, to get employees more familiar with new technological developments. They also underscore that additional specialized knowledge training might prove especially useful as existing employees often have company-related know-how that cannot be easily replaced with new staff.

The availability of a skilled workforce is thus noted as a problem for FinTechs in Estonia (Laidroo et al., 2021). In the current study, all interviewees also found it hard to find people with IT skills, and they also stressed that it could be hard to find people with specific language skills for customer support functions.

According to employer organizations, hiring tech people has become a significant challenge because of the ongoing start-up boom. The start-up world distorts reality since these firms are raising a lot of capital without profit from their business model, while offering remarkably high salaries to tech people. As other organizations need to compete in the same market, they are also striving to provide an equally exciting experience to tech people as start-ups can. In addition, many Estonian FinTechs not only have difficulty hiring developers, but also customer support with strong language skills. To attract and retain good people, they have to have a solid benefits package like other tech companies. Besides these rather specific skills, interviewees also stress that there is a demand for aligned values – a demand that may be more difficult to manage.

There are examples of proactive and novel ways to tackle skill shortages. A bank representative describes how they address difficulties in finding IT development people by 1) offering a summer internship program (which has proved to be a good way to attract new people to the company), and 2) working closely with universities' IT programmes to share their knowledge and offer internship opportunities. FinTech representatives also confirm that in the case of tech people, they have to manage the international competition, as these jobs can be performed remotely, irrespective of location. IT specialists are hard to find, and therefore they recruit staff from abroad and bring them to Estonia.

Some of the expertise that FinTechs require can also be obtained from the banks. Employer organization representatives stated that it was previously thought that FinTechs didn't like lawyers and compliance officers and that they should remain working in banks in a good tranquil working environment. However, today this belief has changed; as many innovations are developed in RegTech and FinTech companies, they also need creative lawyers and compliance officers. Many FinTech activities are also related to banking, making it increasingly more attractive for FinTech companies to acquire a broader range of expertise from the banking sector.

FinTech companies are also searching for an agile workforce that may fit into a climate characterized by constantly changing plans and direction. In FinTechs, it is not possible to act

strictly according to a yearly plan or a manual. Another assumption about FinTechs is that they require teams characterized by a diverse workforce that are more creative due to different experiences and cultural backgrounds.

Interestingly, however, employees both in the banks and at FinTechs included in this study appear to work according to contractual arrangements. In one bank, all the core functions are covered in-house, and staff have employment contracts. Even summer trainees are considered regular employees and attend all mandatory training and security checks. In another bank, everybody besides IT has an employment contract. Regarding IT, it's not about the contract, but rather that these tasks are often performed by contractors working at an hourly rate, and brought in on demand. In the FinTechs, either all or the majority of staff have employment contracts. In one case, only short-term trainees are asked to sign non-disclosure agreements. In the other case, some of the IT development (certain specific tasks) is outsourced from development partners abroad, but all the main competencies are hired in-house.

According to a state authority representative, the employment relationship across FinTechs and traditional organizations are somewhat different. One aspect is remote work – staff can complete their part of a task, and it doesn't matter where or when they do it. Thus, the employment relationship is more like outsourcing certain blocks of services, and the service provider's location does not matter. Another aspect is the share of financial earnings.

Summing up, respondents of the current study consider competition for skilled employees to be high in the sector, especially IT skills. Still, it is also challenging to find the appropriate competence mix of analysis, technical competence and sometimes specific language skills. Regarding employees, a crucial selection criterion was a cultural fit with the organization. In interviews with the banks and FinTechs, it transpired that regular employment contracts are the standard mode of employment. Only short-term skill requirements are outsourced. COVID-19 had some impact on the sector related to expansion to new markets where face-to-face meetings play an essential role in creating trusting relationships.

[Collective organization and employment relations in Estonian FinTechs](#)

Estonia has limited social dialogue, a low density of both trade unions and employer organizations, low collective bargaining coverage (below 10%), and sectoral level collective agreements exist in only a few sectors (health care, transport, education) (Masso et al., 2019). Since 1991, Estonia's financial and banking sector has been mostly non-unionized. One factor at play here is the high level of foreign direct investments (FDI) in the Estonian economy, including the banking sector (cf. the largest banks Swedbank, SEB, Luminor). While Estonia's foreign investors come from Scandinavia, a country characterized by high labour standards (incl. in the financial sector), they often adapt their labour standards to those of the host country, rather than attempt to maintain the higher labour standards applied at home, though there are also positive cases (Peterson, 2018). This practice has also characterized the financial sector, where the formation of the first banking sector trade union in 2015 in the Luminor bank was far from smooth-sailing. The same applied later to the conclusion of the first collective agreement in the Estonian financial sector in 2018. The Association of Estonian Financial Sector Employees was created in 2013 but disbanded in 2019.

The issues related to digitalization, automation and technological change have received attention in the social dialogue. In Estonia's education sector, for example, the use of new technologies in teaching and learning, development of digital skills (digital literacy) and smart youth work have entered into social dialogue (Masso et al., 2019). Regarding technological innovations, automation, digitalization and related issues, union representatives have been concerned that due to wage growth having exceeded productivity growth for several years, Estonian industries with high wages and non-automated technology would be vulnerable in case of a recession (Peterson, 2018).

Neither banking nor FinTech staff had any dealings with unions and did not consider them to be relevant. According to the employer organization representative, the reason for the absence of strong trade unions and yearly collective bargaining in Estonia might be that salary levels in the finance and technology sector are high, and people are quite happy enough; they don't need anybody to stand up for their rights. The modern world is said to be dependent on talents and skills, and employers need to make a significant effort to ensure their employees' happiness, motivation, and excitement. Otherwise, they have failed already in the competition, and there is not much that any trade union can do about it. Besides, one of the interviewed bank representatives stated that if companies on the market are small and flexible, there is no need for trade unions. The bigger the companies, the greater the need for trade unions, as otherwise, not everybody's voice will be heard.

However, the trade union representative emphasized the lingering relevance of unionization and social dialogue. In Estonia, there is no trade union tradition in banking or FinTechs, but some employers have expressed that it would be good to have one. For example, it has been related to raising investments, where trade unions can add extra value from investors' point of view.

Estonian employers are not participating in EU-level social dialogue. European-level agreements are drawn up in the presence of Estonian trade union representatives, but there is no representation from the employers' side. From a trade union perspective, it would be beneficial to have employers' input regarding EU regulations and their local implementation.

However, the industry participants did not see any value in the unions as they believed that competition for the skills already ensured good working conditions for staff. In their approach to the subject, we may also get a glimpse of an historic and mocking image of the unions from Soviet Union occupation times (Masso et al., 2018).

Concluding remarks

The Estonian FinTech sector has been very active, supported by a vibrant start-up community and ecosystem, high digitalization of traditional banking, and the strong contribution of IT to the economy. Especially from the interviews, it seems that a co-operative relationship with traditional banks dominates at least among Estonia FinTechs. Traditional employment contracts dominate in employment relationships, though the landscape is more diverse regarding IT skills. The latter is also related to how companies manage shortages of specific IT skills. For the further development of the FinTech sector as a whole and the specific companies, it is crucial to address the skills shortages and tackle the regulatory bottlenecks. The unions and collective bargaining are lacking

within the traditional banking sector and among FinTechs, with FinTech companies generally not considering them to be relevant. If the unions want to change this perception, innovative approaches which take into account the unique characteristics of this sector will be needed.

References

- Corporate Finance Institute. (2021). Top Banks in Estonia – Overview of Estonia’s leading financial institutions. Retrieved from <https://corporatefinanceinstitute.com/resources/careers/companies/top-banks-in-estonia/>
- Credit Institutions Act. (1999). Riigi Teataja. Retrieved from <https://www.riigiteataja.ee/en/eli/508042015002/consolide> [Last accessed: 23.03.2022]
- Cuestas, J. C., Lucotte, Y., & Reigl, N. (2017). *Banking sector concentration, competition and financial stability: The case of the Baltic countries*. Working Papers of Eesti Pank. (No. 7/2017), Retrieved from https://haldus.eestipank.ee/sites/default/files/publication/en/WorkingPapers/2017/wp07_2017n.pdf
- Deloitte Legal, & Finance Estonia. (2016). *Best Practice for Crowdfunding*. Retrieved from <http://www.financeestonia.eu/wp-content/uploads/2016/02/Crowdfunding-Best-Practice.pdf>
- Eesti Pangaliit. (2020). Estonian banking sector 1Q 2020. Retrieved from <https://www.pangaliit.ee/banking-information/market-shares-of-estonian-banks>
- Eesti Pank. (2017). The Structure of the Estonian Financial Sector. Retrieved from <https://www.eestipank.ee/en/financial-stability/structure-estonian-financial-sector>
- Estonian Investment Agency. (2021). Banking and Financing. Retrieved from <https://investinestonia.com/business-in-estonia/financing/banks/>
- European Commission. (2019). European Commission clears Blackstone to buy Luminor. Retrieved from: <https://news.err.ee/902757/european-commission-clears-blackstone-to-buy-luminor>
- European Commission. (2020). *Country Report Estonia 2020*. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0505&from=EN>
- Eurostat (2022a) Gross value added and income by A*10 industry breakdowns http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_a10 Last accessed: 23 March 2022.
- Eurostat (2022b) Real GDP growth rate – volume <http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tec00115> Last accessed: 23 March 2022.
- Financial Supervision Authority Act. (1999). Riigi Teataja. Retrieved from <https://www.riigiteataja.ee/en/eli/515012020001/consolide>
- Kallaste, E., & Woolfson, C. (2009). The Paradox of Post-communist Trade Unionism: “You Can’t Want What You Can’t Imagine.” *The Economic and Labour Relations Review*, 20(1), 93–110. <https://doi.org/10.1177/103530460902000107>

- Kerem, K. (2003). *Internet Banking in Estonia* (PRAXIS Working Paper No. 7). PRAXIS Center for Policy Studies. Retrieved from <https://www.praxis.ee/wp-content/uploads/2014/03/2003-Internet-banking-in-estonia.pdf>
- KredEx Foundation (2022) <https://www.kredex.ee/en/who-we-are/sa-kredex>. Last accessed: 23 March 2022.
- Laidroo, L., Tamre, A., Kukk, M.-L., Tasa, E., & Avarmaa, M. (2021). *Fintech Report Estonia 2021*. Finance Estonia & Tal Tech School of Business and Finance. Retrieved from <http://www.financeestonia.eu/wp-content/uploads/2021/06/FinTech-report-2021-final.pdf>
- Luštšik, O. (2003). E-banking in Estonia: Reasons and Benefits of Rapid Growth. *Kroon and Economy*, 3, 24–36.
- Luštšik, O. (2004). Can E-banking services be profitable? *University of Tartu, School of Economics and Business Administration, Working Paper No. 30*.
- Masso, J., Themas, A., & Aksen, M. (2019). *Social dialogue articulation in Estonia – country report for EESDA* [Project: Enhancing the Effectiveness of Social Dialogue Articulation in Europe]. University of Tartu, Estonia. Retrieved from https://celsi.sk/media/datasource/EESDA_Estonia_Report_revised.pdf
- Masso, J., Tverdostup, M., Mierina, I., & Espenberg, K. (2018). Labour Market Inequalities in Conditions of Limited Social Dialogue: The Case of the Baltic States. In D. Vaughan-Whitehead (Ed.), *Reducing Inequalities in Europe: How Industrial Relations and Labour Policies Can Close the Gap* (pp. 68–115). Cheltenham, UK: Edward Elgar Publishing.
- Startup Estonia (2022) <https://www.startupestonia.ee/>Last accessed: 23 March 2022.
- Startup Estonia. (2021). Sector Insights – Fintech [Database]. Retrieved from <https://startupestonia.ee/startup-database/sector-insights/?sector=FinTech>
- Suutre, S. (2021). The Ministry of Finance will start regulating the field of crowdfunding and crypto assets [News]. Retrieved from Estonian Ministry of Finance website: <https://www.rahandusministeerium.ee/en/news/ministry-finance-will-start-regulating-field-crowdfunding-and-crypto-assets>
- Tirmaste, K., Voolma, L., Laidroo, L., Kukk, M.-L., & Avarmaa, M. (2019). *Fintech Report Estonia 2019*. Finance Estonia & Tal Tech School of Business and Finance. Retrieved from <http://www.financeestonia.eu/wp-content/uploads/2013/02/FinTech-Report-Estonia-2019-2.pdf>
- Vettik-Leemet, P., & Mets, T. (n.d.). The Role of the Startup Ecosystem in an Innovation Paradox. *Post-Communist Economies*, (Forthcoming).
- Wise (2021) The Wise story <https://wise.com/gb/about/our-story> Last accessed: 23 March 2022.
- World Bank (2022) [Bank nonperforming loans to total gross loans \(%\) – Estonia](https://data.worldbank.org/indicator/FB.AST.NPER.ZS?locations=EE). <https://data.worldbank.org/indicator/FB.AST.NPER.ZS?locations=EE> Last accessed: 23 March 2022.

Chapter 6: Denmark

Anna Ilsøe and Trine P. Larsen

Introduction to the Danish case

In this chapter, we present the findings of the Danish case study, examining the FinTech development in Denmark. The Danish study draws on desk research as well as interviews with key actors in the Danish banking sector and FinTech companies, as well as with representatives for the social partners in the sector. We have interviewed informants representing five different groups of actors about the development of the Danish FinTech industry, the role of ICT as well as emerging trends of social dialogue (see *Informants on FinTech in Denmark* below). All interviews, 10 in total, have been recorded and transcribed or documented via extensive notes, before we analysed the text using a thematic coding strategy.

Informants on FinTech in Denmark

- Unions: The President and the Vice-president of the Financial Services Union Denmark (Finansforbundet)
- Employers' Associations: The Director and Vice-director of the Danish Employers' Association for the Financial Sector (FA)
- Tech lab directors: The Director of Copenhagen FinTech Lab, the Director of Symbion, the Director of The Camp
- Directors of FinTech companies: The CEO/CRO and the COO of Lunar Bank; Head of Marketing at Nord Investments.
- Data companies: Chief consultant at Bankdata.

The chapter is divided in six sections. First, we introduce the key actors in the Danish banking and finance sector and briefly describe the main features of the workforce in the sector. Next we present the size and composition of the Danish FinTech industry. These two first sections mainly draw on desk research and present important background information. Based on the thematic coding of our interviews, we identified three common themes across the interviews, which we explore in the following three sections: The role of tech hubs, partnerships between traditional banks and FinTech companies, and employment relations in Danish FinTech. The final section concludes with a summary and reflections for future studies.

Key actors on the Danish banking and finance market and workforce composition

The Danish banking sector is characterized by a few large banks (with Danske Bank and Nordea being the largest players) and four Danish mortgage banks (Realkredit Danmark, Nordea Kredit, Totalkredit and Jyske Kredit). In recent years, many smaller and larger banks have merged, with the result that today there are around 60 banks in Denmark.

In recent years, there has been a shift in the workforce composition in Danish banking and finance, as roles have changed and new technologies have been introduced. In 1998, skilled workers dominated the workforce in the sector (60% of all workers), whereas low-skilled and unskilled workers (23%) and highly skilled employees (7%) made up smaller segments of the workforce. In 2018, 25% of all staff employed within the banking sector were highly skilled workers with university degrees, while 32% were skilled employees and 17% were lower skilled employees (FA, 2019a). In addition, 46% of all bank employees are women, and there is a slight overrepresentation of older workers aged 50+ years within the Danish banking sector (FA, 2020; 2019b).

ICT as a challenge and opportunity within the sector

The Danish banking sector faces various challenges. ICT investments and developments are considered a main challenge among both larger and smaller banks – but often for different reasons (see Rolandsson et al., 2020; Shapiro 2018a). Whereas the large players such as Danske Bank and Nordea can afford their own ICT departments (either in-house or as outsourced entities), this is not the case for smaller banks. Hence, the SMEs in the Danish banking sector have joined forces and run four data companies (BEC, SDC, Bankdata and JN-data), which deliver all ICT services and development. Some of these were founded back in the 1960s (BEC, SDC and Bankdata), while others were founded shortly after the millennium (JN-data). For instance, Bankdata is owned and run by nine Danish banks to which they deliver data services, develop self-service solutions for online banking and support compliance measures (See *Case 1: Bankdata* below). The larger banks have large ICT departments in-house that support their data services. However, one of the main challenges experienced by larger banks are difficulties linked to innovation and R&D in-house due to various regulatory constraints. There are several Danish examples of banks outsourcing such research and research initiatives – or partnering up with smaller FinTech companies who are responsible for the innovative aspect of various projects. One example is the recent development and implementation of the app-based payment solution Mobile Pay, which now dominates the market, at least in Denmark. Mobile pay was developed by an outsourced entity from Danske Bank called Mobile Life.

Case 1: Bankdata

Bankdata is a large financial ICT research and development company in Denmark with 750 employees. It was founded in 1966 and is owned by nine Danish banks, which are also customers of the company. Bankdata provides complete ICT solutions, including the development of network and mobile banking, credit and advisory tools, support and security, for all nine banks. This is an advantage in particular for the smaller banks, which cannot afford to do this on their own. The banks actively participate in the planning and development of Bankdata's activities. In recent years, the focus of the company has been on creating agile organizational processes, where new ICT solutions are developed in close co-operation with individual banks and user-experienced staff. This has been a strategy to solve the dilemma between sharing ICT solutions and meeting individual demands among the client banks. The client banks in particular request new digital self-service solutions, whereas AI and machine learning-based solutions remain limited. Another focus has been to handle new requirements in relation to compliance. This has led to new competence and skill requirements. Although ICT specialists continue to represent most staff, a larger share of employees now hold university degrees within law, economics, business or social sciences.

The size and composition of the Danish FinTech industry

The Danish FinTech industry has grown rapidly within the last five years, accompanied by rapid job growth and substantial investments (see *Developments in Danish FinTech 2015–2021* below). In 2020, the number of FinTech companies in Denmark reached 280 – an increase of 144% since 2016 (Business Insights, 2021; Copenhagen FinTech Policy, 2021). In addition, more than 2,300 jobs were created in the sector over the last five years. Investment funding in FinTech has also increased. In 2019, Danish FinTech companies received the largest share of venture capital among all tech companies in Denmark (Kulager, 2020).

Developments in Danish Fintech 2015–2021

- The number of Danish FinTech companies has grown from 71 to 280
- New jobs created through FinTech in Denmark have increased from 700 to 2,300
- The number of partnerships between FinTech and established companies has increased from 10 to 120
- Investments in FinTech companies have grown from DKK 95 million to DKK 3,529 million

Source: Copenhagen FinTech Policy (2021)

Danish FinTech companies operate within different areas. The business organization Danish FinTech categorizes the Danish start-up companies within 13 domains (see Figure 1). These include: Regtech and Security, Corporate Infrastructure, Digital Banking, P2P-Lending, Pension and Wealth-tech, Business Solutions and Platforms, Payments Processing and Networks, Insurtech, Cryptocurrencies, Money Transfers, Accounting and Payroll, Data Analytics Providers, and Direct Lending. In 2020, the three largest domains were Business solutions and Platforms, Payment Processing & Networks, and Data Analytics Providers. Around 40% of all FinTech start-ups were active in one of these domains. The fastest growing domains are Corporate Infrastructure and Cryptocurrencies. We also find Techin companies in Denmark. The largest is Coop Bank established in 2013, which is a banking service developed by one of the largest retailers, Coop Danmark. Today, COOP Bank has more than 150,000 customers and operates via more than 1,100 retail shops⁸.

As new actors enter the FinTech stage, there is a continuous differentiation of services, but also constantly new collaborations between the different actors that shape the Danish FinTech development. In this report, we have been able to identify three prime leitmotivs or themes characterizing this development: The role of tech hubs, partnerships between traditional banks and FinTech companies, and employment relations in Danish FinTech. The following section presents our analysis of these three themes.

⁸ <https://coopbank.dk/om-coop-bank/>



Figure 1: Overview of the Danish FinTech Start-up Scene. Source: Copenhagen FinTech. Replication approved by Copenhagen FinTech.

The role of tech hubs for Danish FinTech: facilitator and relation maker

The Danish market for FinTech companies is mainly organized around a number of tech hubs. An important example is the Copenhagen FinTech Lab, which was created by the organization Copenhagen FinTech in 2016⁹. The Copenhagen FinTech Lab is a co-working space housed by The Financial Services Union Denmark (Finansforbundet). It was set up by the social partners within the Danish finance and banking sector and supported by a wide range of partners, including Danish and Nordic banks and global players in finance. The aim of the lab is to “develop Copenhagen as one of the leading FinTech Hubs in the global financial services industry by supporting and catalysing the next era of technology-led corporate and start-up innovators”. Copenhagen FinTech Lab has attracted a lot of attention and often welcomes international delegations, who visit the hub to get an overview of major trends in the FinTech landscape. Finansforbundet and the other lab partners have co-founded the lab and have used it to familiarize themselves with the new FinTech players and to survey new competence and skill requirements in finance.

Today, Copenhagen FinTech Lab houses around 50 FinTech start-up companies, but more than 120 companies have been affiliated with the lab since it was established. Many affiliated start-up FinTech companies have left the hub and evolved into larger successful finance companies. The FinTech companies focus on various financial services from P2P-Lending (for instance Lendino and Kameo) to Pension and Wealthtech (Nord.Investments and Grandhood), Payments Processing and Networks (Aryze), Crypto-currencies (Cyroinvest) and many more. Nord.Investments¹⁰ is an example of a successful FinTech start-up, which has experienced rapid growth and expansion as part of the lab. Today, the company has 11 employees and 2,650 customers. The company co-operates with a larger Danish tech bank, Saxo Bank, which delivers important infrastructure such as banking licences and compliance competences. Nord Investments wants to expand into other countries inside and outside the Nordics and has started to explore such potential markets (see *Case 2: Nord.Investments* below).

⁹ <https://copenhagenfintech.dk/>

¹⁰ <https://www.nord.investments/>

Case 2: Nord.Investments

NORD.investments is a digital investment advisor that offers a completely digital investment experience, i.e. they operate in the domain of Pension and Wealthtech. It was founded in 2016 and expanded fairly quickly. In the early years, the company was situated at Copenhagen Fintech Lab, but it later consolidated outside of the lab in central Copenhagen. Due to the effects of the pandemic on the market as well as the lack of day-to-day networking outside the lab, they decided to re-integrate with Copenhagen Fintech Lab in late 2020. Today, the company has 11 employees and 2,650 customers and facilitates investments of more than 650 million DKK, corresponding to 87 million euros. Most of the employees are young people with tech or business backgrounds, however, they have also recruited more experienced workers with legal expertise. The company co-operates with a larger Danish tech bank, Saxo Bank, which works as their infrastructure and supplies access to licences. Saxo Bank has a partnership strategy for co-operating with digital start-ups. Nord.investments wants to expand into other countries inside and outside the Nordic countries, but here, they also depend heavily on a larger partner bank, which may help to define their choice of new foreign markets. National variations are significant with regards to rules and regulations, and therefore they need legal support in markets outside of Denmark. In May 2021, Nord.Investments floated on the stock exchange in Denmark (Ohmeyer, 2021). Read more: <https://www.nord.investments/>

There are also examples of successful FinTech start-ups emerging outside of the Copenhagen FinTech Lab. In 2015, the Digital Banking company Lunar Way was founded by CEO Ken Villum Klausen in Århus. He wanted to create an app-based and mobile bank solution inspired by social media and targeting the young customer segment. The company grew quickly and has received a number of larger investments (\$53 million so far). In 2019, they obtained a European Banking licence and changed their name to Lunar Bank¹¹. They plan to expand into the Nordic countries and are already operational in Denmark, Norway and Sweden (see *Case 3: Lunar Bank* below).

¹¹ <https://lunar.app/dk/>

Case 3: Lunar Bank

In 2015, the company Lunar Way was founded by CEO and partner Ken Villum Klausen (CEO). They wanted to create an app-based and mobile banking solution with SOME elements and a strong visualization of services. During their first years of operation, they targeted young customers (millennials) and relied heavily on investor funding. Today, they have more than 300 employees (40 in tech positions) and more than 250,000 customers across the Nordic countries.

In the early years, they established a partnership with Nykredit Bank. Nykredit Bank shared their infrastructure with Lunar Way – including their banking licence – whereas Lunar Way focused on delivering innovative digital solutions and customer experiences. However, it seemed increasingly difficult to make the digital part of the partnership work. Nykredit Bank is founded on a more traditional digital solution well-situated in one of the data companies, whereas Lunar Way utilizes cloud-based technology. Accordingly, Lunar Way decided to obtain their own banking licence, which would allow them to collaborate directly with data companies and other partners and offer the same services as a traditional bank. An important part of this strategy was also to keep (young) customers in-house, when they reach an age where they want to buy their own home.

In 2019, Lunar Way became Lunar Bank (with a banking licence), which has accelerated the growth of the company. They have also expanded into the Nordic countries and are now active in Sweden (since 2020) and in Norway and Finland (since 2021). In 2021, they bought the Swedish Fintech company Lendify, which also expanded the company. They consider the Nordic market profitable for digital banks and have a clear Nordic market strategy.

Today, Lunar Bank co-operates with many partners in the bank sector to offer a variety of services. They co-operate with Saxo Bank to offer investment opportunities, with Tryg on insurances, with Nordic Api Getaway on account information, with Subajo on subscriptions and Nets on transactions. Furthermore, they co-operate directly with a data company to obtain clearing. Their collaboration with the data company involves challenges, as the data banks often rely on older codes in their digital systems. As mentioned, Lunar Bank utilizes a cloud-based technology (Amazon web service) and is built around micro-services, where codes can easily be changed in single services without changing other codes. This is very different to the digital structure at the data companies, where the code limits the scope and depth of innovation according to Lunar's experiences.

From the very beginning, the technology and digital structure has impacted recruitment processes. Lunar Bank especially seeks to hire younger people outside the banking sector with a quest for innovation and problem-solving as well as tech skills. Typically, they hire students part-time and many of them shift to full-time positions in the company after graduation. However, after obtaining its banking licence, Lunar Bank has also started to recruit more established candidates from the banking sector with competences within compliance and regulations, as they need to have these competences in-house.

The Camp and Symbion – other important FinTech hubs

In 2016, the insurance company Tryg set-up a hub called The Camp¹² for Insurtech, FinTech and other start-ups in Denmark. The co-working space houses more than 20 start-ups within various business areas and is located at Tryg's headquarters in Copenhagen, which provide office space for 185 start-up workers. More than 100 companies have been through the hub. The aim for Tryg with housing and co-ordinating The Camp is to facilitate a dialogue between innovative Insurtech start-ups and the core business of Tryg to stimulate the development of the core business and facilitate partnerships. Recently, they also launched a series of open virtual conferences called Vertical Tracks, where start-ups and established players in the Danish insurance industry can meet external experts and embark on dialogue around the future of finance. In 2018, together with a number of founders, Tryg established the Insurtech solution Undo, which is targeted towards young people. Other notable Insurtech companies in Denmark are the first mover Scalepoint (founded in 2001) and Penni, which has collaborated with the insurance company Topdanmark, as well as Coop insurance (in collaboration with the retailer Coop Denmark).

Another important tech and FinTech hub is Symbion¹³, which is one of the largest start-up hubs in Denmark, housing 650+ companies in four locations. Symbion started as a hub for start-ups in biotech and medtech, but over the years it has increasingly included a number of FinTech companies. For instance Qred Erhvervslån¹⁴, which operates in the domain Direct Lending, as well as Astro.io¹⁵ and AI Alpha Lab ApS¹⁶, which are Pension and Wealth tech solutions. Symbion offers a wide range of services for start-up companies and facilitates collaborations between FinTech and biotech.

Partnerships between traditional banks and FinTech companies: innovation, scale and technological challenges

According to Copenhagen FinTech Lab, there are more than 100 partnerships between FinTech companies and traditional players in finance and banking in Denmark today. The partnership model is core in the FinTech industry as well as in traditional banking and finance. A key argument for joining forces seems to be that digital innovation works better outside the work organization and the tech infrastructure of the traditional banks, i.e. in a smaller FinTech company or in an outsourced entity, as they often appear more agile than traditional banks. The stories and trajectories of Mobile Pay, Coop Bank and Coop Insurance as well as The Camp support this point. However, our interviews with FinTech

¹² <https://thecamp.io/>

¹³ <https://symbion.dk/>

¹⁴ <https://www.qred.com/da-dk/hjem>

¹⁵ <https://astro.io/>

¹⁶ <http://www.aialphalab.com>

companies and stakeholders of Copenhagen FinTech Lab also demonstrate that traditional banks can offer FinTech start-ups access to important infrastructure in the form of access to data companies, bank licences and expertise within compliance and regulation. Moreover, the traditional banks have often larger sums to invest in new start-ups, which can accelerate growth. All these factors are important, when FinTech companies seek to scale up in a national market or enter new markets internationally. In sum, the partnership between traditional finance companies and FinTech start-ups seem to be a win-win situation for both parties involved.

For instance, Nord.Investments developed a partnership with Saxo Bank, which has a banking licence, which is required to facilitate an end-to-end investment experience. For Nord.Investments, the access to important infrastructure in a registered bank was the driver for seeking a partnership. The Head of Marketing explains:

You meet us, Nord.Investments, in the app, and when you invest, your deposit is safe with Saxo Bank. We pay Saxo Bank to use their infrastructure. They do not own part of us, but we have a close partnership with them. We provide the investment advice and customers deposits are with Saxo Bank. We have a market strategy to expand in the Nordic countries, and here we depend on a partner bank in the new market. We have both been looking at the markets where Saxo Bank has a strong presence, but we are also exploring other options.

Nord.Investments has chosen Saxo Bank as their partner, because of their new technological infrastructure. This strategy is similar to other FinTech companies, which have struggled when collaborating with banks with older technological infrastructures. Also, Saxo Bank has an explicit partnership strategy in relation to FinTech start-ups and co-operates with several FinTech companies. According to Nord.Investments' experience, large parts of the Danish banking sector utilize old-fashioned technologies – which makes collaboration between innovative start-up FinTech companies and traditional banks challenging. In fact, the Head of Marketing at Nord.Investments explained that it took them some time to identify the right partner, because it was critical to them that the partner bank had specific digital infrastructures in place:

There are not many banks with an available API, which is important to provide a 100% digital solution. Many banks deliver data in an Excel sheet. When we chose our current partner bank, we wanted one with an API, and the only one available at that point in time was Saxo Bank. Before we co-operated with Saxo Bank, we received an Excel sheet every morning, with updated data on all our customers. That is the reality in the banking sector. This changed when Saxo Bank became our partner bank, because they have a modern digital infrastructure. This is also the reason why they have many partnerships with FinTech companies.

Lunar Bank has had similar experiences to Nord.Investments. Before Lunar Bank obtained their own banking licence, they were in partnership with Nykredit Bank. However, their co-operation involved various challenges due to differences in the

technological infrastructure, which was also one of the reasons why Lunar Bank opted to acquire their own banking licence. The COO at Lunar Bank explains:

Our original business model was very inspired by the tech scene, especially in Denmark, with a split between who owns the basic infrastructure and who is the service provider on top of it. We had to find a business partner who had their own banking licence and had the basic infrastructure, and then we could concentrate 100% on products, services, the user experience, digital development, everything that the customers meet. Therefore, we established a collaboration with Nykredit Bank involving a revenue split. Although it was a really good collaboration, we also experienced limitations because we were bound by their infrastructure. Our technology is 100% cloud-based and it does not fit so well with the digital infrastructure at Nykredit Bank. Therefore, the idea came to get our own banking licence. No one has done that for the last 10 years in Denmark. But then we get control with the choice of other partners and with our products. So our business model pivots in the process from being an infrastructure/service provider model, i.e. a partner bank model, to a technology company with a banking licence, and that is very much what defines our DNA today.

Although the partnership model is often considered as a win-win solution for both parties involved, it is also evident that the partnership is not without challenges. It is in particular the different digital infrastructure in FinTech companies vis a vis traditional banks that seem to be problematic and tend to be considered a constraint by both the start-up and the traditional banks. Subsequently, this may also impact the choice of partner bank, as well as cause start-up FinTechs to change their choice of partner bank (Nord.Investments) or change their business model (Lunar Bank).

Employment relations in Danish FinTechs: framework agreement and employers' association

In line with what is usually understood as a Scandinavian model of labour market regulation, wages and working conditions in Danish banking are regulated through collective agreements negotiated and signed by social partners at sectoral and company levels. The Financial Services Union Denmark (Finansforbundet) represents employees within the Danish banking sector, while the Danish Employers' Association for the Financial Sector (Finanssektorens arbejdsgiverforening, FA) represents the voice of the banks and other financial institutions. The collective agreement coverage is estimated to be around 80% in the traditional banking sector, whereas it is much lower in new segments of the industry such as FinTech and Insurtech (Jørgensen, 2011).

Danish social partners have a strong tradition of collaborating in formal and ad hoc tripartite arrangements on various themes, including the issue of digitalization (Ilsøe, 2017). This is also the case in the financial sector. Both the Financial Services Union Denmark (Finansforbundet) and the Danish Employers' Association for the Financial

Sector (FA) have participated in the SIRI Commission¹⁷ (2018), focusing among other things on FinTech (Shapiro 2018b,c) and in the Competence Council¹⁸ (2019) targeting the need for new competences in finance and banking. In addition, unions and employers' associations have embarked on a series of joint initiatives such as the aforementioned Copenhagen FinTech Lab, as well as large-scale joint research and development projects. Health and safety at work in the age of digitalization is a core concern at Finansforbundet and FA, and they received 6 mill. DKK for a project entitled Digital Future Work Lab¹⁹ from the Velliv Association in 2019. In this project, social partners in collaboration with researchers from the National Research Center for Work Environment (NFA) investigate mental health in digital work.

Digitalization was also a key theme during the most recent sectoral collective bargaining round within the Danish finance and banking sector (sector-level agreement 2020–23) and was an integral part of the bargaining results (Finansforbundet, 2020). For example, the employers pushed for a more flexible scheduling of working time and overtime, which are requested by many banks and finance companies working on digital innovations, including FinTech solutions. The new agreement allows for greater latitude of individual working time scheduling and a more flexible use of overtime at company level.

A recent initiative is Copenhagen FinTech Policy, which was founded by Finansforbundet, Finance Denmark, Insurance and Pension Denmark, Confederation of Danish Industries and Copenhagen FinTech. Copenhagen FinTech Policy tries to make parliament aware of recruitment challenges within Danish FinTech (Copenhagen FinTech Policy, 2021). According to Copenhagen FinTech Policy, one of the main barriers to growth in the sector is the lack of skilled workers. It is especially difficult to attract enough workers with the right tech competences. One reason for this is the strict regulations in Denmark with regards to hiring foreign workers from outside the EU.

FinTech employers' association (AF) and the framework agreement for FinTech companies

In 2021, three larger FinTech companies formed an employers' association for FinTech companies in Denmark, *Arbejdsgiverforeningen for FinTech* (AF), that have become members of the exiting employers' association in Danish banking FA, *Finanssektorens Arbejdsgiverforening*. The three companies are Lunar Bank, Nordnet and P27 Nordic Payments Platform. Lunar Bank is a Digital Banking solution (described above), whereas Nordnet and P27 operate within the domains Pension and Wealth tech and Payment Processing & Networks, respectively. All three FinTech companies are active in several Nordic markets. Simultaneously with the formation of AF, Finansforbundet and AF

¹⁷ <https://ida.dk/om-ida/temaer/siri-kommissionen>

¹⁸ <https://www.finansforbundet.dk/dk/nyheder/2019/vi-vil-uddanne-holdbare-medarbejdere/>

¹⁹ <https://futureworklab.dk/>

announced that they had concluded a framework agreement covering the three companies for the next three years (Arbejdsgiverforeningen for FinTech (AF) and Finansforbundet, 2021). To our knowledge, this is one of the first sector-level agreements in FinTech, not only in Denmark, but also in the rest of the Nordic region and the rest of Europe.

The frame-work agreement, *Rammeoverenskomst 2021–2023*²⁰, covers many of the core topics typically addressed in a sector-level agreement on the Danish labour market: wages, working time, pension, maternity leave, further training, holiday entitlements and election of workplace representatives. Furthermore, the agreement includes a general agreement for rules and regulations on handling conflict of interests related to labour standards, and procedures for enacting the system of arbitration and the labour court system. This was considered pivotal, as social partners in banking and finance are not members of the Confederation of Danish Employers (DA) and the Confederation of Danish Trade Unions (FH). Thus, their framework agreement is not covered by the confederal main agreement between DA and FH, which, among other things, outlines procedures for conflict resolution in large parts of the Danish private sector. The framework agreement *Rammeoverenskomst 2021–2023* can be signed by FinTech companies, who join AF, and have 10+ full-time employees.

The agreement by AF and Finansforbundet differs from most traditional Danish sector-level agreements, first and foremost due to its status as a framework agreement. Many important labour standards such as wage, working time and pensions that usually are set in most sector-level agreements are delegated to company-level bargaining. Only topics such as maternity leave and competence funds for further training are regulated with a higher level of detail in the agreement. However, FinTech companies who sign the framework agreement by AF and Finansforbundet are mandated to initiate company-based negotiations on all issues. The framework agreement clearly states that these negotiations at company level should be conducted between the company and either elected union-affiliated workplace representatives or representatives from Finansforbundet. This can be characterized as a novel form of centralized decentralization, at least in the Danish context, due to the mandatory obligations for local social partners to initiate and engage in collective bargaining (Due et al., 1994). We find similar mechanisms of decentralization of collective bargaining in Danish manufacturing; however, here the level of detail is much higher in the sector-level agreement and local bargaining is optional (Due et al. 1994; Ilsøe 2012; Larsen and Navrbjerg, 2015). The opening statement by the employers' associations AF and the union Finansforbundet on the first page of their agreement reflects the unique character of their agreement: *Arbejdsgiverforeningen for FinTech (AF) and Finansforbundet concluded this framework agreement in mutual understanding of the differences in local conditions*

²⁰ <https://www.finansforbundet.dk/media/doqjeb/rammeoverenskomst-2021-2023.pdf>

across companies and among employees (Arbejdsgiverforeningen for FinTech (AF) and Finansforbundet, 2021).

According to Lunar Bank, which was one of the driving forces behind the establishment of AF and the negotiations of the framework agreement, there were several reasons for enacting these steps. First, the need for structure around wages and working conditions increases when a start-up FinTech company grows into a medium-sized or large company. This has to do with organizational legitimacy internally among the employees and externally among customers and other collaborative partners. But it is also about saving time and bureaucracy in larger organizations, and might be a sign of what other FinTech companies will choose to do in the future, when they scale up their business. The CEO of Lunar Bank explains:

Well, I think, first of all, when you become as big as we are, then it is part of being a company in Denmark that you follow the rules of the game. We have an excellent labour market with collective bargaining rules that both sides follow. I think you have to support that. And the other thing is that even though we can easily recruit employees, we also want to offer them some more structured conditions. When you're approaching 300–400 employees, you cannot just run it like you were a start-up. Then it is a really good idea that you write some of these things down on paper, so everyone agrees on the rules. Then we do not have to sit and have salary talks with each individual, it is regulated by the agreement. In the end, we became so big that it was difficult to defend to the outside world not being part of an agreement.

These reflections also relate to the fact that the finance and banking sector is one of the most organized sectors in Denmark according to agreement coverage and membership rates of unions and employers' associations. According to Lunar Bank, it affects your image if you do not join the system. The CEO of Lunar Bank underlines that this not only means offering proper conditions like the traditional players in the market, but also taking responsibility for the system as a whole:

The financial sector is probably one of the most agreement-heavy sectors in Denmark. We do not have many conflicts, but all companies are part of the traditional sector-level agreement. Accordingly, it is a little hard to defend to stand outside the agreement as the only player on the banking market. Both for ourselves, our employees and our partners in general. (...) Also, I think it is an obligation to support the societal development in a good direction, when you are a bank and look after other people's money. You must contribute to the societal contract. This is also why we wanted to form an employers' association and a framework agreement covering several companies, instead of just negotiating a company agreement.

However, it never seemed to be an option to join the traditional sector-level agreement for Lunar bank, as they considered the existing sectoral agreement to be too detailed – especially with regards to working time. Once again, the company's CEO explains:

It would be difficult for us to use the traditional agreements, which aim to regulate physical meetings with customers operating around a 9–16 schedule. Workers in Lunar have another mindset and a need for flexibility, and we as managers do not mind when or where you work as long as you deliver. Some of the traditional banks might think we got a slightly cheaper model with the framework agreement, but in fact wages are not the main issue for us today. Wages are core issues, when you are a start-up. You cannot pay market-standard wages as long as you are only investor-funded. But today the main issue is flexibility and to signal the values that are important for our employees.

According to Finansforbundet, they entered negotiations for the FinTech framework agreement with the aim of regulating the FinTech industry via collective agreements. They are well aware that other aspects of collective organization remains limited within FinTechs such as low union density. However, Finansforbundet considers that the framework model includes flexibility gains that may attract some of the larger players in the market and have a positive impact of wage and working conditions over time. The President of Finansforbundet explains:

We have a clear strategy to use the existing institutions like Copenhagen FinTech to cover the largest possible share of FinTech companies with collective agreements. In the initial phase this is even more important than to organize workers as union members. This we can do in the next phase. Also, we think it is better to develop a framework agreement that allow companies like P27 to keep their already established pension fund and negotiate a local agreement on that. We did not want to develop a cheap version of the existing sector-level agreement in banking, but to support and include the already positive developments in wage and working conditions. Also, we hope that the framework agreement supports the definition of FinTech as an industry – a task already initiated by Copenhagen FinTech and Copenhagen FinTech Lab.

The CEO of Lunar Bank underlines that this proactive strategy and attitude towards FinTechs at Finansforbundet has been an important foundation for where the Danish FinTech sector stands today. The vision of the union to develop, set up and house Copenhagen FinTech Lab and build a collaborative model with all Danish banking actors around the lab is a key prerequisite to the partnership model becoming widespread in Danish FinTech. This union-led approach with strong tripartite elements also seems to be a pivotal driver for the collaboration between individual FinTech companies in the new FinTech employers' association AF.

Summary and reflections

The Danish banking sector is dominated by a few large players and a number of SMEs. The market for FinTech companies is mainly organized around the hub Copenhagen FinTech Lab, which houses around 50 start-ups and has facilitated more than 120 FinTech companies since the hub was founded in 2016. The Danish FinTech industry has grown rapidly in recent years. Today, we find more than 280 companies, 2,300 jobs and 120 partnerships between FinTechs and traditional banks. Investment funding has superseded

3,500 million kroner. FinTech companies operate within various domains with Business solutions and Platforms, Payment Processing & Networks, and Data Analytics Providers being the three largest.

A general characteristic for the start-up community within Danish FinTech is the partnership model. Many FinTech start-ups collaborate with established and larger companies within banking, finance, retail, insurance, etc. This reflects the core aim of the union-led Copenhagen FinTech Lab, which is to stimulate partnerships between traditional players and start-ups to facilitate both room for innovation and infrastructure to support growth. The FinTechs tend to offer the technology, competences, agility and size that facilitate innovation, whereas the traditional banks offer banking licences, legal support within compliance and regulation, and last but not least funding to ensure growth. However, experiences by the case companies analysed in this study, Nord.Investments and Lunar Bank, demonstrate that these partnerships are not without challenges. A core challenge is that traditional players often use older and more traditional technology, whereas FinTechs tend to prefer cloud-based technologies. This can lead to changes in partnerships or business models. Finally, all finance companies and banks operating in Denmark (including FinTech companies) depend on collaboration with one of the existing data companies to obtain clearing (ability to transfer between accounts). However, these companies also tend to use more traditional technologies, which may affect the collaboration.

Social dialogue and collective organization in Danish banking is strong, with a general agreement coverage of 80% and high membership rates of unions and employers' associations. This seems to have an impact on the larger and successful FinTech companies. In 2021, three of the largest FinTechs in Denmark formed an employers' association for Danish FinTech companies (AF) as well as initiated and negotiated a framework agreement on different labour standards with Finansforbundet. One of the members of AF, Lunar Bank, which participated in the negotiations, explained that the internal and the external legitimacy on the market played a key role in taking this step. However, the agreement was also necessary to facilitate a clear structure on wages and working conditions and clear rules of the game within the organization, as individual bargaining tends to be time-consuming and highly complex in a large organization. The union, Finansforbundet, sees the framework agreement as a lever to start protecting the new FinTech industry with collective agreements, as this is a part of the Danish labour market that until this agreement was reached operated on the fringes of the Danish collective bargaining model. In many ways, the agreement can be regarded as a result of the institution-building via Copenhagen FinTech and Copenhagen FinTech Lab. However, it is also intended to be the first step on the way to organize workers in the future. As the framework agreement is very new, this study has been unable to evaluate the effects of the agreement and its implementation and further implications. Future studies should explore the impact of the framework agreement for social dialogue at company level (Ilsøe 2012; Larsen and Navrbjerg, 2015). Do the FinTech companies

negotiate locally as mandated and what are the effects of the local agreements in practice? Who negotiates on behalf of the workers: local workplace representatives or representatives from the union office? What is the legitimacy of such agreements – notably as the union density is low in FinTech companies compared to the union density in traditional banks – and how does this impact local bargaining results? Such studies would benefit from including worker interviews, which unfortunately were outside the scope of this study.

References

- Arbejdsgiverforeningen for Fintech (AF), & Finansforbundet. (2021). *Rammeoverenskomst 2021-2023*. Retrieved from <https://www.finansforbundet.dk/media/doqjeblls/rammeoverenskomst-2021-2023.pdf>
- Business Insights. (2021). The Growth Story of Danish Fintech lead by Fintech Mapping [Website Report]. Retrieved from <https://www.businessinsights.dk/copenhagen-fintech-uk/the-growth-story-of-danish-fintech-lead-by-fintech-mapping/>
- Copenhagen Fintech. (2020). *Copenhagen Fintech 2020*. Business Insights. Retrieved from <https://www.businessinsights.dk/copenhagen-fintech/>
- Copenhagen Fintech Policy. (2021). *Digitale talenter efterlyse—9 anbefalinger til Folketinget* [Online Report]. Retrieved from https://copenhagenfintech.dk/documents/86/9_r%C3%A5d_til_foketinget_052021.pdf
- Due, J., Madsen, J. S., Jensen, C. S., Petersen, L. K., & Martin, S. (1994). *The Survival of the Danish Model: A Historical Sociological Analysis of the Danish System of Collective Bargaining*. Copenhagen: DJØF Publishing.
- FA. (2019a). *Udvikling i finanssektorens uddannelsesniveau*. København: FA. Retrieved from <https://fanet.dk/noegletal/noegletal-udvikling-i-finanssektorens-uddannelsesniveau>
- FA. (2019b). *Kønsfordelingen i finanssektoren*. København: FA. Retrieved from <https://fanet.dk/noegletal/noegletal-koensfordeling-i-finanssektoren>
- FA. (2020). *Aldersfordeling efter virksomhedstype*. København: FA. Retrieved from <https://fanet.dk/noegletal/noegletal-aldersfordeling-efter-virksomhedstype>
- Finansforbundet. (2020). *Overenskomst 2020*. København: Finansforbundet.
- Ilsøe, A. (2012). The Flip Side of Organized Decentralization: Company-Level Bargaining in Denmark. *British Journal of Industrial Relations*, 50(4), 760–781. <https://doi.org/10.1111/j.1467-8543.2011.00875.x>
- Ilsøe, A. (2017). The digitalisation of service work – social partner responses in Denmark, Sweden and Germany. *Transfer: European Review of Labour and Research*, 23(3), 333–348. <https://doi.org/10.1177/1024258917702274>

- Jørgensen, C. (2011). *Denmark: The representativeness of trade unions and employer associations in the banking sector*. Dublin: Eurofound.
- Kulager, F. (2020, January 23). Jeg har set ind i fremtiden. Bedre kendt som listen over storinvestorenes favoritvirksomheder. Retrieved from <https://www.zetland.dk/historie/sOPVqJay-aOZj67pz-18df9>
- Larsen, T. P., & Navrbjerg, S. E. (2015). The economic crisis: Testing employee relations. *Economic and Industrial Democracy*, 36(2), 331–353. <https://doi.org/10.1177/0143831X13506050>
- Ohmeyer, K. (2021). *Nord Investments klar til børsnotering: Aktiesalg overtegnet 68,3 pct.* Børsen. Retrieved from <https://borsen.dk/nyheder/investor/nord-investments-klar-til-borsnotering-aktiesalg-overtegnet-683-pct>
- Rolandsson, B. (Eds.) (2020). *Digital Transformations of Traditional Work in the Nordic Countries* (540th ed., Vols. 1–2020:540). Copenhagen: Nordisk Ministerråd. DiVA. <https://doi.org/10.6027/temanord2020-540>
- Shapiro, H. (2018a). *Udviklingstrends i den finansielle sektor*. København: Finansforbundet. Retrieved from https://www.finansforbundet.dk/media/ly2falla/udviklingstrends_i_den_finansielle_sektor.pdf
- Shapiro, H. (2018b). *Fintech, en international kortlægning*. København: SIRI Kommissionen. Retrieved from https://ida.dk/media/2500/fintech-report_hsh_v2_final.pdf
- Shapiro, H. (2018c). *Fintech i Fremtidens Danmark – Muligheder og Udfordringer*. København: SIRI Kommissionen. Retrieved from https://ida.dk/media/2501/fintech_rapport_2018_06.pdf

Chapter 7: Discussion and conclusions

Bengt Larsson and Bertil Rolandsson

This chapter summarizes the results and analyses of the preceding case studies. By comparing and carving out some commonalities of the development and situation in the studied countries – Sweden, the Netherlands, Estonia and Denmark – we will now set out to discuss more specifically the questions initially raised in the report: How can we depict the national FinTech development, and which factors are facilitating or impeding it? How can we understand the relationship between the traditional incumbent actors and the new challenger firms in the FinTech niche? What do skills requirements and staffing look like in the FinTech niche, and how do employment relations differ from the overall financial sector? To what extent do regular employer associations and trade unions play a role in these employment relations?

Before addressing the empirical themes allowing us to answer our questions, we will give a brief description of some contextual factors shaping the four countries studied. We will then also recapitulate how the overall FinTech development in general, and FinTech companies in particular, have been seen as disruptive to the financial markets. From this point of departure, we continue to discuss how we understand the ongoing *transformation* of the financial markets into a more complex market ecology, in which financial technology in general and FinTech companies in particular play an important role in processes of not only competition, but also co-operation and co-optation. Addressing in particular our first two questions, we then also turn to the emerging *consolidation* of the FinTech niche as such, and of its integration into the new market ecology. Addressing our final two questions, the final theme of the conclusions concerns the employment relations and labour market organization, in a discussion of which indications of an emerging *formation* can be may identified in the FinTech niche.

The four countries studied, Estonia, Denmark, the Netherlands, and Sweden, are all open economies characterized by concentrated financial and banking markets, dominated by a few large banks as well as a greater number of specialized banks and financial companies, including some foreign actors. With the exception of Estonia, in which other Nordic banks are dominant, the major banks on these markets are domestic. All four countries have a highly developed digital infrastructure. The use of the internet, smartphones and other new digital technologies is widespread throughout society. In all these countries digital transformation to online banking has been pervasive, and the use of FinTech is an integral part of the strategy applied by the large banks providing financial services. Even so, there has been a rapid increase in the number of FinTech companies that over the last decade have established businesses in all these countries, providing us with some of the most advanced FinTech contexts in the European Union.

Transformation of financial markets – Disruption or cooperative interdependence?

Over the years, research on financial businesses has repeatedly depicted digital technologies as a source of dramatic change, fostering disruptive innovation effects both for established business models and for working conditions and employment relations (Chiu, 2016; Frey and Osborne, 2017; Susskind and Susskind, 2015). The development of the internet in the 1990s emerged as a vehicle for change in the banking and financial markets, and the expansion of online banking around 2000 did eventually expedite the closing down of local bank branches in many countries. There followed a period of strong growth and concentration in the financial sector, which ended with the Great Recession of 2008 (Rolandsson et al. 2020). Once again, new digital technologies were seen as a source of disruption, supporting further bank mergers as well as triggering warnings of massive job loss, and apocalyptic scenarios of the end of work (Arner et al., 2016; cf. Lomachynska, 2020).

In the introduction, we pointed out that this type of a disruptive narrative also applies to recent developments in FinTechs, emerging as a threat to traditional banks and their “one-stop-shop” business models that used to provide all the services a customer would require. FinTechs are seen as challengers forging new types of financial businesses by providing updated, mobile and innovative digital services exploiting the possibilities of App-based services and AI in connection with the growth of a new infrastructure of open banking, giving FinTech companies access to the banks’ application programming interfaces (APIs) (Breibach et al. 2020; Degryse 2016; Lomachynska, 2020). Echoing broader discussions about digital disruption linked with robotization and AI (Brynjolfsson and MacAfee, 2015; Umans et al., 2018), this is a development that has raised concerns not just for the survival of conventional businesses models in the financial markets, but also for what types of jobs employees in traditional banking and finance will perform in the future (Abbasi et al., 2021; Rego, 2018; Rolandsson et al., 2020).

While the above narrative emphasizes the disruptive effect of FinTechs challenging established business models, regulation and employment relations in banking and finance (Chiu, 2016; Hagberg et al., 2021; World Economic Forum, 2016), our analysis points to a more nuanced development. We will begin by discussing the general transformation of the financial markets: here depicted as a development from a market towards a more complex market ecology (Atkinson and Wu, 2017; cf. Langley and Leyshon, 2021; Lomachynska, 2020). Rather than offering a completely new business domain or competition threatening to disrupt existing actors and business models maintained by traditional bank and financial actors, the analysis indicates that FinTechs become integrated in this new market ecology through a set of competitive, co-operative and co-optative relation with established actors – or in one word through *cooperative interdependence* (Bogers et al., 2019). As the value chain of traditional banking and finance is opened up with the help of digital technology and open banking – as supported both at national and EU-level through the PSD2 and the EU Digital Finance Strategy (European Commission, 2021) – varying relationships between traditional actors and FinTechs emerge. This is, of course, not unique to banking and finance, as similar developments have been discussed in other tech-penetrated markets, e.g., in insurance and pharma (cf. Christensen and Karlsson, 2019; Hagberg et al, 2021).

FinTechs and the transformation to a market ecology

As we compare the development across the four national settings, we thus find that FinTechs do not only emerge as a disruptive innovation force – if by that we mean that they interrupt existing businesses, market leaders and alliances in a fundamental way, or the creation of new markets (cf. Chiu, 2016). There are, naturally, FinTechs that act as challengers in relation to the traditional market incumbents, e.g. those aiming to become established as neobanks without any physical branches, thereby adding actors to the online retail banking market (cf. Hodson 2021). However, many of them are deeply engaged in collaboration and strategic partnerships with traditional banks and other established actors on the finance market (cf. Brandl and Hornuf, 2020; Hornuf et al., 2020). FinTechs active in these four countries thus do not primarily act as challengers to traditional banks, but as catalysts in the transformation towards a more complex financial market ecology. By applying the concept of “ecology”, the following analysis continues to describe in greater depth how these FinTechs become actors among several other interlinked or interdependent actors, engaging with each other to develop a specific domain or business ecology by using the same infrastructure (Abbott, 2005; Adner, 2017; Bogers et al., 2019; Lomanchynska, 2020).

Our point of departure for the discussion is a very simple market model based on an analysis of up- and downstream markets (Aspers, 2011). Figure 1 briefly presents the main principles of a simplified model in which producers (e.g. banks) compete with other producers on the consumer market consisting of individuals and companies in need of, for example, credit or payment solutions. In fact, the definition of this as a “market” is based on the fact that there is competition on at least one and usually both sides of a market; that is, there are multiple producers or sellers and there are multiple consumers or buyers. The consumer markets that traditional financial actors and large banks are involved with may, of course, be discussed in terms of different segments or submarkets, as the traditional bank is, for instance, supplying not only credits, but also savings services, payment services etc., or is oriented to a certain segment of consumers, e.g. corporate banking vs savings or retail banking, but for the sake of argument we have kept the model simple. Looking upstream in Figure 1, we find a “role shift” in the sense that on the supplier market, the banks are buyers of products and services from other companies, e.g. hardware or software to perform their operations, or the labour market, where individuals (or temp agency companies) offer labour to the banks.

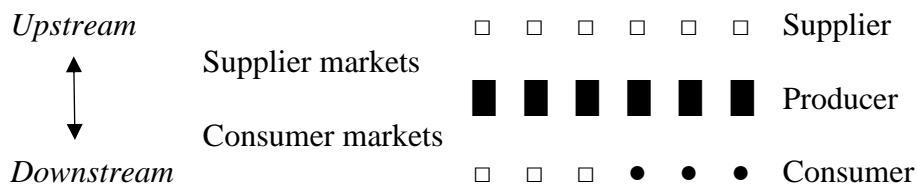


Figure 1. Simplified model of a traditional banking market

Symbols: ■ = Bank; □ = Supplier/Consumer firm ● = Consumer

Based on this simplified model, we may discuss how new FinTech companies are not only competitors to banks, but also “insert” themselves into other market positions , and thereby facilitate and expedite an ongoing transformation to a market ecology. Starting from the “producer position” in the centre of Figure 2, there are certainly FinTechs which are pure competitors to the traditional banks on some of the submarkets of banking and finance. The most illustrative example are FinTechs with an ambition to develop into neobanks, supplying payment solutions, credits, and savings services directly to customers – at least in some segments of the market, e.g. online shopping/e-commerce (cf. Hodson, 2021). Some of the FinTechs may also team up with BigTechs that have a large stock of customers in, for example, online commerce, thereby joining efforts through co-operation to compete with the traditional payment and credit services of banks. In addition, there are also more specialized FinTechs competing in particular market segments such as payment services, investment management, financial advice, regulatory technology, etc.

FinTechs may also position themselves as collaborators by placing themselves upstream in relation to a bank, providing technical solutions or even ideas that are bought by banks and thus co-opted or integrated through strategic partnerships (cf. Brandl and Hornuf, 2020; Hornuf et al., 2020). Another form of co-operation for FinTechs would be to place themselves downstream, between the bank and the customer. By, for instance, utilizing open banking solutions based on customer and account-information from the regular banks, they may then both open up the opportunity to add new services, and for customers to utilize and get an overview of services from different actors on the market. In so doing, they can increase the competition between the traditional actors by introducing apps that simulate a one-stop-shop solution on the customer end, even though different producers/sellers are used (cf. Lomachynska, 2020).

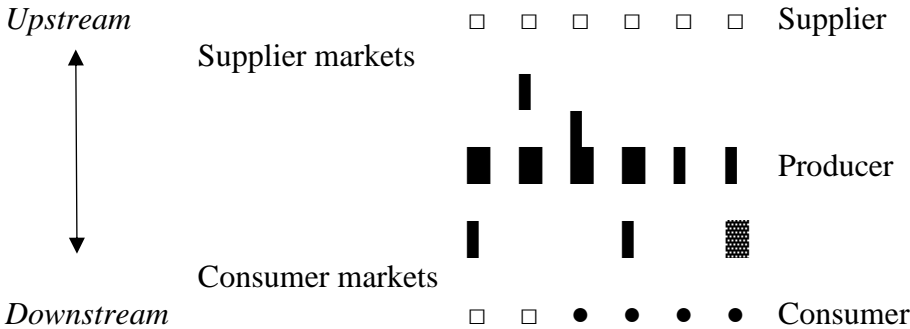


Figure 2. Simplified model of FinTech in the new banking market ecology

Symbols: ■ = Banks; ▮ = FinTechs; ▩ = BigTechs; □ = Supplier/Consumer Firms • = Consumer

The models in Figure 1 and 2 thus help us to understand FinTechs not only as competitors to traditional banks and other established actors on the financial markets, but also as actors

that aim to co-operate with them, or even be co-opted by them. As the Financial Technology as such reduces barriers to entry in the market, FinTechs “change the forms of interaction between market participants [...and] promote the diversity and competitiveness” (Lomachynska, 2020, p.376).

Even if this simplified modelling of the transformation into a market ecology does not model all processes of diversification and mergers of subsectors and actors on the financial markets, and downplays the fact that tendencies towards a market ecology already existed before the FinTech development, it illustrates how the discussion of FinTechs as mainly being challengers towards traditional banks must be nuanced – and that the FinTech development accelerates this process of expanding a more traditional market into a market ecology. In order to concretize this analytical discussion and answer our questions, we will now turn to some results illustrating how FinTechs in many instances advance a continuous transformation of the financial markets in collaboration with other more conventional and established actors.

Opportunities and challenges to co-operation on the new market ecology

The trend towards an integration of FinTech companies into the emerging financial market ecology discussed above is confirmed by both documents and interviews with representatives for traditional banks, business associations, FinTech companies, and unions in the four countries. Defying the strong association of FinTech with competitive threats and disruptive pressures, the attitude towards FinTechs and their diversification of financial services from traditional banks, as well as regulators and supervisory authorities, appears to be generally positive. As long as the banks do not risk becoming back-end suppliers for services or products that are undermining consumer trust in the financial markets, consumer security, regulatory control or financial stability, they do in many instances participate in the development. Perhaps this comes as no surprise given the EU Digital Finance Strategy, advocating open banking and the scaling up of FinTech, embraced in all these four countries recognized as being at the forefront of digital banking.

By comparing the different case studies, we find that traditional actors of the financial market in many instances regards FinTechs as a necessity, ensuring sufficient innovation required to meet customer demand and remain competitive. Across the different country contexts in this report, traditional banks are building alliances or strategic partnerships with FinTechs able to identify what they believe is the future demand for services and products, as they are already under pressure to open their value chains through the open banking regulations of the second EU Payment Services Directive (PSD2). In shaping these alliances, they do then also offer, for example, access to their clients as a customer base, or financial muscles. In this way the banks are still key actors in the new market ecology, but they see a need to co-operate with or co-opt innovative FinTech ideas, to develop new services and products to hold off the BigTechs who are also teaming up with FinTechs in offering payment and credit solutions (cf. Brandl and Hornuf, 2020).

Even if traditional banks have the financial capacity to develop FinTech services in-house, they often see collaboration with FinTechs as a means to maintain a position as relevant on an increasingly digital market, in which the FinTechs are cutting-edge and

innovative actors. The additional transaction costs are often also seen as sufficiently low to favour external partnerships over in-house development, thereby utilizing the entrepreneurial culture fostered in FinTechs. As collaboration enables banks to cherry pick already developed and proven concepts rather than develop their own, collaboration also allow the banks to externalize the risk of investment. In addition, traditional banks may benefit from collaboration with FinTechs, while looking to increase their market share with very limited capacity for in-house technological developments. The demand for updated IT systems and the fact that regulatory pressures require substantial investments, provide further reasons for both banks and FinTechs to collaborate.

Our case studies nevertheless indicate that the banks will have to transform their services while facilitating and enacting influence over the emerging market ecology; there will be less space for the type of integrated value chains that used to recognize traditional banking. Under such conditions, the FinTechs may then also take advantage of the increased collaboration. They develop new products and services that transform the organization of financial services, upstream as well as downstream. For instance, FinTechs are able to position themselves as influential collaborators upstream, providing technical solutions that are either bought by the bank or simply connected to the bank's financial product line and services. Likewise, they may place themselves downstream between the bank and the customer, e.g. by utilizing open banking solutions based on customer and account information from the regular banks.

Still, if considering the wider *institutional field* beyond the actual consumer markets, which also includes regulators, policymaking and associations of different kinds (Ahrne et al., 2015; Fligstein and McAdam 2012), we may identify some rather crucial challenges restricting the co-ordination of measures and technological resources underpinning the emergence of business ecologies in all four countries. The most explicit challenge referenced by the documents and in the interviews addresses regulations constraining or delaying innovation or the development of services and products. Regulation may slow down FinTech implementation for both established banks and FinTech start-ups. The fact that the former are governed by much stricter regulation and control, whereas the latter often experiment in a regulatory grey zone, acts as a regulatory interface between banks and FinTechs that may create obstacles for both sides. This is why banks may prefer to purchase and co-opt FinTech ideas rather than team up with FinTechs in co-operation, whereas some FinTechs search for partners outside of the national arena. FinTechs in particular point out that increasingly more stringent regulation has led to high administrative costs and difficulties in knowing what kinds of innovation they should embark on. In addition, there are also technical and cultural issues that still hinder co-operation (cf. Brandl and Hornuf, 2020). Some banks are dependent on older software and cultural ideas about banking, locking them into certain ways of doing things or slowing down the adjustment to new products and services. On the flip side, this creates difficulties for FinTechs in utilizing bank or customer account data through open APIs to the extent or at the speed they would like.

It should be pointed out that regulation is, of course, not always perceived negatively, even by FinTechs. Regulatory requirements certainly set limitations for both banks and FinTech companies in their business practices, but also contribute positively to business

activities and the potential for collaboration, by reducing uncertainty and contributing to consumer confidence and security. It may appear difficult to manage this dual impact of regulations, and involved actors representing banks, authorities and FinTechs therefore also address the demand for expertise that will enable them to capitalize on opportunities. The expansion of FinTech and the entrance of FinTechs drives the concern for new legal complexities related to digital infrastructures and cyber security, urging involved companies to hire more educated personnel with expertise in law, risk management and compliance. This expanding category of staff would thus meet demand for some sort of regulative guidance for how to design arrangements and organize collaborations. Across the four countries, several actors also emphasize the importance of state-controlled regulatory arrangements providing legal guidance and even FinTech experimentation in so-called regulatory sandboxes, making it easier for FinTechs to develop products and services in uncertain or complex regulatory grey zones.

Consolidation of the FinTech Sector – from start-ups to scale-ups?

By referring to the intensified collaboration and the central role for traditional banks in this cooperative ecology, we may also underscore that the procedures for how to bring financial services to the market, appear to be in a phase of consolidation – as is the FinTech niche overall (cf. Langley and Leyshon, 2021). Rather than outcompeting each other or disrupting the whole business, both the traditional and new parties are engaged in partnerships seen as a necessity in their joint efforts to integrate an increasingly differentiated market. They are forging a specific “logic of collaboration”, guiding how FinTechs specialize and contribute to the market ecology both upstream and downstream by providing innovations to traditional banks. The FinTechs emerge thus more or less as externalised R&D units offering innovations to traditional banks which offer financial muscles and the ability to co-ordinate things in the market ecology.

As is shown in the four case studies, there is both co-operation and a sort of consolidation pursued by what we theoretically may refer to as “governance units” in the field of banking and finance. Such governance units, which are not themselves creating services, help to consolidate by organizing the market ecology through regulation, information, and by bringing various market actors into dialogue (Ahrne et al., 2015; Fligstein and McAdam, 2012). They comprise the increasing number of associations and communities established both by the state and actors in the field: start-up and regulatory support arenas, including joint seminars, help desks, funding opportunities, and sandboxes driven by government agencies and supervisory authorities, as well as meetings at fora organized by bankers’, business or employer associations, FinTech hubs and associations, and in acceleration programmes driven by banks. With the increasing growth and entanglement of the activities of such governance units, the mutual understanding between actors and the co-operative integration of FinTechs in the market ecology develops.

If we zoom in on the FinTech niche as such, there are also indications that there is an emerging consolidation happening. As shown in the country case studies, an increasing number of small firms seem to play an important role in the transformation of the market ecology and the capacity to generate jobs. However, a handful of expanding companies are also starting to attract a larger portion of the investments, and there are several mergers

with, and acquisitions by, incumbents in these markets. This development may appear logical given the emergence of the abovementioned collaboration with large banks. Interviews and documents from most of the countries also indicate that partnerships and acquisition will become more frequent. Further confirming this trend towards consolidation is that in some of the countries – particularly the Netherlands and Sweden – the number of new start-ups is beginning to slow down somewhat, whereas the number of employees and the turnover is still increasing rapidly through scale-ups in existing FinTechs. Even though Estonia is clearly not showing a similar development yet, such a trend may occur in the close future. As FinTechs scale up and grow in number of employees, and become an established actor, they seem to slightly move away from the most extreme forms of entrepreneurial culture and improvised employment relations of the small start-up – which is a topic we will return to below.

In other words, the dynamic in the FinTech niche not only draws on a stronger interest in collaborating with other actors in the ecology. Successful FinTechs are already maturing, whereas many previous start-ups are working hard to scale up their business. It is, however, important to keep in mind that as regards numbers of companies, the overall niche continues to be dominated by small firms – in particular in Estonia, where the number of small start-ups has continued to increase in recent years. In all four countries, however, new entrepreneurial firms will continue to identify new niches and set up their business, and the small and medium-sized FinTechs may thereby also continue to play an important role by creating a large share of the new jobs generated. Whether we will see more mergers and a greater concentration in the FinTech niche therefore remains an open question.

It is too early to say what the long-term consequences of the emerging consolidation of FinTechs will be, and as some FinTech companies are scaling up, we may naturally face a situation where there is less of today's entrepreneurship. The companies that succeed in taking advantage of the growth could then also transform themselves, for instance by ceasing to act only as outsourced research and development units, supporting bigger banks with innovation. It is reasonable to expect that more of the FinTechs will instead start to become established actors, providing services both upstream and downstream, or even turning into neobanks. At this point in time, however, our report concludes that FinTechs primarily emerge as providers of innovation, and as the business consolidates, many of them are about to scale up by collaborating with other financial actors and banks.

The emerging formation of FinTech employment relations?

As discussed in the theoretical market models above, the labour market is an upstream market from the service and product providers on the financial markets (cf. Aspers, 2011). Just as the consumer markets in banking and finance are regulated and organized, in many countries the labour markets are also highly regulated and organized by the state, trade unions and employer associations (Baccaro and Howell, 2017; Bamber et al., 2016). In line with the discussion of the wider institutional field of banking and finance above, we may thus talk of the existence of “governance units” on the labour markets (Ahrne et al., 2015; Fligstein and McAdam, 2012). That is, the state, employer associations and trade unions, and other forms of local worker representation, such as works councils in the

Netherlands, are shaping the employment relations on this market. In the following section, we will discuss the unique characteristics of employment relations in the FinTech niche: both the relatively weak collective organization on the employee side, and the relatively weak – though in some cases emergent – formation of collective organization on the employer side.

Two contextual factors are important to discuss before turning to the more detailed discussion about employment relations in the FinTech niche. The first has to do with the size of the FinTech niche and its relation to the regular banking and finance market. As the FinTech niche is relatively new, it is still rather small in terms of number of employees in all four countries. Even if the number of FinTech employees grows, this growth is also slower than the growth of the sector overall, because of the technological impossibility of scaling up on the consumer market without a corresponding increase in staff. In addition, whereas the growth of employees in FinTech companies is based on the technological development as such, in banking and finance there has been the opposite trend, in that technological developments have led to a decrease in the total number of employees (Rolandsson et al., 2020), even if there has been an increase in the demand for highly educated staff being able to manage risk analysis and compliance, or to develop the tech-side of banking and finance (Dølvik et al., 2020). Since the development and use of financial technology in FinTech companies was both predicted and is still ongoing also in traditional banks, FinTech companies are to some extent competing with the traditional actors in recruiting staff with competences in these areas on the labour market. In addition, FinTech companies also compete with other tech businesses in that they recruit software developers and tech engineers who are more of outsiders in the regular labour market for banking and finance.

The second contextual factor of importance has to do with the variation in existing industrial relations in banking and finance in the four countries studied. As discussed in the introduction, there are differences in the industrial relations set-up and culture between the countries, but there are also differences in the banking and finance sector as regards union density, collective bargaining coverage and the existence and level of collective bargaining. Whereas collective bargaining coverage in the banking sector have been very high in NL (95%), DK (80%) and SE (65%), it has been non-existent to very low in Estonia (Eurofound 2019). The percentage of employees who are members of a trade union in banking also varies. The figures in DK (76%) and SE (appr 47%) are rather high compared to the union density in NL (appr. 6%), and in Estonia where it is very low. These differences are naturally expected to affect the degree of organized employment relations also in the FinTech niche, so that we would expect more collective bargaining in the Nordic countries and the Netherlands, and increased trade union membership in DK and SE, as compared to Estonia.

[Employees and trade unions in FinTech – a mutual un-interest?](#)

Even though there is no systematic data available, from the interviews it seems evident that there is less collective organization in terms of trade union membership and collective bargaining in the FinTech niches as compared to banking and finance generally. The exception in this case is Estonia, where the degree of collective organization of

employment relations is virtually non-existent across the whole banking and finance sector.

A fair share of the workforce that matches the FinTechs' skill requirements appears to be young and highly qualified, with competences in both finance and software development, or specialized in one of these areas. They are depicted as in-demand, early career finance and tech professionals, who are mobile and at the stage of life where they still appreciate flexible working conditions and contractual arrangements. By attracting a workforce that is relatively young, highly educated, coming from both financial and technical backgrounds, it seems that both the knowledge of and the interest in trade unions is relatively low among FinTech staff in these countries. It is perhaps no surprise that this is the case in Estonia and the Netherlands, where trade union membership in general is low in the banking and finance sectors, but we find this to be the case also in the two Scandinavian countries, where union membership is more common, and where there is a long tradition of high trade union density and considerable regulatory responsibility for employment conditions given to the social partners.

In our interviews, both representatives for the business side and the trade unions in all countries describe this type of indifference to trade unions as rather common. Trade unions are seen as something from a bygone era that have little to do with these young individualistic and career-oriented individuals (Berglund, 2011), assigned a rather high value on the labour market. Furthermore, the high level of foreign workers in some of the FinTech companies may also mean that there is a high number of employees who lack knowledge of the existing industrial relations, and thus the strength of trade unions in the country where they work.

Many employees are also said to value things besides job security or the collective regulation of wages and working conditions. This is acknowledged by trade union representatives, who recognize that they are regarded as a bit boring by this segment on the labour market – who do not identify with trade unions. There is, of course, a cultural and identity aspect to this. Young people from metropolitan business schools and software developers working in entrepreneurial and creative industries do not exactly fit the stereotypical view of trade unions and trade union members. As shown in other tech-penetrated sectors, the culture and opportunities for fulfilment of creative ambitions seem to be higher on these employees' agenda (cf. Kunda, 1995). In addition, as these employees know their worth and have good opportunities to change job and employer, they may, of course, use individual exit rather than a collective voice if they are unsatisfied with the pay or working conditions.

Against this background it is thus quite understandable that FinTech staff are rather hard to organize for the unions. As many are employed in SMEs, and there is an uncertain sectoral belonging amongst staff combining finance with tech and software development, we may also add that neither the companies nor the staff appeared to fit neatly into the existing sectoral division of companies and workforce into existing employer associations and trade unions. In Sweden, for instance, we identified hesitancy among representatives from trade unions concerning whether it would really benefit their members to recruit FinTech employees. Although they would not say turn down new members, they also pointed out that if they were approached by FinTech employees or companies, they would

consider recommending them to talk to another union engaged in recruiting members from tech companies. Interestingly, one representative from this other union organizing employees in the tech business also declared that they, on the other hand, would consider directing FinTech employees to the regular union for bank and finance.

In short, there is uncertainty regarding whether the regular “functions” performed by trade unions appeal to this category of staff, or if there is a need for the unions to develop and “package” their services to members in a way that they may be “sold” to employees of FinTech companies.

[Towards a formation of collective organization on the employer side?](#)

The above discussed characteristics of the labour force, and the mutual un-interest between FinTech employees and trade unions, explain why challenges usually addressed through collectively organized employment relations tend to be solved ad-hoc locally. However, from the interviews, it seems that FinTechs need to offer the working conditions that employees want or expect, even though there is little of collective organization or collective agreements – with the exception of the recent development in Denmark. As presented in the Danish case study, a collective agreement was signed for the FinTech niche in 2021, however, it is worth noticing that this agreement is looser in its form than traditional ones, in that it is a framework agreement, leaving much room for local negotiation and flexibility in detailing wage working-time, pensions and other aspects of working conditions.

The reason why FinTech companies have to offer working conditions and wages that are reasonable for the employees within the national context – despite the non-existence of collective agreements – is that the demand for these early-career finance and tech professionals makes it somewhat of a “seller’s market”. Representatives for the FinTech niche in all four countries studied point out that their companies encounter difficulties in finding the skills they need, and they thus have to make an effort to retain competent staff by ensuring that they are happy and excited about the work and company conditions. Because of the technologically and financially advanced products, many try to avoid having to recruit temporary staff, and instead try to offer permanent contracts. With the caveat that we only interviewed a small fragment of the population of FinTech and representatives for business organizations and trade unions, the general impression is that the FinTech niche is at a fairly low level using the type of casual workforce doing gig-work, that is common in the platform economy in sectors such as transport, translation, food couriers etc. (Ilsøe and Larsen, 2020; Jesnes and Oppegaard, 2020; Rolandsson et al., 2020).

As there is an explicit need to recruit and retain highly educated staff with front-line competencies in the FinTech niche, the workforce enjoys a rather strong position on the labour market. In addition, as many FinTechs recruit new staff recurrently as they scale up, they have a good awareness of what the competitive pay levels are. The general impression from the four country case studies is thus that FinTech companies need to keep up with wage increases on the national market, and also offer the cultural organizational context and flexible and creative working conditions sought after by prospective employees. When FinTechs are scaling up, there is, of course, also a tendency

to try to form more stable employment relations by establishing within organizational HR functions, working with recruitment and retaining activities, through organizational culture, training opportunities, etc.

If the market-based mechanisms discussed above in many cases seem to force FinTech companies to offer wages and working conditions that from the employees' point of view seem reasonable given the national market context for these highly educated young professionals, there are, however, also signs of the emerging formation of the collective organization of employment relations in the FinTech niche – at least in the Scandinavian countries. In the Swedish case, a number of FinTechs are actually members of an employer's association, thus securing collective agreements for their members. In addition, in both Sweden and Denmark, at least the larger FinTechs are knowledgeable of the principles of collective agreements, and several of them have aligned pensions and the like from the existing collective agreement in the banking sector. In the Danish case, it should be noted that the collective agreement for the FinTech niche signed in 2021 to some extent was an effect of such joint organization from the employers' side rather than from the trade unions. Some of the larger FinTechs found a need to establish an employer's association for FinTech companies within this sector, Arbejdsgiverforeningen for FinTech companies, AF, and thereafter negotiate collective agreements with the existing trade union in the banking and finance sector (Finansforbundet). One may expect that this will in the long run have an effect on trade union density in the sector, as this might increase the legitimacy and interest in becoming trade union members among FinTech staff.

The Danish case may, of course, be seen as an outlier in the European context. But it may also be seen as a breakthrough from a forerunner of an underlying trend pointing towards the emerging formation of collective organizations within the FinTech sector more broadly. The Danish development will surely inspire other Scandinavian countries, given their tradition of collective organization and collective agreements. However, we believe that this development is related to the already growing strength of other “governance units” integrating the FinTech niche as such and connecting it to the broader field of banking and finance. As discussed above, the national case studies have shown an increasing consolidation of the FinTech niche in the form of an increase in communities and associations that function as governance units: hubs, FinTech associations, and other more or less structured communication arenas and communities, which integrates the FinTech niche, and also connects to the established state and banking market actors, such as bankers' associations and employer organizations, supervisory authorities and other state agencies. These organizations and arenas are not only used to discuss the technical, financial or regulatory side of FinTechs, but also raise questions regarding the hiring of skilled employees, as well as educational and training issues.

Whether this development will foster employers' associations performing collective bargaining in more countries remains, of course, an open question, and one that depends on the national traditions of employment relations as well as other contextual factors in each country. However, as shown above, such a development may be of interest for some FinTech companies as they grow and become more established. As explicitly stated in the Danish case – and to some extent also indicated in the case of Sweden, and perhaps

also in the Netherlands – what is at stake in this development is ultimately the legitimacy of FinTech companies and the FinTech niche as a serious force not only on the financial markets, but on the labour market as well.

Concluding remarks and recommendations

In all four countries studied – Denmark, Estonia, the Netherlands and Sweden – we see a development fostering a pervasive digital transformation of the financial services. FinTech companies do not necessarily disrupt existing businesses – at least not in the radical sense. As the FinTech niche in all four countries appears to consolidate through the emergence of a new business ecology, our analysis rather suggests that the development consists of an intense and innovative differentiation of the services on the market. FinTech development thus promotes an increasingly complex infrastructure of financial services: some FinTechs compete with the traditional banks, endeavouring to develop into neobanks, supplying payment solutions, credits, and savings services directly to customers, e.g. in online shopping/e-commerce (cf. Hodson, 2021). However, FinTechs primarily position themselves as partners by providing technical solutions or even ideas that are bought by banks and thus co-opted or integrated through strategic partnerships (cf. Brandl and Hornuf, 2020; Hornuf et al., 2020). They may also forge a position as intermediaries between the bank and the customer, utilizing open banking solutions based on customer and account information from the regular banks. In doing so, they are shaping both an opportunity to add new services, and for customers to utilize and get an overview of services from different actors on the market (cf. Lomachynska, 2020).

Contrary to studies describing how digital services destroy job opportunities (Brynjolfsson and MacAfee, 2014; Umans et al., 2018), this change can then also be expected to increase demand for new skills, urging us to consider what types of jobs employees in bank and finance may perform in the future (Abassi et al., 2021; Rego, 2018). The rapid growth makes it difficult to state definitively what these skills requirements will look like. Our report nevertheless finds that policymakers, business associations and FinTech communities are more concerned with a lack of education and competence development addressing demands for new combinations of tech and financial skills, than the risk of job losses in the sector at large.

Given the difficulties in recruiting adequate competencies to the FinTech niche, a first recommendation is that policymakers and labour market parties investigate more closely which types of skills the FinTech sector needs and engage in identifying which types of educational programs can support the existing and emerging skills requirements. Although the highly educated, early-career finance and tech professionals that make up the core of FinTech staff are very much taking care of keeping up in skills and competencies, there may also be opportunities for both employer organizations and trade unions to team up with the FinTech associations and communities in developing professional upskilling and training fora.

Even if some issues are country-specific, we can still point out that both employer organizations and trade unions in all countries – with the exception of the latest

development in Denmark – seem unsure about how to address employer relation issues related to FinTech growth. According to our sources, existing employer organizations and trade unions in the banking and finance sector struggle to attract members from FinTech companies, and it's unclear to which organizations the companies and employees should belong. It's partly owing to a lack of knowledge of the FinTech business as such, and partly the combination of finance and tech, which point in somewhat different sectoral directions.

As regards the latter problem, we have information on agreements on how to manage blurred boundaries between trade unions active in the labour market in banking and finance in Sweden, and that may, of course, be a way forward in identifying where FinTech companies and employees belong in the national social partner structure. In addition to this, however, it seems that both employer organizations and trade unions need more knowledge about the FinTech business and its development.

Both employer organizations and unions could also gain from further raising their awareness of which companies and types of workforce characterize the FinTech sector and how their interests can be served by employer associations and trade unions. To do so, they could benefit from collaborating with the FinTech business hubs and associations, which appear to be increasingly engaged with questions of relevance to the emerging organization of employer relations. In Estonia, where industrial relations appear to play a less significant role, such hubs could even play a more pivotal role.

Considering to what extent employer organizations and trade unions will play a role for future employment relations, there are indications that the parties in some of the countries also play an increasingly crucial role as it becomes more and more important for FinTechs to be recognized as legitimate and trustworthy actors in the field. We have, for instance, mentioned the setting up of a Danish employer organization, indicating that certain characteristics of a Scandinavian industrial relations regime may prevail. This is an example that labour market parties from other countries may learn from. Employer organizations and trade unions from other Scandinavian countries, characterized by similar industrial relations regimes, should be interested in the Danish development. Given that there are Nordic actors such as the Nordic Financial Union (NFU), a suggestion could even be that they set up seminars where Danish actors are able to share their experiences with parties from the other countries. Similarly, there should be an interest from the social partners in most European countries, to find out how they may influence the structuring of employment relations within the emerging realm of FinTech. Furthermore, raising awareness about different cross-national concerns, i.e. blurred boundaries and regulations, competence and skills requirements and employment relations in FinTechs, could be done more explicitly, through knowledge-sharing and projects, related to the European Sectoral Social Dialogue in Banking.

In addition, further studies need to be initiated to understand broader long-term consequences, including not just the future supply of skills, but also contractual arrangements, future pension requirements and concerns for work-life balance that may become topics of a more crucial and acute concern. These future studies should also

recognize implications for the industrial relation regimes that characterize the different countries, and how such regimes may play a part in the forging of employment relations shaping conditions for negotiations between the parties on the labour market. The following table sums up some of the identified recommendations in this report, addressing policymakers, trade unions and employer organizations.

References

- Abbasi, K., Alam, A., Du, M. (Anna), & Huynh, T. L. D. (2021). FinTech, SME efficiency and national culture: Evidence from OECD countries. *Technological Forecasting & Social Change*, 163(C), 120454. <https://doi.org/10.1016/j.techfore.2020.120454>
- Abbott, A. (2005). Linked Ecologies: States and Universities as Environments for Professions. *Sociological Theory*, 23(3), 245–274. <https://doi.org/10.1111/j.0735-2751.2005.00253.x>
- Adner, R. (2017). Ecosystem as Structure: An Actionable Construct for Strategy. *Journal of Management*, 43(1), 39–58. <https://doi.org/10.1177/0149206316678451>
- Ahrne, G., Aspers, P., & Brunsson, N. (2015). The Organization of Markets. *Organization Studies*, 36(1), 7–27. <https://doi.org/10.1177/0170840614544557>
- Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The Evolution of Fintech: A New Post-Crisis Paradigm? *Georgetown Journal of International Law*, 47(4), 1271.
- Aspers, P. (2011). *Markets*. Cambridge: Polity Press.
- Atkinson, R. D., & Wu, J. (2017). False Alarmism: Technological Disruption and the U.S. Labor Market, 1850–2015. *Information Technology & Innovation Foundation ITIF, @Work Series, May 2017*. Retrieved from <https://itif.org/publications/2017/05/08/false-alarmism-technological-disruption-and-us-labor-market-1850-2015>
- Baccaro, L., & Howell, C. (2017). *Trajectories of Neoliberal Transformation: European Industrial Relations Since the 1970s*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781139088381>
- Bamber, G. J., Lansbury, R. D., Wailes, N., & Wright, C. F. (Eds.). (2016). *International and Comparative Employment Relations – National Regulation, Global Changes* (6th ed.). Abingdon-on-Thames, UK: Routledge. Retrieved from <https://doi.org/10.4324/9781003116158>
- Berglund, T. (2011). Work Orientations in Western Europe and the United States. In B. Furåker, K. Håkansson, & J. C. H. Karlsson (Eds.), *Commitment to Work and Job Satisfaction – Studies of Work Orientations*. London: Routledge.
- Bogers, M., Sims, J., & West, J. (2019). What Is an Ecosystem? Incorporating 25 Years of Ecosystem Research. *Academy of Management Annual Meeting Proceedings*, 2019(1), 1–29. <https://doi.org/10.5465/AMBPP.2019.11080abstract>
- Brandl, B., & Hornuf, L. (2020). Where Did FinTechs Come From, and Where Do They Go? The Transformation of the Financial Industry in Germany After

- Digitalization. *Frontiers in Artificial Intelligence*, 3(8), 1–12.
<https://doi.org/10.3389/frai.2020.00008>
- Breidbach, C. F., Keating, B. W., & Lim, C. (2020). Fintech: Research directions to explore the digital transformation of financial service systems. *Journal of Service Theory and Practice*, 30(1), 79–102. <https://doi.org/10.1108/JSTP-08-2018-0185>
- Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company.
- Chiu, I. H.-Y. (2016). Fintech and Disruptive Business Models in Financial Products, Intermediation and Markets – Policy Implications for Financial Regulators. *Journal of Technology Law and Policy*, 21(1), 55–112.
- Degryse, C. (2016). *Digitalisation of the economy and its impact on labour markets* (No. Working Paper 2016.02). Brussels, Belgium: ETUI: European Trade Union Institute. Retrieved from <https://www.etui.org/publications/working-papers/digitalisation-of-the-economy-and-its-impact-on-labour-markets>
- Dølvik, J. E., Alasoini, T., Hedenus, A., Ilsøe, A., Larsen, T. P., Steen, J. R., & Rolandsson, B. (2020). Digitalization of Services – A Diverse Sector. In B. Rolandsson (Ed.), *Digital Transformations of Traditional Work in the Nordic Countries* (pp. 50–82). Copenhagen: The Nordic Council of Ministers. Retrieved from <http://www.diva-portal.org/smash/get/diva2:1502452/FULLTEXT05.pdf>
- Estonian Investment Agency. (2021). Banking and Financing. Retrieved from <https://investinestonia.com/business-in-estonia/financing/banks/>
- European Commission. (2021). *Digital Economy and Society Index (DESI) 2021. Thematic chapters*. Retrieved from <https://ec.europa.eu/newsroom/dae/redirection/document/80563>
- Fligstein, N., & McAdam, D. (2012). *A Theory of Fields*. Oxford: Oxford University Press.
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting & Social Change*, 114(January), 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>
- Hagberg, J., Hauff, J. C., Elliot, V., Magnusson, J., & Nilsson, J. (2021). *Försäkringsbolaget i de digitala ekosystemen – nya former av intermediering*. Gothenburg, Sweden: University of Gothenburg. Retrieved from <http://hdl.handle.net/2077/69707>
- Hodson, D. (2021). The politics of FinTech: Technology, regulation, and disruption in UK and German retail banking. *Public Administration*, 99(4), 859–872. <https://doi.org/10.1111/padm.12731>

- Hornuf, L., Klus, M. F., Lohwasser, T. S., & Schvienbacher, A. (2020). How do banks interact with fintech startups? *Small Business Economics*, 57(3), 1505–1526. <https://doi.org/10.1007/s11187-020-00359-3>
- Ilsøe, A., & Larsen, T. P. (2020). Digital platforms at work. Champagne or cocktail of risks? In A. Strømme-Bakhtiar & E. Vinogradov (Eds.), *The Impact of the Sharing Economy on Business and Society*. London: Routledge. Retrieved from <https://doi.org/10.4324/9780429293207>
- Jesnes, K., & Oppegaard, S. M. N. (Eds.). (2020). *Platform work in the Nordic Models: Issues, Cases and Responses* (Nordic Future of Work Project-TemaNord 2020:513). Copenhagen: Nordisk Ministerråd. <https://doi.org/10.6027/temanord2020-513>
- Kunda, G. (1995). Engineering Culture: Control and Commitment in a High-Tech Corporation. *Organization Science*, 6(2), 228–230. <https://doi.org/10.1287/orsc.6.2.228>
- Langley, P., & Leyshon, A. (2021). The Platform Political Economy of FinTech: Reintermediation, Consolidation and Capitalisation. *New Political Economy*, 26(3), 376–388. <https://doi.org/10.1080/13563467.2020.1766432>
- Lomachynska, I. A. (2020). Modernization of structure of financial systems with the development of fintech. In V. O. Boiko, N. I. Verkhoglyadova, O. M. Volska, & V. H. Hranovska (Eds.), *Scientific approaches to modernizing the economic system: Vector of development* (pp. 363–382). Lviv/Toruń: Liha Pres. Retrieved from <https://doi.org/10.36059/978-966-397-189-6/363-382>
- Lomachynska, I., Maslennikov, Y., & Yakubovska, M. (2020). Infocommunication Tools of Unconventional Monetary Policy. *2020 IEEE International Conference on Problems of Infocommunications. Science and Technology (PIC S&T)*, 737–740. <https://doi.org/10.1109/PICST51311.2020.9467922>
- Rego, R. (2018). *Digitalisation and Restructuring: Which Social Dialogue?* Lisbon, Portugal: Diresoc. Retrieved from https://repositorio.ul.pt/bitstream/10451/37324/1/ICS_RRego_DIRESOC_Portugal-country-report.pdf
- Rolandsson, B. (Eds.) (2020). *Digital Transformations of Traditional Work in the Nordic Countries* (540th ed., Vols. 1–2020:540). Copenhagen: Nordisk Ministerråd. DiVA. <https://doi.org/10.6027/temanord2020-540>
- Susskind, R., & Susskind, D. (2015). *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. Oxford: Oxford University Press.
- Umans, T., Kockum, M., Nilsson, E., & Lindberg, S. (2018). Digitalisation in the banking industry and workers subjective well-being: Contingency perspective. *International Journal of Workplace Health Management*, 11(6), 411–423. <https://doi.org/10.1108/IJWHM-05-2018-0069>

van Kempen, P. (2021). The Netherlands' banking sector: Facts & Figures. Retrieved from EBF: European Banking Federation website: <https://www.ebf.eu/the-netherlands/>

World Economic Forum. (2016). *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution* [Online]. Retrieved from https://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf