STOCKHOLM FINTECH REPORT 2018

AN OVERVIEW OF THE FINTECH SECTOR IN THE GREATER STOCKHOLM REGION

VERSION 2.0

#HUBBING IN SILICON FOREST

ECOSYSTEM
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MICHAL GROMEK

JANUARY 2018

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AN OVERVIEW OF THE FINTECH SECTOR IN THE GREATER STOCKHOLM REGION

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January 2018
ISBN 978-91-7731-057-0

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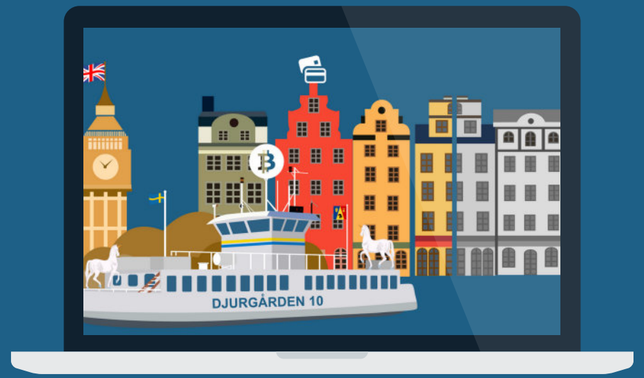
In cooperation with Invest Stockholm.

STOCKHOLM SCHOOL OF ECONOMICS
CENTER FOR STRATEGY AND COMPETITIVENESS

#INTRODUCTION

A WARM WELCOME TO THE STOCKHOLM FINTECH REPORT 2018



#GOOD TO SEE YOU

CENTER FOR STRATEGY AND COMPETITIVENESS

WAS FOUNDED IN 2005 AND FOCUSES ON FIVE RESEARCH TRACKS: STRATEGY & MARKET SYSTEMS, INTERNATIONAL BUSINESS, KNOWLEDGE IN NETWORKS, CLUSTERS, AND COMPETITIVENESS POLICY.

CSC WORKS IN A TRANS-DISCIPLINARY TRADITION INVOLVING THEORIES FROM STRATEGY, MANAGEMENT, INTERNATIONAL BUSINESS, ECONOMIC GEOGRAPHY, ECONOMIC SOCIOLOGY AND ECONOMIC HISTORY
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In 1967 the American political scientist Herbert Simon stated that the goal of a business school is training for the practice of management and to develop new knowledge that may be relevant to improving the operations of a business.

As members of the academic community of the Stockholm School of Economics, we are honoured to release our third FinTech report for the Greater Stockholm Area, in cooperation with Invest Stockholm.

As our previous report focuses on the Rise of Stockholm as a Unicorn Factory and the reasons behind the emergence of FinTech, this report investigates the current development stage of different angles of a regional FinTech ecosystem.

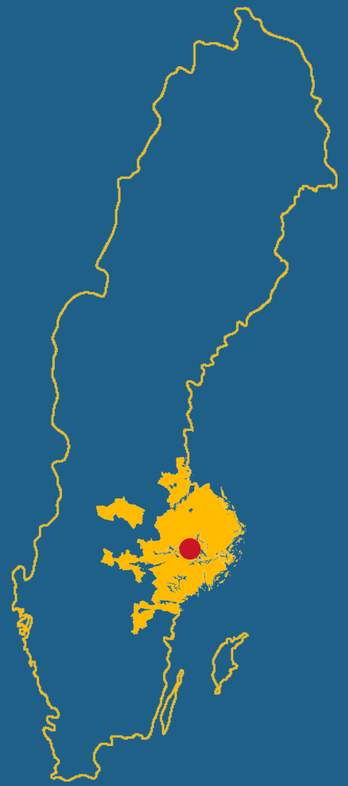
#SUMMARY

Nearly 700 Million Euro has been invested into FinTech companies between 2012 and June 1st 2017.

Stockholm FinTech is more than just payments between users or lending brokerage. Niche investors, FinTech VCs support today's cutting-edge companies offering: Blockchain-based crowdfunded insurance service for individual consumers or check-out payment options incorporated into smartwatches.
This report investigates 3069 LinkedIn profiles of Stockholm FinTech employees, including an educational and professional background or countries of previous employment. Furthermore, it examines the largest investments and investors in recent years, reflects upon emerging developments like Brexit and Green Digital Finance.

16 interviewees from members of the Swedish Financial Supervisory Authority to FinTech founders, reflect on potential trends and regulatory changes.
The awarding of a banking license to Klarna on June 19th, 2017 in comparison to regulatory changes on the European level in the form GDPR, PSD2, two pending Swedish Government assignments and the launch of the Stockholm FinTech Hub in February 2017, are already reshaping the rules of the game.

Michal Cromek
Stockholm School of Economics



STOCKHOLM BUSINESS ALLIANCE
55 MUNICIPALITIES IN GEOGRAPHIC VICINITY

SWEDEN

Arboga	Heby	Ludvika	Sigtuna	Täby
Botkyrka	Huddinge	Nacka	Smedjebacken	Upplands Väsby
Danderyd	Håbo	Norrköping	Sollentuna	Upplands-Bro
Ekerö	Järfälla	Norrtälje	Solna	Uppsala
Enköping	Karlskoga	Nykvarn	Stockholm	Vallentuna
Eskilstuna	Katrineholm	Nyköping	Strängnäs	Vaxholm
Flen	Knivsta	Nynäshamn	Sundbyberg	Värmdö
Gnesta	Kungsör	Oxelösund	Södertälje	Västerås
Gävle	Köping	Sala	Tierp	Örebro
Hallstahammar	Lidingö	Salem	Trosa	Österåker
Hanige	Linköping	Sandviken	Tyresö	Östhammar

Crucial aspects of this report (investments, LinkedIn analysis or trends) are geographically limited to companies which have been incorporated in 55 municipalities of a called Stockholm Business Alliance (SBA) – unless otherwise specified in the methodology and source section. The terms Greater Stockholm Area, Stockholm Region and Greater Area, has been used interchangeably and refer to the area defined as Stockholm Bussiness Alliance, collaboration between the municipalities administrated by Invest Stockholm

GEOGRAPHY. FUNDING. MAIN AUTHOR

Stockholm
The Capital of Scandinavia

This report has been financially supported by Invest Stockholm, which is the official investment promotion agency of Stockholm. The goal of Invest Stockholm is to connect incoming companies to the ecosystem of top-notch companies, universities and research centres.

The service includes matching investors with opportunities and providing advice and practical assistance, free of charge, in setting up and expanding a business in Stockholm
http://www.investstockholm.com/

Michal Gromek is a Researcher on FinTech and Crowdfunding at the Center for Strategy and Competitiveness at the Department of Marketing and Strategy of Stockholm School of Economics.

He collected his practical FinTech experience while leading international expansion of European FinTech Ventures.

Michal is halfway through the doctoral program in Business Administration. Sweden is the seventh country of his residence.

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#HUBBING
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BLURRY LINES OF FINTECH

#OPENING THE PANDORAS BOX OF PRIMARY-FINTECH CATEGORISATION

Michal Gromek, Stockholm School of Economics

When a tourist in a city centre asks about the distance to any bus stop, despite best intentions, answers will vary. To receive a more accurate response, a clarifying question must be asked: Which particular bus stop is needed? Or: where does the person intend to go? This metaphor reflects the current state of the Financial Technology (FinTech) industry in which definitions are as numerous as are the numbers describing it.
This chapter introduces our attempt to address the above by suggesting a comprehensive segmentation of 129 Financial Technology Ventures defined as “Primary-FinTech” operating in the Greater Area of Stockholm. The first section introduces the current state of categorisation of FinTech. The second section presents our categorisation of FinTech companies into five main categories and 69 sub-categories, with the companies divided into corporate and private usage of FinTech. The last section represents a visualization of featured companies adopting a model from the area of social sciences to FinTech industry needs.

The classification specified in this chapter is the result of a joint team effort consisting of representatives from the leading players within the Stockholm FinTech scene, namely the Stockholm FinTech Hub, Nordic Tech List, NFT Ventures, and PA Consulting, along with the authors of this chapter.

*This text is an excerpt of a chapter that will be published in an upcoming book: Gromek, M. (n.d.) [Clarifying the blurry lines of FinTech: opening the Pandora's box of FinTech categorisation]. In The Rise and Development of Fintech: Accounts of Disruption from Sweden and Beyond, London: Routledge."

This team was formed with the specific purpose of creating one common classification of Swedish 'Primary FinTech' and to incorporate the results into one joint FinTech portfolio in Sweden that will be kept up to date. The final result will be incorporated as "Primary FinTech" into a continuously updated interactive map available at: data.stockholmfin.tech

LACK OF A UNIFIED CLASSIFICATION SYSTEM FOR FINTECH

Despite common belief, the idea of FinTech can be dated back to the first half of the 18th century (Arner, Douglas, Barbetis, Nathan, Buckley, Ross, 2015) with the introduction of the telegraph (1838) and the construction of the first transatlantic cable in 1866. Before the transatlantic cable, the connection between the old continent and the United States happened only via shipping. One century after the first transatlantic cable, Barclays Banks introduced the first ATM in Enfield, UK (Nicoletti et al, 2017; 17).

This invention allowed the bank's clients to perform cash withdrawals and deposits without involving a bank clerk, which might be viewed as the beginning of the modern interaction between technology and finance.

Today's FinTech wave comes in the aftermath of the global financial crisis of 2008, in addition to digitalization and globalization. We also see two other factors leading to the development of FinTech. Firstly, a record low level of trust in current financial institutions has been "consistently at or near the bottom of any survey of public trust" (Flint, 2013).

Secondly, millennials have begun to enter and participate in financial markets. Through a 2016 US study of Facebook conducted on 70 million users aged 21-34, Forbes concluded that only eight per cent of users trust financial institutions, and more than half do not know where to turn to for financial guidance (McGrady, 2016).

'MEASURING SOMETHING THAT HAS NOT YET BEEN DEFINED HAS TO BE DIFFICULT.'

Despite growing awareness, the term "FinTech" remains ambiguous. Its usage and classification are often a source of misperception, as there is no doubt that measuring something that has not yet been defined has to be difficult. The term FinTech refers to mostly start-up companies that provide a service as a facilitator between financial services and technology providers. FinTech's goal is to offer customer solutions that are more automated and transparent, with a better user experience and efficiency (Dorfleiter, Hornuf, Schmitt, Weber, 2017; 5), and that offer a price advantage and/or time-savings.

The growth of FinTech has become a subject of debate among researchers, practitioners, capital providers and authorities. It continues to attract growing public interest. The importance of FinTech grows in parallel with an increase of investments in the sector with global investments of more than EUR 113M in 2016. Stockholm is well-placed in FinTech, receiving significant investments in FinTech ventures located in the city.
Between 2010 and 2014, Stockholm was the second largest city in Europe in terms of investment volume with

EUR 179M in investments. Moreover, FinTech is one of the more active investment areas, as it received one-third of all of the investments made into limited liability companies in 2014 (Wesley-James, Ingram, Teigland., Stockholm, 2015; 17).

Growing interest in FinTech has led to an unprecedented amount of industry reports with the intention of describing and interpreting the phenomenon. Numerous reports apply a variety of definitions and data collection methods, thereby leading to a myriad of descriptives for this phenomenon not only in Sweden but also in a global context. The lack of a commonly accepted definition has implications for robustness.
For example, comparing two recent reports on the size of investments rounds in British FinTech ventures revealed a difference of USD 80 million between the two (Dealroom, 2017; 5, Pitchbook 2016).

The reasons for such a variety of outputs are traced back to a lack of unified classification of FinTech. Furthermore, while reviewing the methodology sections of industry reports, it is hard to clarify what branches of business can or cannot be accounted as parts of the FinTech industry. The City Banks FinTech Report, "Digital Disruption Revised," released in February 2017, does not define FinTech but does define the following subcategories:

#BLOCKCHAIN
#LENDING
#PAYMENTS
#INSTURANCE
#WEALTH MANAGEMENT
#ENTERPRISE FINANCE
#REG TECH

Crunchbase's annual report on FinTech from 2016 displays not only different investment values from the above, but also adds the following subcategories of FinTech:

#ROBO-ADVISORS
#ENTERPRISE SOFTWARE
#PAYMENTS
#ONLINE PAYMENTS
#STOCK AND OPTIONS
#MOBILE LENDING
#LENDING
#WEALTH MANAGEMENT
#PERSONAL FINANCE
#ASSET MARKETPLACE

* Own data review, based on values provided from Nordic Tech List - last data, June 10th 2017

Even in the previously performed reports on the Regional FinTech ecosystem, conducted by members of our Research Centre, the fastest growing subcategory between 2015 and 2016 had the name of "Other FinTech." To display the complexity of a classification attempt, we might use two examples: one from the Payment & Transaction sector and one from the Crowdfunding sector

How should FinTech be classified? Toborrow and Klarna can be used as examples. TOBORROW was founded in 2013, allowing lenders to provide loans to small enterprises and receive interest on the repayments while accepting the risk of default.

Toborrow would then qualify in three categories:

#Lending – From the borrower's perspective, the core revenue stream of Toborrow originates in the intermediary services that connect lenders willing to lend their money to companies incorporated in Sweden that need debt financing.

#Wealth Management – From the lender's perspective, the interest rates on toborrow.se might result in a higher rate of return on their total financial wealth in comparison to bank deposit rates or risk-free government bond rates. As toborrow.se helps in managing their savings, it is a wealth management tool.

#Crowdfunding – As defined in the chapter of this book on crowdfunding, Toborrow collects funds from numerous capital providers and channels them to those who have financing needs.

The Stockholm-based unicorn, **KLARNA** serves as a payment method for e-commerce while actually providing microcredit to consumers. Forty percent of the Swedish population of 10 million has used Klarna, primarily for e-commerce purchases (Milne, 2014). Similar to Toborrow, the classification of Klarna depends on the particular usage of their services:

#Payments – From the position of an e-commerce shop, Klarna is a payment method similar to Visa or MasterCard.
The e-commerce shop pays a setup fee of 1.5% - 3% per transaction plus a setup fee. Using the angle of the e-commerce merchant means that Klarna would be classified as a Payment & Transaction FinTech venture in the subcategory of Payment Method.

#Payments Service Provider – One of Klarna's offerings not only includes a payment method but also an entire checkout software that allows e-commerce platforms to use a range of payment methods, including both Klarna and credit cards. Following this path, Klarna could still be classified in the Payment & Transfers category but in the subcategory of Payment Service Provider.

#Microcredit Provider – From the consumer perspective, Klarna is a microcredit provider as the user can purchase goods, services or technology but has compensated Klarna through a short time commitment.
Klarna claims charges for late payments. Using the angle of the consumer, Klarna would be placed into the Capital Equity, Debt Provider as a Consumer Lending provider.

SIMILAR OUTPUT, DIFFERENT PROCESS - AS COMPARED TO A BANK.

As FinTech represents an umbrella term for business models and products, it is impossible to define the term FinTech using a basic legislation or legal documents.

To classify Swedish FinTech ventures correctly, it is important to underline how the services, technology, and products differ from traditional financial intermediaries, i.e., banks.

The differences in the business processes of financial products can be described through the example of Wikipedia and the Encyclopedia Britannica.
Both Wikipedia and the publishing house Encyclopedia Britannica have the same goal:

To deliver the most accurate knowledge to both consumers and legal entities. Encyclopedia Britannica was achieving this through a pipeline-based business model based on a team of carefully selected experts who edited, delivered and provided content to its encyclopedias.

Wikipedia, on the other hand, relies on a platform-based business model built on the wisdom of crowds and fueled by the motivation of volunteers.

Given the differences between Wikipedia and Encyclopedia Britannica, their service is used for the same purpose—to reassure the end user about a meaning of a particular word. FinTech allows customers, both physical and legal entities, to receive a similar service to the one they acquired in the past from banks.

Such services allow the users to deposit, withdraw and transfer cash, pay invoices, exchange currencies, or engage in investment activity.
FinTech companies provide the same result to their customer as banks do; they just use a different process than the banks, similar to the difference in keyword editing between Wikipedia and Encyclopedia Britannica.

FINTECH IS A TOOL, NOT A DESTINATION.

For centuries, individuals have desired to explore distant destinations. For the last approximately 30 years, low-cost airlines have made travel affordable and possible for a larger group of individuals.
In the past, to travel from Sweden to Japan, travelers had to organize every part of the trip by themselves or pay a high fee to a travel agency.

The complexity of doing this on one's own or paying high transaction costs discouraged many people from travelling.
The growth of FinTech—similar to that of low-cost airline carriers—did not happen overnight.

Availability and access to the internet and the digitalization of trust (Diekhöner, 2016) supported the recent acceleration of FinTech, together with the introduction of the bitcoin cryptocurrency (Skinner, 2016) and the global financial crisis of 2008. However, the introduction of FinTech has also increased efficiency and lowered transaction costs, enabling financial transactions among different parties to be more accessible and user-friendly, thereby growing the market. Despite some successes such as the peer-to-peer application Swish, traditional financial services players have not yet captured the possibilities to improve their services along the lines of FinTech (Mackenzie, 2015).

New entrants to financial services propose more efficient solutions conventionally performed by traditional providers such as banks, insurance companies, asset managers, and payments and credit card companies (Scardovi, 2016; 26). FinTech venture services or technologies have been, generally speaking, more secure, more convenient, perform tasks more quickly, and can be customized or operated at a lower cost than a traditional financial product. As a facilitator, FinTech lowers the cost of transactions and incorporates process improvements, characterized by high efficiency, flexibility and innovation.

FinTech could be viewed as a financial service which uses technology to satisfy the finance needs of tomorrow.

FinTech venture services or technologies have been, generally speaking, more secure, more convenient, perform tasks more quickly, and can be customized or operated at a lower cost than a traditional financial product. As a facilitator, FinTech lowers the cost of transactions and incorporates process improvements, characterized by high efficiency, flexibility and innovation. (Dapp, et al. 2014). Despite the difference in business processes and models of value creation, the fundamental purposes of financial transactions remain the same. Users, still would like to transfer payments, manage wealth and pay their bills. Thus, users still need the same services as provided by banks so their classification should be performed as close to the existing banking products as possible.

As FinTech in the Greater Stockholm Business Region "is an expanding galaxy" (Nicoletti et al, 2017), it is not only worthwhile to develop a particular classification but also to provide a picture of the complexity of the industry from the perspective of an individual user or a legal entity.

'FINTECH IN THE GREATER STOCKHOLM BUSINESS REGION IS AN EXPANDING GALAXY.'

As FinTech companies are similar but not identical, it is difficult to produce a general definition that includes all types of companies.

For example, despite the fact that FinTech companies are mostly associated with start-ups, companies like Klarna, Bamborra or iZettle are not startups, so associating startup companies with FinTech cannot be an essential part of the definition (Dorfleitner, Hornuf, Schmitt, Weber, et al, 2017; 5).

Furthermore, a significant amount of FinTech companies remain obscure to the general user.

Companies, such as the payment service provider Mondido.com, help to process credit card payments in the background while an individual user buys e-commerce products online.

Other companies exchange cryptocurrencies, enable currency transfers or provide back-end services for FinTech companies.

Nevertheless, despite a low visibility for the end consumer, businesses that provide back-end services are also a vivid part of the FinTech ecosystem. In order to create a classification scheme for FinTech ventures in the Stockholm area, we first had to draw a boundary around which company should be included to the Primary-FinTech.

As such,
we created the following criteria:

Be incorporated in the form of at least a Swedish limited liability entity with a registration address in the Greater Stockholm Area by May 1st, 2017

- Enable financial transactions at the crossroads of technology and financial services
- Provide innovation in one of the following subcategories listed below with its own technology via an application or front-end or back-end services
- Provide services listed in detail in the following section of this chapter, which have traditionally been performed by traditional financial industry players

The following types of companies have been excluded:

- Regulatory technology ventures or behavioural biometrics companies, which are supporting FinTech companies, e.g., BankID, as they are being used for user authentication purposes but do not have a "FINancial" component
- Companies performing innovation in the field of accounting, receipts, and salary payments
- Firms performing services in the field of consulting to the financial services industry
- Enterprises that produce exclusively hardware for existing solutions, e.g., ATMs, credit and debit card providers
- Traditional financial companies performing internal services to the financial companies, e.g., debt collection, debt recovery, factoring
- Conducting business in the Greater Stockholm Area but do not have a legal incorporation there, e.g., Finnish crowdfunding platform Invesdor.com

- Co-working spaces, business environment institutions, e.g., Stockholm FinTech Hub, Epicenter
- Consulting companies and FinTech Outtasking and Outsourcing firms

As this is the first exploratory study of its kind in Sweden, the following sources of data have been used:
#Data from companies that applied to be a member of the Stockholm FinTech Hub, companies monitored by the Nordic Tech List, companies mapped for previous Stockholm FinTech Reports in 2015 and 2016 by the Stockholm School of Economics.
#Examination via social media groups, Facebook groups, LinkedIn groups, press landscape mapping including. major international and Swedish media
#Qualitative studies during interviews for the Swedish FinTech Book and Stockholm FinTech Report.

"WE CANNOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE CREATED THEM."
- ALBERT EINSTEIN

USER FACING FINTECH CIRCLES – METHODOLOGY

In proceeding, the primary members of this project found it was difficult to find an existing classification schema that would incorporate the objective of this study. Therefore, we decided to incorporate and adopt two models from the field of psychology. Using the airplane analogy, every passenger on a plane from Stockholm to Tokyo might have a different reason to travel to Japan, but they still use the same type of transport on a scheduled flight. According to the airline, passengers are grouped into three classes of travel: Economy, Business and First

Class, despite their travel purpose being work or leisure.
As stated in the previous section, FinTech companies can be perceived differently depending on the angle of the observer. Two circles of Stockholm FinTech actors have been grouped using a user-centric view:

1) individual users who use FinTech services for personal purposes;
2) corporations and legal entities that use the services for corporate purposes.

Our initial visualisation has been built upon the model of the Zone of Proximal Development (ZPD), (Daniels, Colek, Vertusch, 2007), which has been popularized by the psychologist Lev Vygotsky (1896–1934). This model has attracted attention from psychologists and educators. Vygotsky's main idea was to place the "learner" (in his example: a child) at the centre of the circle. The description of the anticipated ZPD model as well as the Bronfenbrenner's Bioecological Model. (Freudenberg, Klitzman, 2002; 65). which have been used for this visualisation have been defined in Appendix 1.

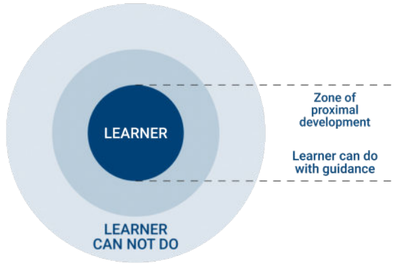


Figure 1 - Zone of Proximal Development (ZPD) own creation based on Lev Vygotsky Model

FinTech companies do not necessarily provide new services but instead focus on providing solutions from traditional financial providers more efficiently.

The subcategories listed on next page of FinTech have been kept as close as possible to the services provided by banks. The categorisation mostly overlaps in both the corporate and individual circles. However, similar to traditional banking, some categories (like clearing technology or hedging) have been reserved for corporate customers only.

CLARIFYING THE BLURRY LINES OF FINTECH GREATER STOCKHOLM AREA - Q4 2017

PROPOSED PRIMARY FINTECH COMPANIES FACING INDIVIDUALS

In cooperation with:

fintech hub · Nordic Tech List · NFT VENTURES · PA

Stockholm FinTech Report 2017
Author: Michal Gromek, Stockholm School of Economics
Graphics: Adam Strandberg, Fintech Hub

CLARIFYING THE BLURRY LINES OF FINTECH
GREATER STOCKHOLM AREA - Q4 2017

PROPOSED PRIMARY FINTECH COMPANIES FACING CORPORATES

In cooperation with:

fintech hub · Nordic Tech List · NFT VENTURES · PA

Stockholm FinTech Report 2017
Author: Michal Gromek, Stockholm School of Economics
Graphics: Adam Strandberg, Fintech Hub

SUMMARY

Measuring something that has not yet been defined is indeed very difficult. Since the boom of FinTech, nearly every study, published report, and released scientific paper display their own definition of FinTech. Based on the different definitions of FinTech, the number of active FinTech companies in the Greater Stockholm Area varies between 129 and 188. In comparison to other academic research, such as econometrics, studies on FinTech are like operations on living organisms, governed by dynamic market forces that are shaped and reshaped by mergers, acquisitions, new venture creations, and bankruptcies occurring every day.

Regulators have not always been cheerleaders of new financial products as their responsibility is to ensure investor protection, well-functioning markets, and efficient capital allocation. The development of FinTech has modified the cooperation between regulators and startups. In the same realm as the financial market regulators, finding unknown paths in response to new challenges has led to the adaptation of two models from psychology: the Zone of Proximal Development and Bronfenbrenner's Bioecological Model to two FinTech user circles.

User circles have been dedicated to individual users and to legal entities and corporations. These models can help display the clear usability of FinTech for those two different user groups and show the clustering of FinTech companies. Moving forward, many are speculating how FinTech and traditional firms combining

cryptocurrencies such as bitcoin or ether, blockchain and mobile technologies may create the Internet of Value.

This chapter displays a bold attempt to classify Primary-FinTech companies by the:
Stockholm FinTech Hub, Nordic Tech List, NFT Ventures and PA Consulting. It does not only incorporate two models from psychology into FinTech but also displays two aspects of FinTech:

#Customer-centric circle
with the consumer to consumer and consumer to business services, which are facing individual clients

#Corporate-centric circle
with business to consumer and business to business services

Firstly, we present the results from a joint session of practitioners, academics, representatives of consulting companies, venture capital firms and a FinTech business environment institution drafted initial categorisation criteria.
Secondly, it is argued that FinTech offers users financial services similar to the ones offered by banks or other traditional financial providers, much in the same way that Wikipedia and Encyclopedia Britannica feature the same keywords in their search results to resolve a request.
Lastly, the financial aspect did not change; customers still receive and transfer money, pay their bills and purchase items online. What has changed, or rather has been "upgraded," is the fact that FinTech allows customers to receive the same services in a more user-friendly,

accessible, cheaper and/or faster way.

Ideally, one could combine all of these adjectives into one FinTech service. It is not the technology that is subject to the regulation, but the application of that particular technology to garner new users. It has been reasoned that the categorisation of FinTech changes depending on the angle of the user. The different legal entities collaborating with FinTech and individuals collaborating with FinTech have been the motivation to create two “user-centric circles of Fintech”. With regard to companies a particular service can be defined in a different way.

The complexity of this has attempted to be address by research categorisation assumptions and FinTech development in Stockholm have different goals. Economics and business administration remain a social science as companies have often formed a portfolio of services and products that are being offered for a different type of customers. Consequently, allocating FinTech companies into particular sections remains a mix of exploration and experimentation.

The result is that there are only three possible challenges of classification:

- The Stockholm-based unicorn, Klarna, serves as a payment method for e-commerce while actually providing micro credit to consumers and while being a payment method
- The company Teambrella offers crowdfunded insurance for individuals based on blockchain technology
- The debt collection company Toborrow allows Swedish small and medium enterprises to take loans from individuals and legal entities. For businesses, it serves either as debt or capital provider or as investment possibility as companies and individuals can manage their investments while providing debt to those who need capital on Toborrow.

Nevertheless, the outcome of a particular FinTech product is similar to traditional banking projects. It is arguably where the distinctive border of what can and cannot be included into FinTech is defined. As FinTech users demand the same services but in an “upgraded” way, it has been decided to keep the division of FinTech as close as possible to the current portfolio of banking services.

This means that FinTech companies have been defined as those that are finding innovative ways to blend finance and technology within the business functions that are offered by a traditional full-service bank.

FinTech allows customers, both physical and legal entities, to receive similar services to the ones traditionally provided by full-service banks.
Such services allow the users to deposit, withdraw, transfer cash, pay invoices, exchange currencies, or perform investment activities.

The goal of FinTech companies is to offer customers solutions that are more automated and transparent, provide a better user experience, are more efficient, and offer a competitive price as well as save time.

RECOMMENDATIONS

Two FinTech circles, which feature individuals and corporations in the Greater Stockholm Area, displayed the current stage of businesses activity in particular subfields. Additionally, the visualizations capture the focus while displaying a portfolio of traditional banking services, both in the front- and back-end.
Stockholm's FinTech companies tend to cluster in particular fields (such as payments) while not competing in a wider range of areas. These areas might indicate potential near-future scenarios for FinTechs as well as point to possible challenges that may limit the growth of FinTech.
The free spaces with a non-FinTech presence might capture the attention of regulators, capital providers and representatives of public authorities.

This signals the upcoming fields of development that regulators might approach in the near future.
Intriguingly, while focusing on the visualization charts with displayed logotypes of companies, it is more compelling to concentrate on a large number of empty categories and subcategories.

There are those categories that display potential future fields of development for regional FinTech companies and picture a potential market opportunity for potential founders. Alternatively, the empty fields might send signals of a particular regulatory obstacle, which indicates that entrepreneurs are avoiding developing a range of businesses in a particular area.

Representatives of the academic community might question the assumptions and demand restructuring of this division to increase methodological robustness.
Information connected with the proposed model has been placed in Appendix 1
Representatives of companies that have not been included in this categorisation might contact the team at innovative.internet@hhs.se or add their businesses to the website data.stockholmfin.tech.
LIsts of companies suggested as Primary and Secondary FinTech can be found in appendix 7 and 8

REFERENCES:

Annual FinTech Report, 2016 Crunchbase
Arner Douglas,W.,Barberis, J.,Nathan., Buckley,P.,2015 The Evolution Of Fintech: A New Post-Crisis Paradigm?

Daniels, H., Colek,M.,Vertusch.,J. 2007. The Cambridge Companion to Vygotsky, Cambridge University, p. 276

Dealroom.co, 2017 FinTech in Europe: Early signs of Brexit impact?

Diekhöner,P., 2016. The Trust Economy: Building strong networks and realising exponential value in the digital age, Marshall Cavendish International Asia Pte Ltd.

Dorfleitner, G., Hornus,F.,Schmitt,M.,Weber,M. 2017 FinTech in Germany, p.5. Springer. Available at http://dx.doi.org/10.1007/978-3-319-54666-7_4

Flint, D., 2013. 'Rebuilding Trust in Banking', HSBC Available at:) Speech of the HSBC's CEO at the Institute of Business Ethics London, 10 July 20 Available at: http://www.hsbc.com/news-and-insights/2013/douglas-flint-rebuilding-trust-in-banking14 Conference. Speech. Accessed on March 10th 2017

Freudenberg,N and Klitzman,.S. 2009. Urban Health and Society: Interdisciplinary Approaches to Research and Practice Public Health Vulnerable

Crowdfunding Crossing Borders, accessed March 2017, http://www.fglawyersamsterdam.com/wp-content/uploads/2016/03/20160331-Crowdfunding-Crossing-Borders-Report.pdf. CrowdfundingHub (2016b)

Current State of Crowdfunding in Europe, accessed 20 March 2017 http://www.sbs.ox.ac.uk/sites/default/files/Entrepreneurship_Centre/Docs/OxEPR2/current-state-Crowdfunding-europe-2016.pdf.

Cumming, D. J., Leboeuf, G., & Schwienbacher, A. (2014) Crowdfunding models: Keep-it-all vs. all-or-nothing. In Paris December 2014 finance meeting EUROFIDAI-AFFI paper (Vol. 10). Cumming, D. J., Hornuf, L., Karami, M., & Schweizer, D. (2016) Disentangling Crowdfunding from fraud funding. Max Planck Institute for Innovation & Competition. Research Paper No. 16-09, http://ssrn.com/abstract=2828919.

Dimaggio, P. J., & Powell, W. W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147–160.

Evans, D.S. & Noel, M.D. (2008) The Analysis of Mergers That Involve Multisided Platform Businesses. Journal of Competition Law & Economics. 4(3): 663-695

Populations, Wiley, p.65 Greenstein, S., Zhu,F., 2016 Do Experts or Collective Intelligence Write with More Bias? Evidence from Encyclopedia Britannica and Wikipedia, Harvard Business School. Available at: http://www.hbs.edu/faculty/Publication%20Files/15-023_e044cf50-f621-4759-a827-e9a3bf8920c0.pdf. Faculty paper. Accessed on March 17th 2017

Hook,D., Watts,J. 2002.Development Psychology, UCT Press, p.195)

Mackenzie, A. 2015. The FinTech revolution. London Business School Review, 26(3): 50–53 McGrady,V., 2016. Facebook Eavesdropped On Millennials To Learn Their Money Mindset, Februar 2nd, 2016 Available at: https://www.forbes.com/sites/vanessamcgrady/2016/02/02/facebook/#260b5574735 Article. Forbes. Accessed on April 17th. 2017

Milne, R. 2014. Klarna expands online payments business, Available at https://www.ft.com/content/ed7edc20-89c2-11e4-9dbf-00144feabdc0. Article Financial Times. Accessed, April 15th 2017.

Nicoletti, B.,2017. The Future of FinTech: Integrating Finance and Technology in Financial Services. p 17. Springer.

Pitchbook, 2017 FinTech Report. Industry report.

Scardovi, C.,2016, Restructuring and Innovation in Banking, p 24

Skinner, C., 2016. How FinTech firms are using bitcoin blockchain and mobile technologies to create the Internet of Value. Singapore. Marshall Cavendish International (Asia) Pte. Ltd

University of Hong Kong Faculty of Law Research Paper No. 2015/047; UNSW Law Research Paper No. 2016-62. Available at SSRN: https://ssrn.com/abstract=2676553. Unpublished research paper. Accessed March 10th 2017

Wesley-Jamen,N., Ingram, C., Källstrand C., Teigland.,R, Stockholm FinTech sector in the greater Stockholm Region, Stockholm School of Economics, 2015. o17. Available at https://www.hhs.se/contentassets/b5823453b8fe4290828fcc81189b6561/stockholm-fintech---june-2015.pdf. Accessed April 17th 2017

REVIEWING THE REGIONAL FINTECH COMPANIES

project: michal gromek
design: ali_imron

MADE IN STOCKHOLM

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

REGIONAL FINTECH INVESTMENTS

#ECOSYSTEM IS MATURING, INVESTMENTS CONDUCTED INTO FIRST SIX MONTHS OF 2017 ALREADY BYPASSED 2016.

The amount of FinTech venture transactions being pursued by investors is being viewed as a barometer of the well-being of the entire regional financial ecosystem.

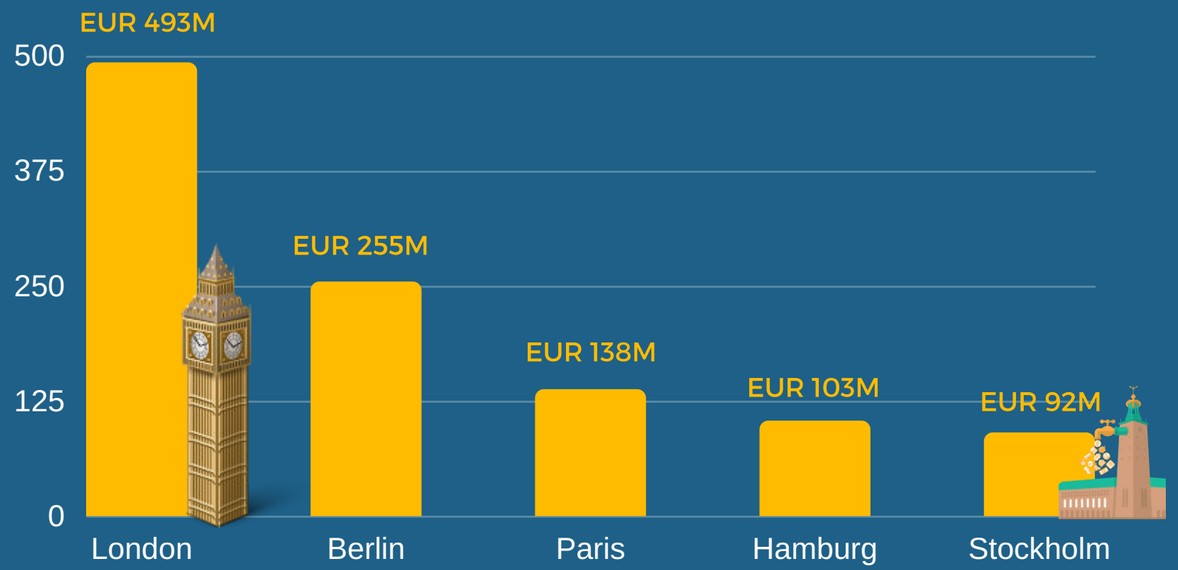
After the record-high year of 2014, with 193 million Euro invested, and 135 million Euro invested in 2015, 2016 has shown a small decline. Nevertheless, the data collected between January 1st and June 10th, 2017 has shown that a number of investments after only the first half of a year has bypassed investment values from the year of 2016.
On a regional level, independent of the way we account only for Primary-Fintech or Secondary FinTech companies in 2014 we have seen the peak of FinTech company creation. Those companies will likely soon mature on the Start-up Financing Circle level.

When this occurs, those founders will reach out for larger investment amounts to scale and accelerate growth, allowing Stockholm to remain in prime position in such values as “amount of FinTech capital raised per inhabitant”.

Methodology: As FinTech companies represent mostly unlisted limited liability companies, manual media screening, and self-investigation led to the collection of investment amounts.
The core of the data outcomes resulted from self-investigation and, thankfully, cooperation from the **Nordic Tech List**, which automatically scans media sources and is connected to the scoring agency Bisnode

FINTECH INVESTMENTS IN ABSOLUTE NUMBERS

IN 2016 in MEURO



DISCLOSED FINTECH INVESTMENTS IN LEADING EUROPEAN FINTECH CITIES IN TOTAL VALUES

OWN CREATION. METHODOLOGY AND SOURCES LISTED ON THE NEXT SIDE.

STOCKHOLM AS EUROPEAN TOP PLAYER

#IN A COMPARISON WITH 145 OTHER EUROPEAN CITIES

Comparing FinTech locations investments in total numbers remains delicate as the Greater Area of London accounts for around nine million inhabitants and Greater Stockholm Area for just “two” million residents. This is why on the next four pages; we have decided to display two comparisons - one in total values ignoring the natural differences between the locations and one in values per capita. Additionally, as other locations might account credit card producing companies, or ATM servicing machines to FinTech, a vague international definition of what can and cannot be accounted to FinTech complicates an accurate European comparison of disclosed FinTech investments additionally.

Source and Methodology:

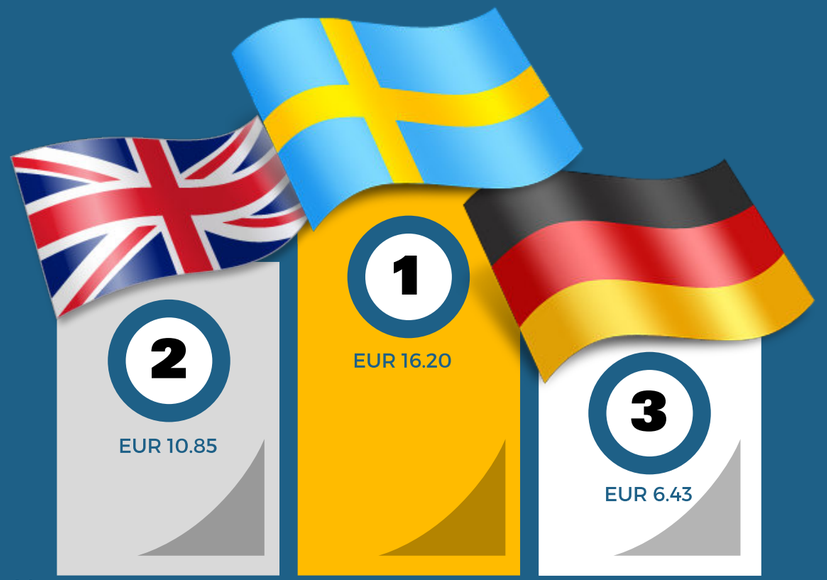
FinTech investments values in all 145 locations beside Stockholm, have been provided by Boston Consulting Group FinTech Control Tower (Carin Forsling, Nicolas Harle, Or Klier and Rahel Lebefromm) as of June 26th, 2017, represent compiling of secondary data from sources like CBInsight.

Values for Stockholm incorporate primary and secondary Fintech companies in the Stockholm Greater Region and, have been the results of own research while reviewing diverse media sources, press releases and investors announcements and cooperation with Nordic Tech List.

ECOSYSTEM - COMPARING WITH LEADERS

HISTORICAL PERSPECTIVE

SWEDEN RECEIVED THE BIGGEST AMOUNT OF FINTECH INVESTMENTS PER CAPITA IN COMPARISON WITH TWO LEADING FINTECH HUBS IN EUROPE.*



Time period 10.2014-09.2015, Data from UK and Germany: based on HM Treasury Report, UK FinTech available (here)
Accessed May 2017. Own data collection for Sweden, based on the Nordic Tech List.

SWEDEN - LEADER PER CAPITA

#IN THE CATEGORY FINTECH INVESTMENTS PER CAPITA 2014-2015

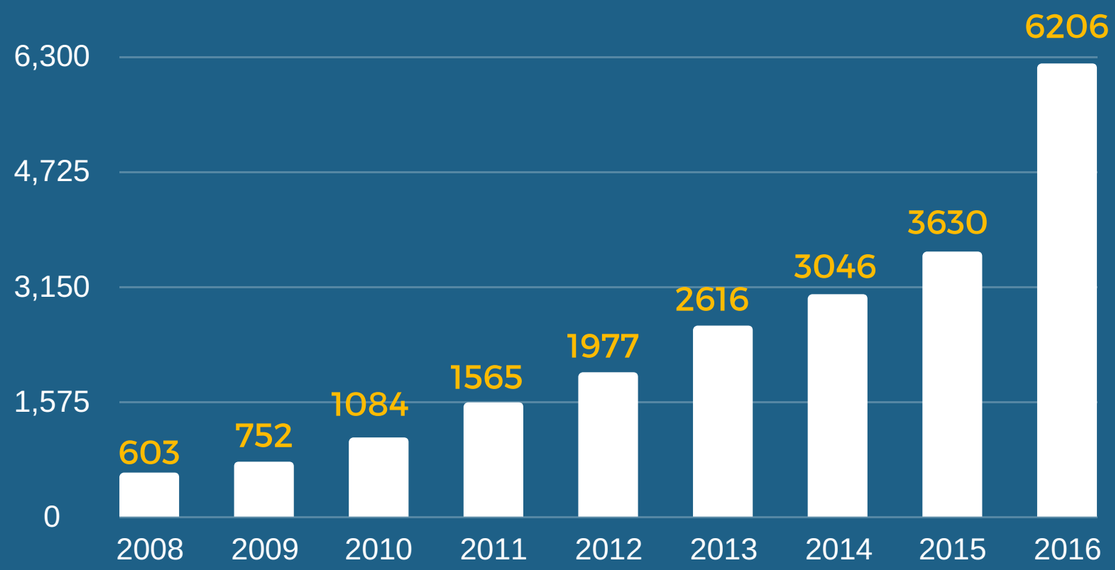
Sweden leads the European podium in the amount of FinTech transaction per inhabitant. Sweden remains mono-centric with over 94% of FinTech transaction taking place in the Greater Stockholm Area.

Reflecting on the recent multipolar undertakings in the form of the Stockholm FinTech Hub, growing investments from the banking FinTech ventures, launch of niche FinTech VCs companies, two reviews of current regulation done by the government itself with the goal to facilitate a more efficient financial ecosystem for FinTech companies and there is a high potential for an overall growth of FinTech companies in comparison to other locations.

Methodology: Comparable FinTech data has been found in the Her Majesties Treasury Report, Available (here). Accessed on June 7th 2017. which summarizes the FinTech investments on Germany EUR 524M and United Kingdom EUR 707M between October 2014 and September 2015.

Own data collection for Sweden, based on own reviews and Nordic Tech List. Incorporated own data for the same time period - Sweden EUR 158.65M the total values have been divided the by the amount of residence as of December 31th 2015.
UK 65.12M = EUR 10.85 per capita
Germany 84.81M = EUR 6.43 per capita
Sweden 9.79M = EUR 16.20 per capita

EMPLOYMENT IN FINTECH COMPANIES BETWEEN 2008 AND 2016



DISCLOSED AMOUNT OF EMPLOYEES IN REGIONAL PRIMARY AND SECONDARY FINTECH COMPANIES

GROWING AMOUNT OF EMPLOYEES

#THE EMPLOYMENT IN PRIMARY AND SECONDARY FINTECH WENT UP 10 TIMES BETWEEN 2008 AND 2016

Proportionally employment in FinTech companies has been growing two and half times quicker than the number of incorporated businesses, listed in the section before. On average each FinTech company employed 38.6 team members by 2016.

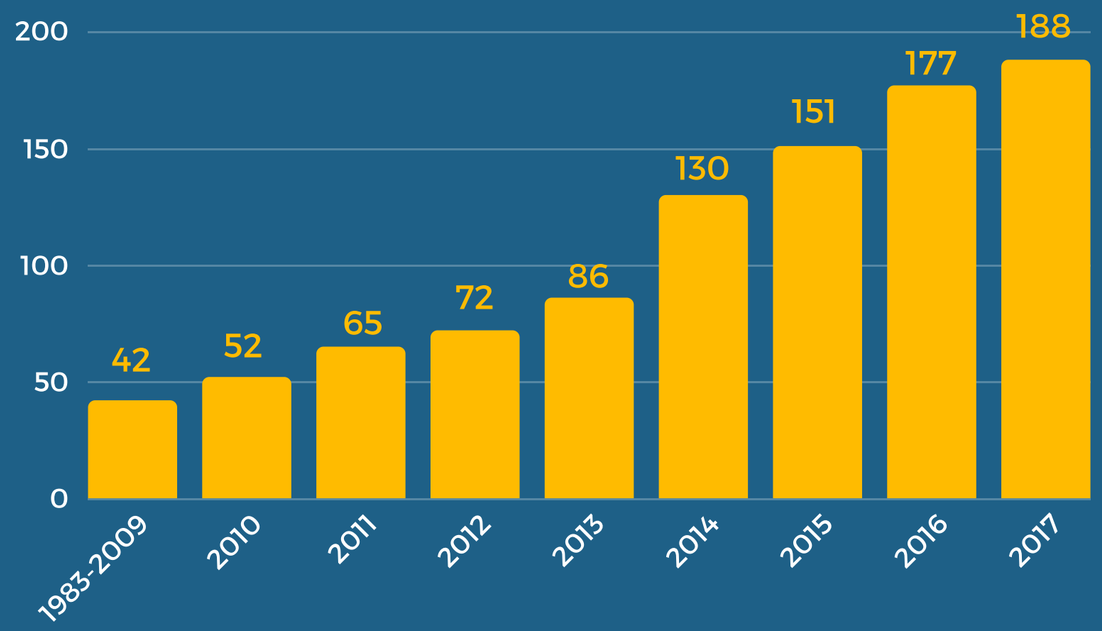
The average amount of employees might be misleading, for example, Klarna declared 1244 employees in 2016, which is more than one-fifth of all of the employees in the sector.

On the other hand, a significant amount of FinTech companies stated to employ fewer than 10 employees.

Source and Methodology:

The amount of registered FinTech employees is based on the declaration of Primary and Secondary Fintech companies incorporated in the Greater Area of Stockholm in the Swedish Companies Registration Office. The list of FinTech companies, from which the employment data have been possible to be traced back, have been stated in Appendix 3.

A NUMBER OF FINTECH COMPANIES VS. REGISTRATION



PRIMARY AND SECONDARY FINTECH COMPANIES ESTABLISHED IN STOCKHOLM GREATER AREA BY YEAR

CUMULATIVE DATA, BASED ON REGISTRATION YEAR. SOURCE: ALLABOLAG:SE, CATEGORISED ACCORDING TO THE SEGMENTATION SECTION OF THIS REPORT

STEADY GROWING ECOSYSTEM

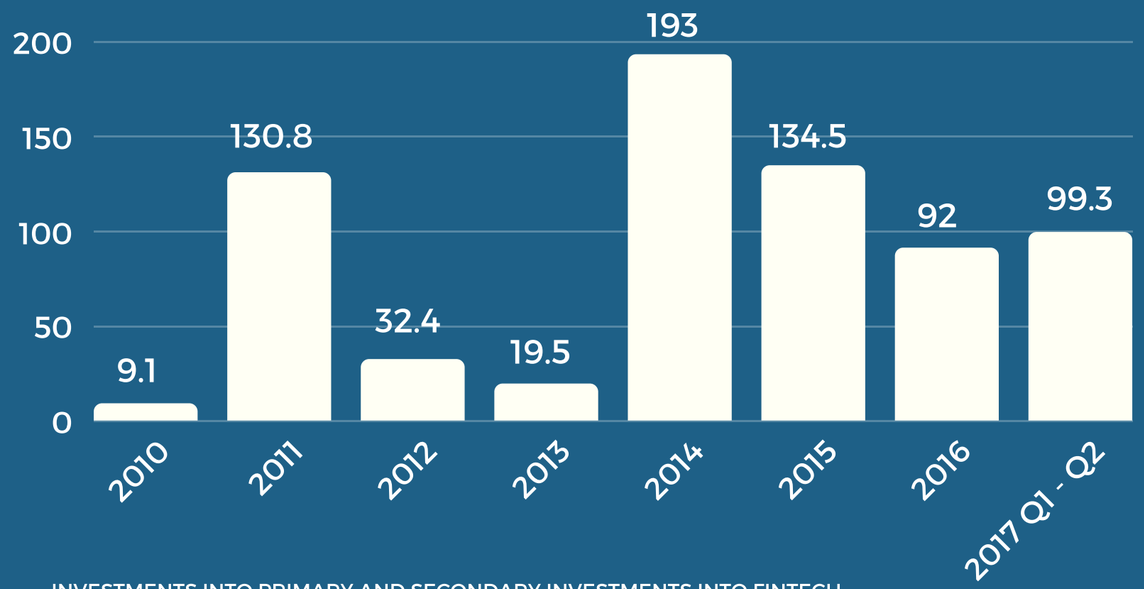
#THE DIGITAL FINTECH ECOSYSTEM HAS GROWN BY NEARLY 450% BETWEEN 2009 AND 2017

The number of companies defined as Primary and Secondary FinTech registered in the Greater Stockholm Area has seen a remarkable peak in 2014.
It is still unclear what caused the 75% growth in registered companies between 2013 and 2015. One of the possible leads might be the correlation between the large amounts invested in the FinTech sector during this time period, like Klarna (90M Euro, March 2014), Trustly (23M Euro, November 2014), and iZettle (40M Euro, May 2014).

Such a highly public and noticeably significant investment amount might have inspired other potential funders to follow the same path.

It is worth notifying that due to the novelty of FinTech, 41 further FinTech companies have been identified during the research period, which have not been able to be classified based on for example ongoing registration process but might shortly contribute to the growth of the ecosystem: AidHedge, Akredo, Avarka BitJoin BonumID, Börssignaler.se. Butlier Chipper, Cash Core.Tech.Chain Delightle Finansvalpen, Fundafarm. Finevate, Finsyn Fractal Labs, Hemsiten.se, Highlander, Hiveonline, Klever Livapp , Lunar Way Maquinando, Fintech SAC MARQTS, Media Sifter, Metafore, mInvoice, Näktergal Finance, Taastrup Octillion, OLB Productions, Penni, Q-Smartly, Rethymos, Smartförsäkring (...)

INVESTMENTS - PER CALENDAR YEAR IN MEUR



INVESTMENTS INTO PRIMARY AND SECONDARY INVESTMENTS INTO FINTECH COMPANIES ESTABLISHED IN STOCKHOLM GREATER AREA BY YEAR

SOURCE: NORDIC TECH LIST, CRUNCH BASE, VARIOUS NEWSPAPER ARTICLES, PRESS RELEASES AND OWN COLLECTION

2017 = 99.3 MILLION EURO COLLECTED

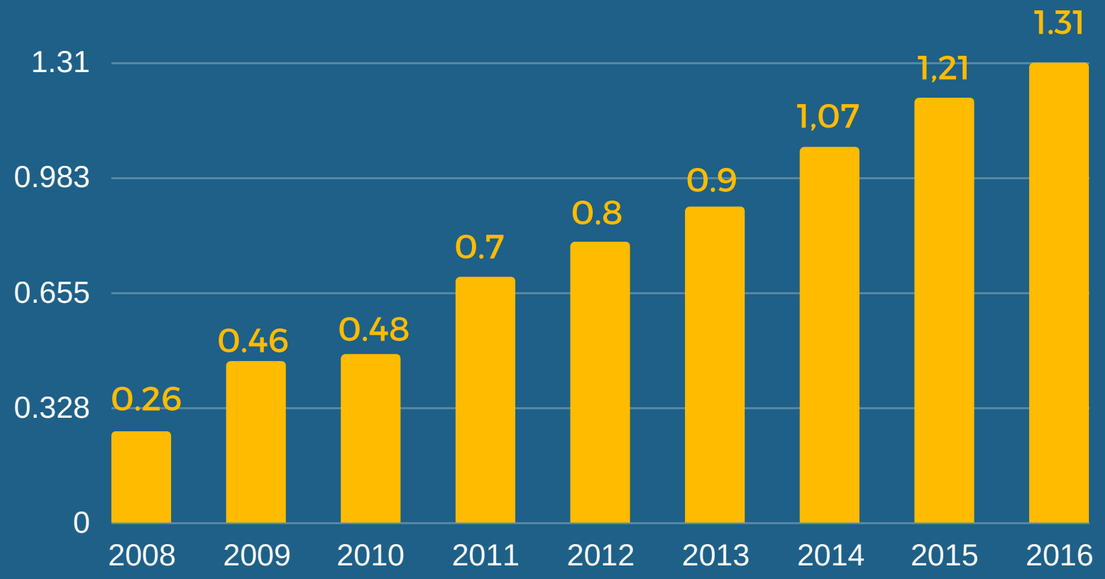
#FINTECH INVESTMENT IN ABSOLUTE NUMBERS

Since 2010, nearly 710 Million Euro has been invested into the Swedish FinTech sector.
This amount is equal to each of the 335,000 inhabitants of the city of Uppsala purchasing four iPhones6* mobile phones.
Despite companies like Klarna and iZettle receiving sums close to 100 Million Euro, the inflow of funds remains relatively steady at around 100+ Million Euro annually between 2015 and the first six months of 2017.
Keeping in mind that this charts represent only value collected until June 10th 2017, this year shows remarkable potential as iZettle has already received around 46 Million Euro.
Additionally, as FinTech grows as a whole. in terms of complexity, maturity and scope of business, two emerging players have each received 10+ million Euro in investments and we are only halfway through 2017.
These new players are:
#Pagero: a cloud-based-network platform for business documents that allows purchase-to-pay, order-to-cash, and logistic-to-pay (TMS) processes. Financed by Summa Equity in May 2017.
#Qapital: a personal banking app designed to help customers save money. Financed by Anthemis, Exponential Ventures, Inbox Capital, Industrifonden, Northzone, RocketShip Finance in March 2017.

*at June 2017 pricing in Sweden

OPERATING REVENUES

IN BILLION EURO 2008-2016



DISCLOSED AMOUNT OF OPERATING REVENUE FROM REGIONAL PRIMARY AND SECONDARY FINTECH COMPANIES

INCREASE IN OPERATING REVENUE

#FINTECH IN STOCKHOLM EXPERIENCES A STEADY GROWTH OF OPERATING REVENUE

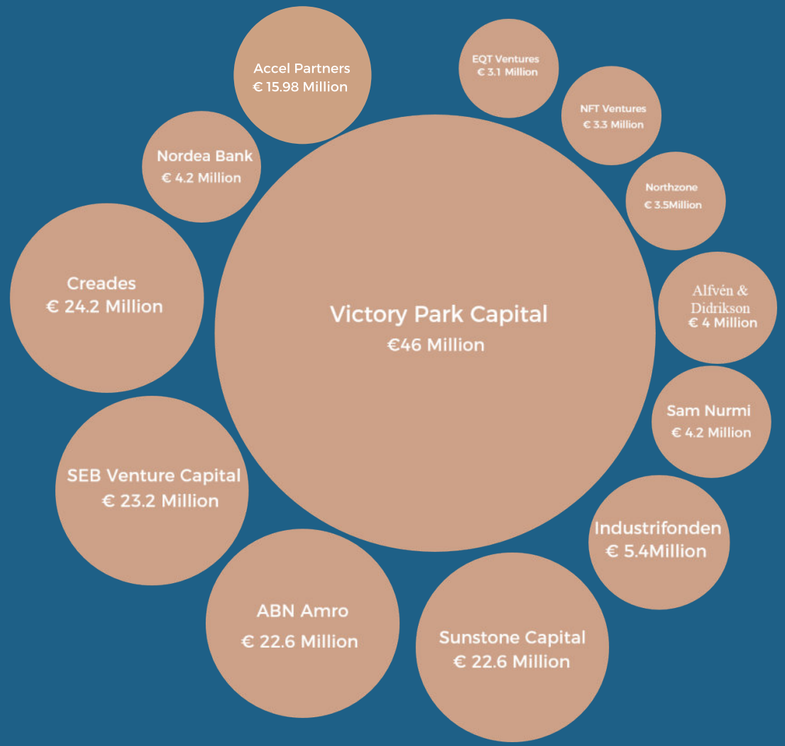
In addition to the fast path of incorporations and growth of employment, operating revenue from Primary and Secondary FinTech companies is on the rise. The reported operating revenue grew from 260 Million Euro in 2008 to 1.31 Billion Euro in 2016. This represents a steady growth of the Regional FinTech Ecosystem.

Operating revenue represents sales which resulted from companies day-to-day business like selling the company's FinTech technology, services or products.

Source and Methodology:

The growth of registered FinTech employees is based on the declaration of incorporated companies to the Swedish Companies Registration Office The list of FinTech companies, from which the operating revenue data have been possible to be traced back, have been stated in Appendix 4.

ECOSYSTEM - BIGGEST 13 INVESTORS OF 2016-17



EXAMINATION OF REGIONAL INVESTORS

#WITH AN AVERAGE INVESTMENT CA. FIVE MEUR

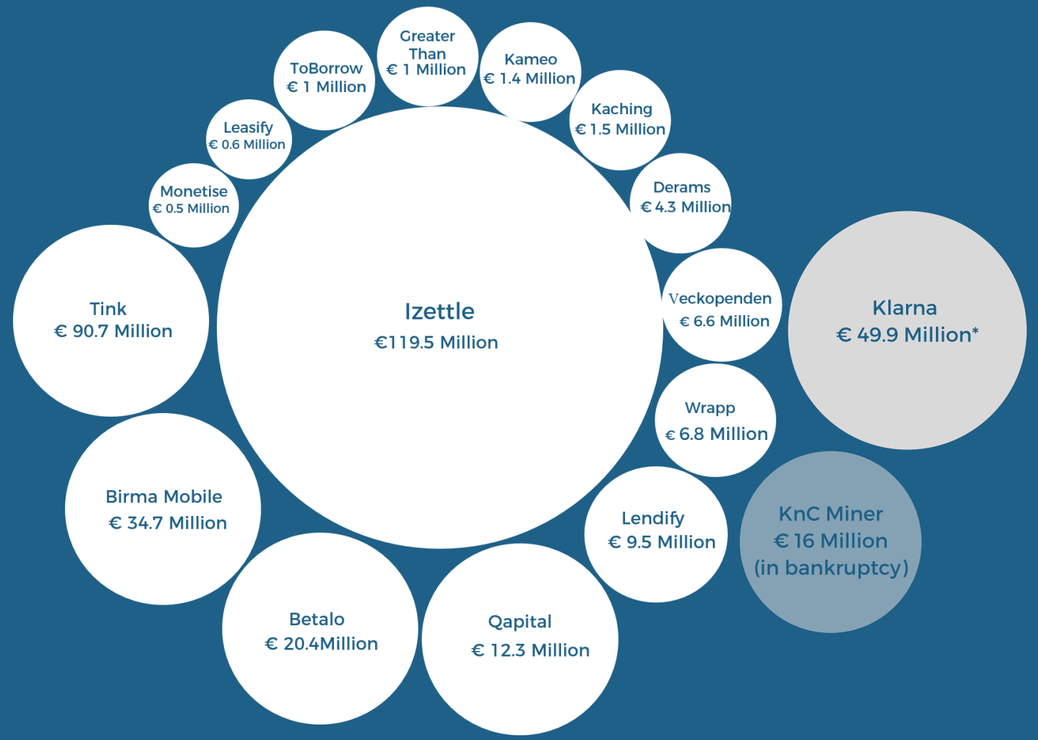
Victory Park Capital, with its EUR 46 million investment into iZettle on January 11th, 2017, remains biggest FinTech disclosed transaction of the first half of 2017.

This is followed by an undisclosed investment in the P2P lender Lendify, of EUR 20.5 million in April 2017, by an unknown investor. The second biggest disclosed investment has been a EUR 15.98 investment into KNC Miner by Acell Partners

Furthermore, joint investments and undisclosed investments similar to Qapital investment are one of main reasons there are significant difficulties in finding exact FinTech transaction amounts.

As stated in the section “chasing undisclosed investments”, most FinTech companies represent limited liability companies, the pieces of information about investments can be collected either from company press releases, media releases or pieces of information provided from the investor side.
Often, companies or investors disclose only a joint investment sum, which increases the complexity to track which investor invested which amount of the combined sum. As a significant amount of ventures do not disclose the exact source of investment, if an investment sum has been released with a list of investors this investment amount is equally divided across all participating parties in the chart on the left side.

ECOSYSTEM - BIGGEST DISCLOSED INVESTMENTS



CUMULATIVE DATA, BASED ON NORDIC TECH LIST
*KLARNA HAS RECEIVED 31.9 MILLION EURO IN INVESTMENT IN JUNE 2016 BUT THE INVESTOR REMAINS UNDISCLOSED, 18M FROM VISA HAS BEEN DISCLOSED AFTER CLOSURE OF THE DATA COLLECTION OF THIS REPORT

17 BIGGEST DISCLOSED INVESTMENTS

#IN THE TIME PERIOD 2015 AND Q2 2017

iZettle alone has collected around 120 million Euro. Investments into iZettle, Tink, Birma Mobile, Betalo and Qapital account for nearly 80% of the total amount of disclosed investments.

The success of the nine digits investor amount of iZettle is followed by the 91.7 Million Euro invested into the account management app Tink
These two leaders alone account for around 40% of the total investments into regional FinTech. The second group of investment leaders, in the area of between 2 to 35 million Euro, are dominated by the bill payment app Betalo and Peer-to-Peer lending

company Birma Mobile, which facilitates investments in emerging economies.
As the average year of FinTech enterprises that have been incorporated in the Greater Stockholm has been 2011, a range of former companies will mature and move from pre-seed to A-Round and C-Rounds, likely resulting in a constant growing of investments values in the region.

A further increase of FinTech acceleration projects by STING or new players might fast-track the growth and investment into regional FinTech enterprises.

INVESTMENTS

BIG UNKNOWN -
FINTECH COMPANIES THAT RECEIVED AN UNDISCLOSED AMOUNT OF FUNDING*

VENTURE - DATE OF RECORDED INFORMATION - INVESTOR

Trivec T&V Holding - 2016 January - Verdane Capital
Pensionara - 2016 March 15th - Alexander Pärleros
Happy X - 2016 April 13th - Carl-Viggo Östlund
Bolånegruppen - 2016 May 25th - Springfield project
Open Solution - 2016 June 14th - unknown amount & investor
Klarna - 2016 June 27th - 31.9 Million Euro
Bolånegruppen - 2016 July - Schibsted
Value Qard - 2016 July - Mikz Global, Wellstreet
Better Wealth - 2016 December - Collector Ventures, NFT Ventures
Mr. Shoebox - 2016 December - Collector Ventures, NFT Ventures
Nordkap - 2017 February - Collector Bank
Sciety - 2017 February - unknown amount & investor

as of June 30th 2017

UNDISCLOSED INVESTMENTS SIZES

#AT LEAST ELEVEN COMPANIES DID NOT DISCLOSE INVESTMENT AMOUNTS IN 2016 - Q22017

One of the known reasons why companies are not pursuing an Initial Public Offering (IPO) is to avoid onerous reporting requirements.
Companies that are not publicly traded need to disclose less information and can stay away from glossy annual reports that provide insights into the complex financial situation of these enterprises.
In 2016-2017 at least eleven FinTech/Primary-FinTech companies in the Greater Stockholm Area have stated publicly that they have received funding from a particular investor or investor groups but refrained from specifying the amount of funding received.

Two companies:
Open Solutions and **Sciety**, refrained from not only mentioning an amount but additionally where the investment originated from.
Despite the fact that this data has not been included in the chart above, as it might be hazardous to speculate about investment sizes, it is important to underline that investments into companies are only as good as the quality of the collected information.

Secondly, even when disclosing investment sources, companies still decline to disclose investment sizes, which adds to the challenges in accurately comparing between different FinTech hubs.

#RONIT GHOSE

GLOBAL HEAD, BANKS RESEARCH
CITI BANK

DISRUPTION WHEN THE CREDIT MARKET WORKS WELL?

Interview by Michal Gromek, SSE

Investments into FinTech remain significant, including lending. In 2016, China dominated the growth in FinTech investments. In emerging economies new players tend to "add-on" credit to a customer that have been previously excluded from financial services for various reasons. In India for example, based on the lack of credible credit scoring companies, FinTech business found a niche while connecting with car-sharing apps companies like Uber or Ola. They use the track record of the Uber or Ola driver as a source of credibility that replaces a traditional credit score, which allows them to calculate the free capacity of the borrower and offer them loans. Such a clustering of FinTech with multisided platforms might be additionally supported by the policy makers as such measures might decrease the number of underbanked citizens or at least increase the inclusion into modern financial services.

In richer countries like Sweden, Fintech lending companies compete with existing credit providers. In 2016, we have experienced an investment drop of 2/3 into peer-to-peer lending companies in the US. Peer-to-peer lending share of US FinTech new investments shrank from 60% in 2015 to 20% in 2016. In 2016 InsurTech was

the hot new area, accounting for 40% of new US FinTech investments. It might be argued that InsurTech is the new bubble in US FinTech, replacing blockchain.

Given the recently stretched valuations in InsurTech, VCs looking to lose money would look at InsurTech. At an industrial level, InsurTech is interesting as these companies could find a niche while connecting insurance services with the Internet-of-Things in the near future. Also, insurance, due to product and regulatory complexity, is the final frontier of finance for VCs and the tech community. Coming back to FinTech lending, regulators in developed markets such as Sweden, the UK or the US may naturally be cautious.

Too much credit availability partly caused the last global financial crisis.
Developed market regulators might see FinTech lending companies differently to those in developing countries.
During a recent G20 conference in Germany, one senior regulator questioned the attractiveness of FinTech lending: “the credit system in my country works as it should, those who qualify - receive credit, so why should we be interested in to support additional players to an ecosystem which works well without them?”.
Disruption often means risk and usually regulators do not favour the increase of risk in their financial system.

To conclude, here is a real life example of how FinTech and alternative finance companies can have a use case. Few years ago we hired a colleague in our team. She was a graduate of a top European business school. She worked for a leading global bank in London.

However, no bank in London wanted to give her a credit card because she had no credit history in the UK. She was not a subprime customer in any sense but an unconventional customer.
In the end our colleague got a credit card – but from a company in Singapore where she used to live and had a credit history. Finding a way to provide services to a client like her should allow a FinTech to grow. **We know one young FinTech company in London that uses current transaction data rather than historical repayment data to build accurate and transparent credit scores. One of the investors in this company is a Stockholm based VC fund. FinTech in action!**

> I"n the richer countries, it is possible that regulators might become incumbent banks' new best friends. Regulators may be willing to protect the franchise of traditional financial providers, seeing them as a pillar of the stability of the economy"

EXPLORING REGIONAL FINTECH TALENT

inspecting the LinkedIn profiles
of primary-FinTech employees
in the Greater Stockholm Area

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

3069 REVIEWED LINKEDIN PROFILES

In countries like Sweden, where the tertiary sector the so-called 'service industry' generates around 75% of the gross domestic product*, the performance of each region will be only as good as the combination of the current talent pool and its capacity to attract new talent.

FinTech employees have to organize and piece together complex puzzle pieces of technology, regulatory framework, the user experience and financial products.

FinTech companies function not only in the highly competitive financial environment, but their products have to be competitive against traditional financial products and swiftly adapt to fluctuations in customer preferences.
A recent study, which reviewed all available LinkedIn profiles in the Greater Stockholm Area, concluded that Stockholm experiences a steady inflow of talent from Uppsala, the United States, and the United Kingdom. Further, another LinkedIn study showed that, unlike other Metropolitan areas, Stockholm doesn't experience any significant outflow of Talent.

Inspired by the **Stockholm Economic Graph**** and a recent paper on the **Mobility of Tech Talents*****, which uses a primary data review of LinkedIn as the foundation, it has been decided to executive this method to review FinTech labour force in the Greater Stockholm Area.
This study focuses on a "current picture" as of May 2017, as the data was collected between April 15th and May 20th, 2017. As the FinTech business environment in Stockholm incorporates a large number of small businesses with a few employees

and two companies with a high number of employees (Klarna and iZettle) this triggered the division of collected data into two main categories:
#Small FinTech – companies defined as primary-FinTech which have been registered in the Greater Stockholm Area by May 1st, 2015 with no more than 400 registered employees;
#Large FinTech – companies defined as primary-FinTech which have been registered in the Greater Stockholm Area with more than 400 employees.

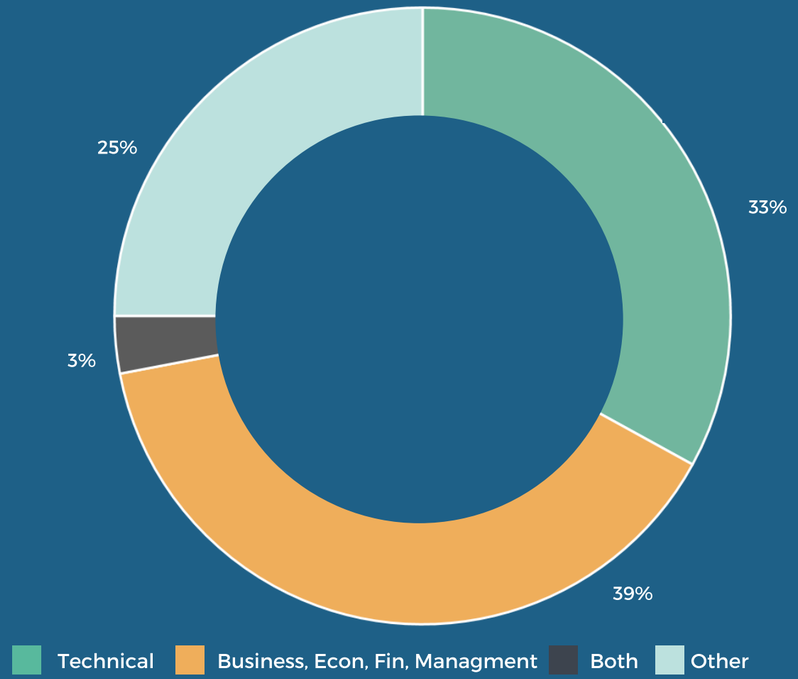
LIMITATIONS: The results summarised in this chapter can be viewed as inspiration but not solid research results. The results of this study are dependent on the completeness of publicly available LinkedIn corporate profiles and has not reached its full potential yet. A significant amount of newly established FinTech companies did not possess a corporate LinkedIn profile during the time of the review. In some cases, such as with the "type of degree earned" variable, only 40 LinkedIn members out of 3069 in total have indicated their alma matter. Another example would be that LinkedIn does not offer a field called "nationality" or "place of origin", so potential foreigners could only be identified if they specified their foreign language skills as something other than native. Unfortunately, this leaves room for error, especially when categorizing children of expatriate parents or dual citizens. Furthermore, LinkedIn profiles of members that have been working for a FinTech company for less than three months have been excluded, in order to exclude employees that potentially were on internships.

#INTRODUCTION TO LINKEDIN AND AVAILABLE DATA ON STOCKHOLM

LinkedIn is the leading professional social media network on the Internet with more than 500 million members in over 200 countries and territories. As of April 2016, LinkedIn had 2.6 million members in Sweden. Around 500,000 members and 34,000 companies are registered in the Greater Stockholm Area alone. Around half of the registered businesses in Stockholm have been classified as small or medium enterprises**. LinkedIn members in Stockholm listed by the job function "information technology" have been exceeding the global average by 68% and between April 2015 and April 2016 more than 10% of LinkedIn members have changed their employment status. The team has been able to find 98 different primary-Fintech companies out of 110 companies defined.

References:
*World Bank. "Sweden: Distribution of Gross Domestic Product (Gdp) across Economic Sectors from 2005 to 2015." Statista - The Statistics Portal, Statista, www.statista.com/statistics/375611/sweden-gdp-distribution-across-economic-sectors/, Accessed 21 Jun 2017
**LinkedIn and Stockholm Business Area, available at: https://www.slideshare.net/MichalGromek/stockholm-economic-graph-in-cooperation-with-LinkedIn Accessed on May 31th 2017
***Ibid, p.25
**** Barslund, Mikkel and Busse, Matthias, How Mobile Is Tech Talent? A Case Study of It Professionals Based on Data from LinkedIn (June 30, 2016). CEPS Special Report, No. 140. Available at SSRN: https://ssrn.com/abstract=2859399

PRIMARY FINTECH: TYPES OF ACHIEVED EDUCATION



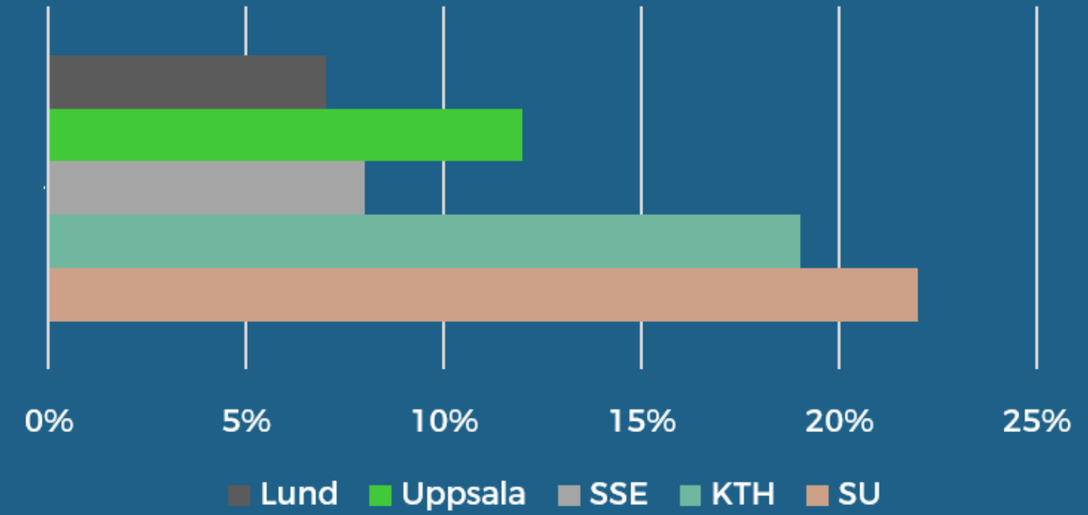
75% OF EMPLOYEES COMPLETED

#TECHNICAL OR MANAGERIAL EDUCATION

Not only have FinTech employees achieved a high level of educational attainment, they additionally display a clear pattern of which types of education were possessed prior to employment in the FinTech sector. Business education is clearly in the lead with 39%, which includes Economics, Finance and Management education. Around one-third of FinTech employees completed education in engineering fields, including IT. 3% of the FinTech workforce has completed a mix of engineering education (for example, during their first educational cycle) and Business education (for example, during second educational cycle). Three-out-of-four FinTech employees have completed technical or/and management education. Only one-out-of-four employees finished a university-level education without a technical or managerial background, which shows how restricted the FinTech field has been restrictive towards those educational fields.

Data sources: 728 out of 3069 reviewed publicly available LinkedIn profiles of Primary FinTech employees displayed their completed field of study on their profile. LinkedIn members that either have not completed their studies or are currently studying have not been included in this review. Data collection current as of May 2017.

PRIMARY FINTECH: SOURCE OF DIPLOMA



60% OF FINTECH EMPLOYEES

#POSSES A DIPLOMA FROM A REGIONAL UNIVERSITY

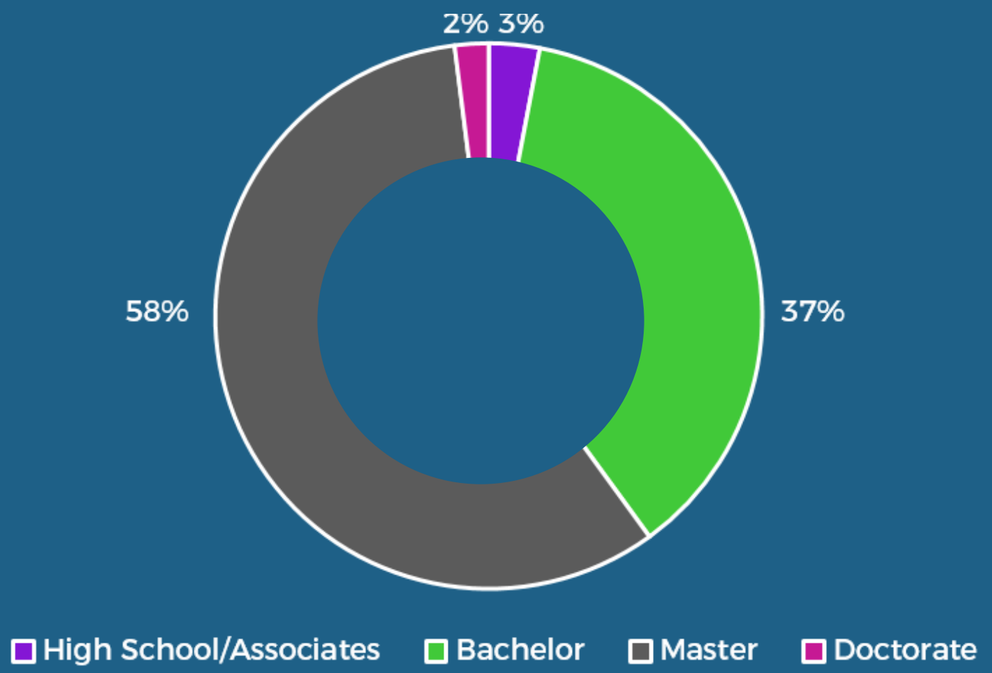
Six out of ten FinTech employees, which have specified their education on their LinkedIn profile, have been educated by a regional university.

While reviewing the certifications of FinTech graduates in the Greater Stockholm Area in relation to regional universities in total degrees earned (Bachelor's and Master's), Stockholm University, followed by the Royal Institute of Technology (Uppsala University and the Stockholm School of Economics are the main alma maters.

There is a significant discrepancy in total graduates. In the year 2015, 1093 students received their Master's from Stockholm University* and only 344 from the Stockholm School of Economics, which requires further investigation to correct the impact factors. **Data sources:** 1661 out of 3069 reviewed publicly available LinkedIn profiles of FinTech employees defined as Primary FinTech have stated the source of academic certification from Stockholm University (SU), Royal Institute of Technology (KTH), Stockholm School of Economics (SSE), Uppsala University (UPPSALA) or Lund University (LUND). If a student graduated from more than one university,both universities have been added.

STOCKHOLM UNIVERSITY, ROYAL INSTITUTE FOR TECHNOLOGY AND UPPSALA UNIVERSITY FUEL REGIONAL FINTECH COMPANIES.

PRIMARY-FINTECH: HIGHEST DIPLOMA ACHIEVED



ONLY 3% OF FINTECH EMPLOYEES

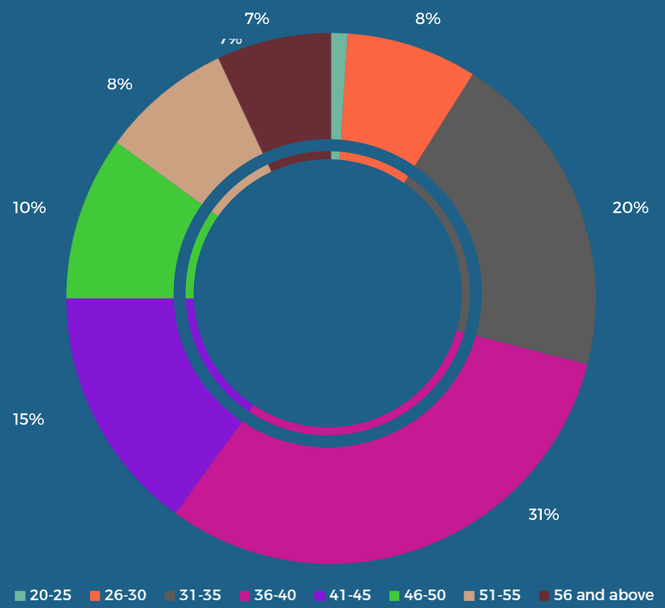
#HAVE NOT COMPLETED A UNIVERSITY EDUCATION

According to the 2016 Education and Training Monitor, released by the European Commission in September 2016, Sweden's tertiary educational attainment rate was at an all-time high of 50.2 % in the year of 2015. Furthermore, the tertiary education attainment rate, according to this LinkedIn-based nethonographic review for the Greater Stockholm Area was 50% higher than the average for the Swedish population.

After reviewing that three out of four FinTech employees completed higher education in technical or business matters, it was found that nearly 60% finished their education with a Master of Arts or Master of Science. More than 35% considered their education completed at the Bachelor level. Finally, only 3% of the FinTech employees have "only" completed high school and a comparable amount of two percent earned PhD degrees.

Data sources: 1020 out of 3069 reviewed publicly available LinkedIn profiles of Primary FinTech employees displayed their highest achieved diploma. Those that have not completed their studies or are currently studying have not been included in this review. Data collection as of May 2017.

PRIMARY FINTECH: REGIONAL FOUNDERS AGE



Comment: The age of the founder, reflects May 2017, not accounting backwards when the venture has been established.

40 YEARS IS THE AVERAGE

#AGE OF A FINTECH FOUNDERS IN THE GREATER STOCKHOLM AREA

Regional FinTech companies are mainly being led by men aged 36-40. Statistically speaking, more than half of the Primary-FinTech companies have a Chief Executive Officer (CEO) or Founder who is between 30 to 40 years old.

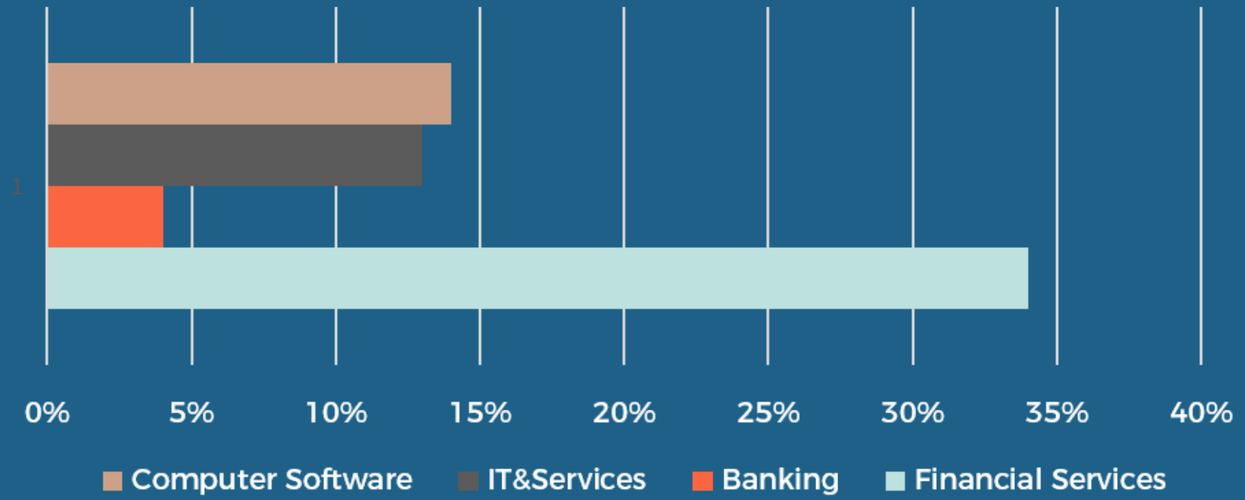
Surprisingly, FinTech companies are not led by very young founders, as only fewer than one in ten founders or CEOs are younger than 31 years. Summing up both small and large sized Primary-FinTech companies together, the average CEO age is 40 (range 24 to 70). If we look at only female CEOs, the average age is 43 (range 35 to 65)

Data Collection: The data was only accessible from 89 companies that were classified as Primary-FinTech. The names of the current CEOs have been extracted from the allabolag.se portal, which provides first name, last name, and current age. The extracted given name and family name were reviewed using the hitta.se portal in order to determine the age.

This process is only possible for residents holding a Swedish Social Security number and, unfortunately, not all founder could be identified clearly. Furthermore, the age of the founder is as of May 2017 and not the day the venture was established.

PRIMARY FINTECH: TYPES OF EMPLOYERS IN THE PAST

70% OF FINTECH EMPLOYEES, WORKED IN THE PAST IN ONE OF THE FOLLOWING INDUSTRY:



Comments: In case employees were working by multiple types of companies from the list, employers have been marked multiple times.

FINANCIAL SERVICES & DEV

#MOST COMMON FORMER EMPLOYMENT

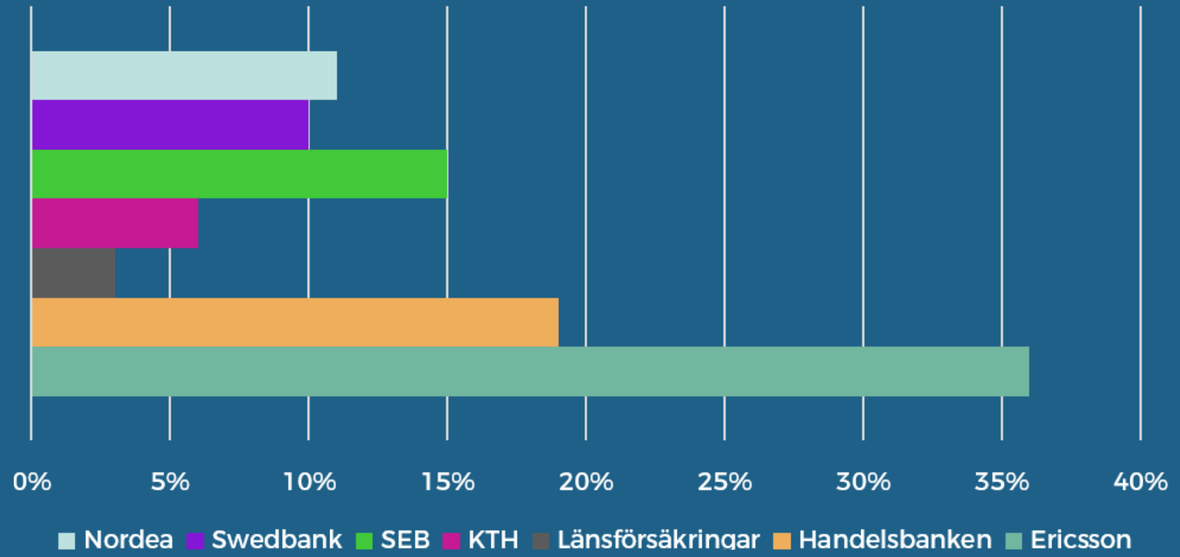
Similar to the results of achieved types of education, the core concentration of FinTech employers is either in technology or financial services.

One-third out of all FinTech employees had worked previously in the broad financial services, in the area of debt collection, payments, administration but excluding banking. Nearly 30% of the reviewed workforce has originated from Computer Software and IT services. Computer Software has been understood as the diverse experience of in usage of different programming languages. IT Services reveals all other activities in the area of IT which are not connected directly linked to programming. Surprisingly core traditional banking employed only 4% out of the current FinTech workforce but reveal a high concentration of employers which can be reviewed in the “biggest companies” section of this report.

Data sources: 2008 out of 3069 reviewed public available LinkedIn profile of FinTech employees defined as primary-FinTech have stated their places or former employment. In case a LinkedIn member worked in more than one types of employments, it has been added multiple times. Data collection as of May 2017.

PRIMARY FINTECH: LARGEST EMPLOYERS IN THE PAST

12% OF REGIONAL FINTECH EMPLOYEES HAVE STATED TO HAVE WORKED IN ONE OF THE FOLLOWING EMPLOYERS IN THE PAST



Comment: In case employees were working by multiple companies from the list, employers have been marked multiple time.

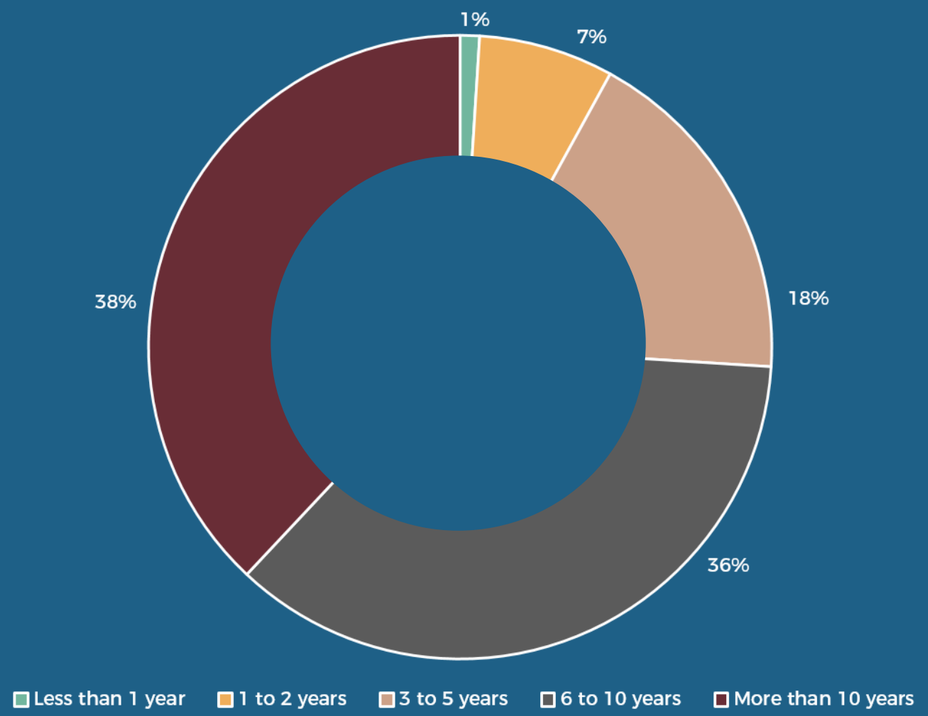
MIGRATION FROM BIG TO FINTECH

The biggest past employers of FinTech talent force in the Greater Stockholm Area display a mix of financial and technological companies combined with academia.
Traditional financial providers, represented by major Swedish banks, Ericsson and research facilities, are the most selected former places of employment for regional FinTech employees.
As reflected by previous graphs, the types of education most acquired by the regional FinTech workforce were engineering and management.
Not surprisingly, Ericsson, Handelsbanken, Swedbank, Nordea and the Royal Institute of Technology (KTH) in Stockholm are encompassing a mix of technological and financial skills, which are the foundation for current FinTech careers. According to the most annual Nordic Bank Statistics report in 2015 employment turnover in Swedish Banks has been as low as 7.6%.
This means that 2242 banking employees in Sweden have changed the place of employment within a year.Of those, around 20% might have transferred to FinTech companies from the Greater Stockholm Area.

SEVEN LEADERS AS FORMER PLACES OF EMPLOYMENT FOR REGIONAL FINTECH

Data sources: 354 out of 3069 reviewed public available LinkedIn profiles of FinTech employees defined as primary-FinTech have stated one of the listed companies as a former place of employment.
Data collection as of May 2017.

PRIMARY FINTECH: PROFESSIONAL EXPERIENCE



PRIOR WORK HISTORY

#BEFORE JOINING THE PRIMARY-FINTECH SECTOR

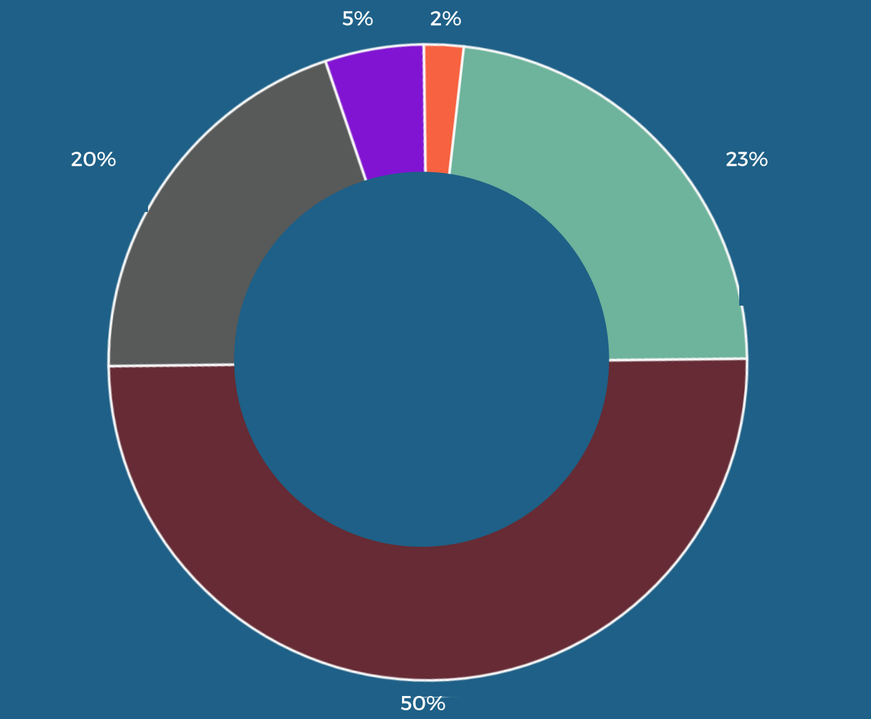
Nearly eight-out-of-ten primary-FinTech employees have had more than six years of professional experience. Additionally, four-out-of-ten have been working professionally for at least ten years.

This result potentially reflects a significant amount of experience needed to combine the financial and technological tasks to complete products. Combining the data connected of: achieved level of education, types of education, and duration of professional experience, the primary-FinTech talent pool shows a highly-educated white-collar worker. The number of fresh graduates with work experience fewer than or equal to one year has been fewer than 1% of the total workforce.

NEARLY 80% OF FINTECH EMPLOYEES HAVE MORE THAN SIX YEARS OF PROFESSIONAL EXPERIENCE:

This might debunk the myth of fresh, unexperienced graduates being newcomers desiring to change financial services products.
Data sources: 2985 out of 3069 reviewed public available LinkedIn profiles of FinTech employees defined as prumary-FinTech have listed. their years of professional experience. As stated in the limitations section at the beginning of the chapter, work durations equal to or less than three months have been excluded from the reviews to exclude short-term internships. Data collection is current as of May 2017.

SMALL FINTECH: CURRENT WORK DURATION



Based on LinkedIn profile review of employees defined as small- primary- FinTech in the Greater Stockholm Area. Review as of May 7th, 2017,

74% WORKED LESS THAN TWO YEARS

#IN CURRENT FINTECH COMPANY

The average year of incorporation of a FinTech company in the Greater Stockholm Area is 2011, which is six years ago. Despite this, three-out-of-four employees in small primary-FinTech companies have worked there less than 24 months.

Every fourth employee did not spend even 12 months in the current FinTech company. This result shows a significant discrepancy with the turnover of employees on the level of 10%, indicated in the Stockholm LinkedIn Economic Graph from April 2016. With the vertically and horizontally growing amount of FinTech companies, a highly educated talent pool of 3000+ employees does not come close to filling the sector's need. This phenomenon is not unique to Stockholm, as FinTech employees represent a unique mix of technological and financial skills; leading international hubs experience challenges attracting them. Luckily, the women in current Tech initiative, as well as cooperation between regional universities (such as the Stockholm School of Economics) with facilities (like Stockholm's FinTech Hub), might help in filling this gap.

Data Source:
1312 out of 3069 reviewed publicly available LinkedIn profiles of FinTech employees defined as primary-FinTech have stated their current duration of employment. This value represents the third highest statistical sampling quality.

PRIMARY FINTECH: FEATURED LINKEDIN SKILLS

Source: Based on LinkedIn profile review of employees defined as primary-FinTech in the Greater Stockholm Area. Review as of May 2017, based on 1100 LinkedIn profiles out of 3069 total LinkedIn profiles review. Multiple skills from one Linkedin member have been added to the visualisation.

TECHNOLOGY MEETS MANAGEMENT

Following the management and technical education achieved by FinTech employees, the skills listed on their LinkedIn profiles can be categorised into two areas: Management and Technology.

On the **technological side:** Java, Scrum, Software Development, Javascript and Linux are leading the programming sub-category. More than 20% of all primary-FinTech employees have added those skills to their portfolio of competencies.

Nearly equally to the amount of technological skills, Business Management, Business Strategy, Project Management and Business Development were all above 20% on the management skills side. The unique mix of competences clearly describes what FinTech is all about: the interaction between project management, technical

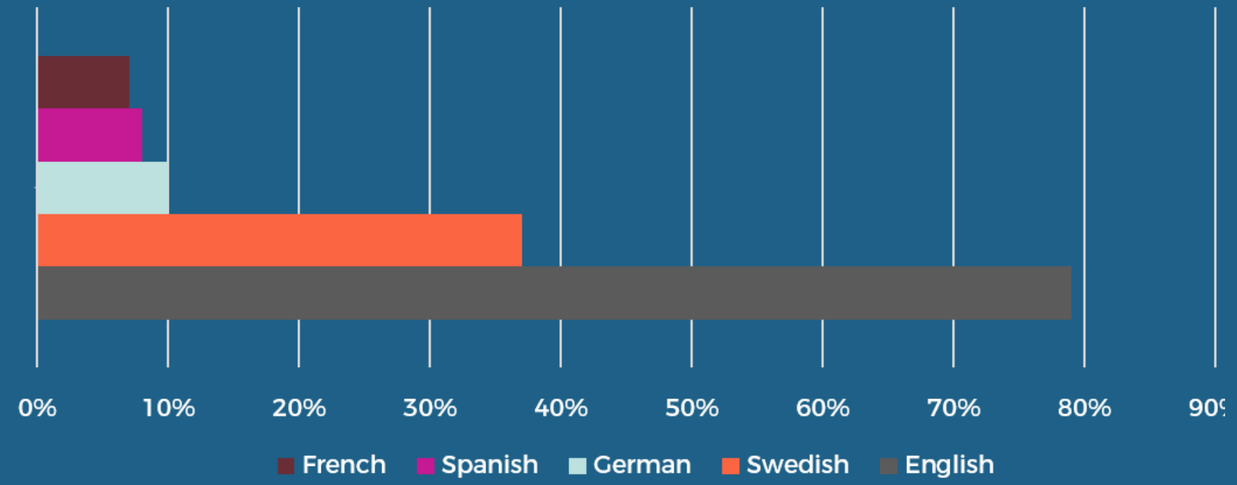
3937 DIFFERENT SKILLS HAVE BEEN FEATURED BY LINKEDIN MEMBERS ON THEIR PROFILES.

development skills and business strategy. Surprisingly there is absence of clear financial skills like hedging, trading and Institutional Trading Platform (ITP).

What are LinkedIn skills?
Skills types like Business Development, Business Strategy or Java are created by each LinkedIn member and can be endorsed by their connections to recognise users expertise and experience.

Data sources:
10% out of 3069 reviewed public available LinkedIn profiles of FinTech employees defined as primary-FinTech have at least one of skills. Data collection as of May 2017.

PRIMARY FINTECH: DECLARED FOREIGN LANGUAGE



Comment: This review was based on publicly available LinkedIn profiles As significant amount of employees indicated Swedish as a foreign language skill, it might not be argued that all of them, are foreigners.

BIG FINTECH = MORE LANGUAGES

Nearly all employees of primary-FinTech companies have specified their foreign language skills on their public LinkedIn profiles.

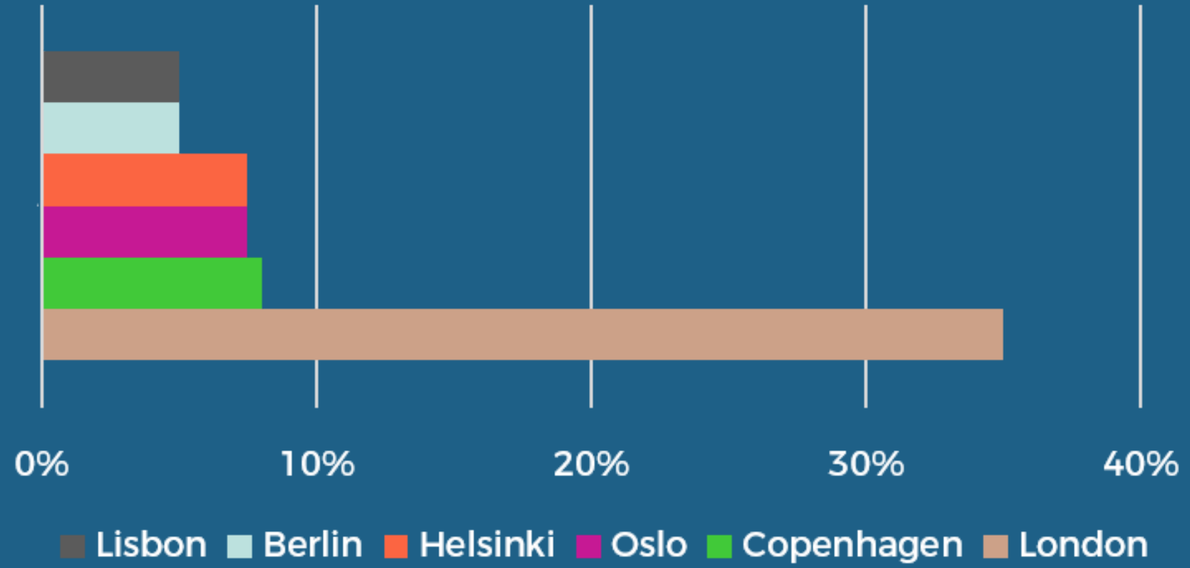
79% of FinTech employees in the Greater Stockholm Area, have listed English as their most common foreign language skill. Furthermore, the need for English is 10% higher in small primary-FinTech companies in comparison to big FinTech. After English, 37% of employees indicate Swedish as a language skill (as a significant amount of employees might have foreign origins), followed by German (10%), Spanish (8%), and French (7%).
Prominently, the employees of Klarna and iZettle have been 20% more likely to list the skills of German, Spanish and French than employees of smaller primary-FinTech companies.

THERE HAVE BEEN SIGNIFICANT DIFFERENCES BETWEEN SMALL PRIMARY-FINTECH AND LARGE PRIMARY- FINTECH IN TERMS OF FOREIGN LANGUAGES SPOKEN. GERMAN, SPANISH AND FRENCH ARE SPOKEN BETWEEN TWELVE TO FIFTEEN TIMES MORE OFTEN AT LARGE REGIONAL PRIMARY-FINTECHS.

Data Source:
Out of 3069 reviewed public available LinkedIn profiles of primary-FinTech employees, the top five most indicated foreign languages were specified 3165 times. This underlines that some employees might have mentioned multiple language skills on their profiles. Language skills labeled as elementary professional proficiency' have not been included into this review. Data collection as of May 2017.

PRIMARY FINTECH: CITIES OF ORIGIN EU / EFTA

12% OF EMPLOYEES WORKED IN EU/EFTA BEFORE JOINING A REGIONAL FINTECH VENTURE



Source: Based on LinkedIn profile review of employees defined as primary-FinTech in the Greater Stockholm Area. Review as of May 7th, 2017, based on 358 LinkedIn profiles out of 3069 total LinkedIn profiles review. In case employees were working by multiple companies from the list, employers have been marked multiple time.

LONDON, COPENHAGEN, OSLO

#LEADING EU/EFTA ORIGINS OF FINTECH TALENT

Despite the fact that LinkedIn does not possess fields that would define nationalities or places of origins, it is possible to review how many employees moved to the Greater Stockholm Area.
While manually reviewing the LinkedIn profiles of primary FinTech members in the Greater Stockholm Area that have defined their native language as something other than Swedish, display visible patterns.

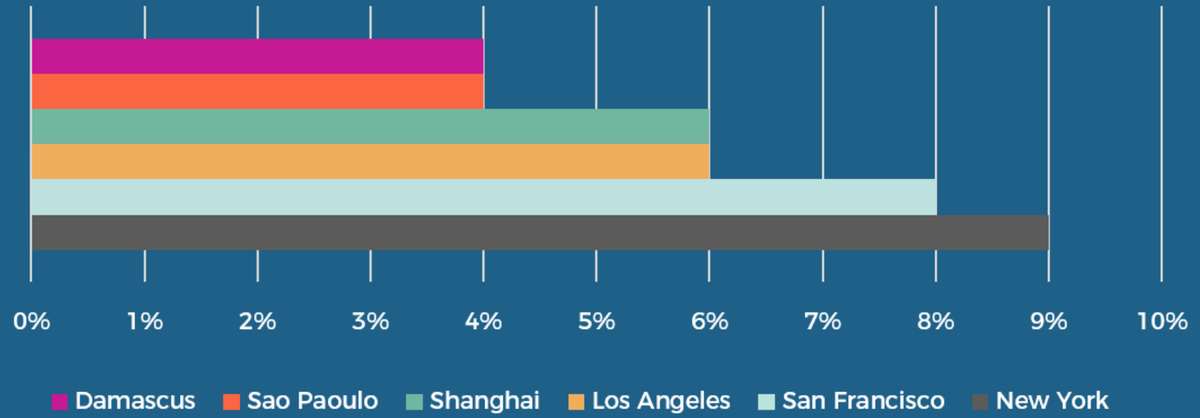
The field of interest for this review has been placed on primary-FinTech employees who moved from to the Greater Stockholm Area.
The available results have been manually clustered into two main categories: INTRA AND OUTSIDE EU/EFTA

Place of previous employment, allocated into the 28 countries of the European Union as well as the four countries of the European Free Trade Area (Switzerland, Norway, Lichtenstein and Iceland). 45% of LinkedIn members transferring from foreign locations to Stockholm have arrived from other European Union or EFTA countries.

Within the EU and EFTA, 72% of the attracted workforce arrived in the Greater Stockholm Area from London, Copenhagen, Helsinki, Berlin, Lisbon, Amsterdam and Barcelona. One-third of the individuals who have moved to Stockholm from the EU and EFTA had been previously employed by a London-based company.

PRIMARY FINTECH: CITIES OF ORIGIN OUTSIDE EU /

6% OF EMPLOYEES WORKED OUTSIDE OF EU/EFTA BEFORE JOINING A REGIONAL FINTECH VENTURE



Source: Own creation. Based on LinkedIn profile review of employees defined as Primary-FinTech in the Greater Stockholm Area. Review as of May 7th, 2017, based on 173 LinkedIn Profiles out of 3069 total LinkedIn profiles review. In case employees were working by multiple companies from the list, employers have been marked multiple time.

USA, CHINA, BRASIL

#LEADING NON EU/EFTA ORIGINS OF FINTECH TALENT

55% of FinTech employees that arrived from outside of the European Union and European Free Trade Area mainly originated from cities with an extensive presence of FinTech companies. San Francisco, New York, Los Angeles, Shanghai and Sao Paolo make up around 40% of Stockholm's internationally attracted talent pool.

Data input for this section, reviewing the transfer of employees to Primary-FinTech companies allocated in the Greater Stockholm Area, has only been made possible by LinkedIn members that have specified on their profile not only their previous places of employment, but additionally the city or region where these particular companies were located. Since our team members only had access to publicly available LinkedIn member profiles, it's estimated that this only captured about 5% of such a specific niche market. These findings should be viewed with caution, as only 173 out of 3069 LinkedIn members have been specified as Primary-FinTech employees with a native language other than Swedish. The results might need a deeper exploration of alternative data sources. Data is current as of May 15th, 2017.

18% OF THE FINTECH TALENT INCOMING TO STOCKHOLM TRANSFERRED FROM ABROAD.

PRIMARY FINTECH: GENDER DIFFERENCES

 # SMALL PRIMARY FINTECH

32% - FEMALE EMPLOYEES IN TOTAL

15% - FEMALE VP AND ABOVE POSITIONS

17% - FEMALE EMPLOYEES IN IT/DEV

 # BIG PRIMARY FINTECH

38% - FEMALE EMPLOYEES IN TOTAL

22% - FEMALE VP AND ABOVE POSITIONS

25% - FEMALE EMPLOYEES IN IT/DEV

6%

ARE FEMALE CEOS OF FINTECH COMPANIES IN THE GREATER STOCKHOLM AREA

MEN DOMINATE FINTECH

#17% - 25% OF IT & DEV EMPLOYEES ARE FEMALE

Only 6% of primary-FinTech companies in the Greater Stockholm Area have a female CEO as of May 2017. Even including all employees in FinTech companies, the percentage of women team members does not exceed 38%.

As FinTech combines financial services and technology, which are two branches of the economy that have traditionally been dominated by men, the gender differences remain unremarkable. Surprisingly, results between small primary-FinTech companies and large primary-FinTech companies have shown further gender differences. Small- primary FinTech companies employ on average six to eight fewer female employees per 100 than Klarna and iZettle

IZETTLE AND KLARNA LAUNCHED INITIATIVES TO ATTRACT WOMEN INTO FINTECH

It is noteworthy to point out that both Klarna and iZettle have supported several initiatives recently, like 'women create tech', or "SmartCoding.se" to engage more women to consider a career in IT and FinTech.

Data sources: CEO gender review was performed manually using the portal allabolag.se and a cran-r project called ‘genderizer’ to determine the gender. All other data has been reviewed using 3069 publicly available LinkedIn profiles of FinTech employees defined as Primary FinTech that have stated their first name and work position. Data collection as of May 2017.

STOCKHOLM COMPARABLE TO SILICON VALLEY

Interview by Michal Gromek, SSE

Sweden has a long history of innovation which is deeply rooted in the society. Moreover, the overall liberal market and mindset favor new developments and products which afterward scale internationally (Klarna, Spotify). Especially in recent years, Sweden is one of the centers for innovation in Fintech, together with Silicon Valley and China.

#JULIAN MALLMANN

HEAD OF HUMAN RESOURCES

B10 (EARLY STAGE VENTURE CAPITAL INVESTOR)
BERLIN

Stockholm is one of the technologically innovative hubs in the world comparable to Silicon Valley. For high-potentials straight from university, this ecosystem offers great possibilities to develop different skills necessary in the ever-changing digitalized world.

Due to its openmindedness Sweden s among the leading countries regarding digitalization of traditional consumer-focused industries such as banking. Talented people rather work at the center of innovation than the periphery. Universities in Sweden, especially Stockholm School of Economics, are preferred hiring locations and many German students consider education at the Swedish universities.
The attractiveness of the already existing Swedish FinTech ecosystem

is the success of world-known companies and the liberal economic system radiates.
When it comes to desired skills of FinTech employees in my opinion the required skills haven't changed drastically. Necessary skills and strengths still are attention to detail, an analytical, problem-focused way of work. In higher positions it is still nearly inevitable to bring some traditional training, e.g. CFA.

What I miss most in applicants are ingenuity and clear-thinking. FinTech is an industry which can generate great value for all parties involved. FinTech requires more attention to detail, compliance and regulatory issues and industry standards. Especially recent graduates entering this business field follow the mantra of scailng fast and exiting faster.

I'm missing the tenacity to build something sustainable. It seems it is more about founding something to prove yourself instead of investing in something meaningful. Concluding, beyond that, employees of Swedish companies tend to have a unique skill set regarding digitalization and consumer-centric innovation which is desirable for German companies of any size.

EXPLORING THE ECOSYSTEM

This text is an excerpt of a chapter that will be published in an upcoming book: Gromek, M. (n.d.) [Digitial Meetings]. In The Rise and Development of Fintech: Accounts of Disruption from Sweden and Beyond, London: Routledge."

FUNDING WITH DIGITAL MEETINGS

#CROWDFUNDING

Michal Gromek, Stockholm School of Economics
Alexandre Dubois, Swedish University of Agricultural Sciences

Originally crowdfunding represented an ancient phenomenon, during which kings or religious leaders raised aising funds among the population to finance projects such as the construction and maintenance of places of worship and/or crusades. Crowdfunding today symbolizes an umbrella term used to define an increasingly growing form of fundraising, typically via the Internet, where both individuals and legal entities contribute to support a particular goal (Ahlers, Cumming, Guenther and Schweizer 2015). The modern version of crowdfunding, the term coined first by Michael Sullivan in August 2006 in a failed web portal called Fundavlog, is based on transparency, reciprocity, shared interests and funding.

The view of crowdfunding, as a collective effort to accumulate relatively insignificant amounts of funding to finance small ideas and early stage ventures, has shifted to bigger sums. The precise factors leading to the rise of crowdfunding since then are still not completely understood. Researchers suggest that the crowdfunding model did benefit from a variety of factors, such as the growing accessibility of the Internet, the digitization of trust, the creation of new legislation, which led to increased risk aversion by traditional financial providers and the decline of bank funding for companies after the 2008-2009 financial crisis. Today in 2017 the Swedish crowdfunding landscape allows not only the finance

of charities and early stage ventures, but it also allows a fundraiser to raise up to one million Euros, finance real estate development, take loans or raise funds through offering shares in their companies. A University of Pennsylvania study published in July 2016 concluded that the successfully funded projects on one US-based platform, Kickstarter.com, have created 300,000 new full- and part-time jobs (Mollick and Ethan, 2016). This has, in turn, had a global economic impact of USD 5.3 billion; equivalent to the Democratic Republic of Congo's annual governmental budget revenue or five times the size of the annual budget revenue of Monaco (CIA, 2017). This section explores the development of the crowdfunding landscape. As the term crowdfunding can have many different meanings, this chapter clarifies the types of crowdfunding, summarizes the benefits and challenges of using crowdfunding and proposed potential future scenarios for this particular branch of the financial services industry.

> In the richer countries, it is possible that regulators might become incumbent banks' new best friends. Regulators may be willing to protect the franchise of traditional financial providers, seeing them as a pillar of the stability of the economy

ROADS TOWARD MODERN CROWDFUNDING

Following a study conducted by the US Small Business Administration, 99.93% of entrepreneurs at an early stage of development will not receive venture capital (VC) funding to sufficiently fulfill their financial needs (Rao, 2013). The study revealed that the average age of a company funded by VC funds is around four years old, which excludes early stage ventures from funding. A study in Switzerland concluded that since the international financial crisis in 2009 many VC companies, that were providing funding for early stage companies, called "pre-seed" and "seed funding", leveraged their investments toward potentially less risky investments of entrepreneurs with more presence on the market (Salomon, 2015). The shift by VCs to more mature companies and a decrease in loan availability from traditional financial providers such as banks and pension funds left a vacuum in the startup financing cycle. This vacuum increased the so-called "funding gap" in the startup financing cycle. This vacuum has been subsequently fairly well filled by different crowdfunding services (Kirby and Worner 2014). For example AddMovement.com, a Swedish private limited liability company producing self-balancing wheelchairs on the foundation of a Segway, has used crowdfunding twice (Hurst, 2016). Initially in September 2015 the company raised just above EUR 106,000 by offering a loan to capital providers (FundedByMe, 2015). One year later they raised another EUR 140,000 by offering 50 investors 2.19% of the company's equity in total (FundedByMe, 2016). The CEO of AddMovement AB, Mike Redford, interviewed in May 2017 for this chapter, explained his motivation to raise capital via crowdfunding in the following manner:

(See the interview on the next page)

CEO of AddMovement AB, Mike Redford

"We decided to use these options due to the lack of support from other state-based/banking funding forms when we needed them most. The benefit of "the crowd" supporting and endorsing us was a significant non-financial benefit in that it gave a vindication that we had something the market liked! (...) The cost of crowdlending is not cheap, but at least it was available even if having to give a personal guarantee."

Today crowdfunding finances nearly exclusively small and medium enterprises (SMEs). Swedish SMEs account for 65.69% of all full-time employment positions in Sweden, so its development and well-being are crucial for macroeconomic stability (European Commission (2016a). Swedish SMEs companies recovered relatively well after the financial crisis, as their value added increased by 30% between 2010 and 2015. Employment grew in this period by 8%. The 2016 and 2017 outlook expected SMEs to grow by 7% and 6% respectively. Employment is expected to increase by 3% per year in 2017 which translates into 120,000 new jobs. A positive outlook will lead to a growing funding gap that might result in an increasing market of potential clients for both the national and international crowdfunding industry (European Commission, 2016a). The growth of crowdfunding might support business owners to fulfill or at least reduce their capital needs. A recent European

Commission staff-working document underlined crowdfunding as a vital part of empowering entrepreneurs in the face of the downside of a global economy (De Buysere, Gajda, Kleverlaan, Maron, 2012). Crowdfunding was described as a job creator that helps to jumpstart economic activity (European Commission, 2016b).

A CLASSIFICATION OF CROWDFUNDING

Crowdfunding companies have several subcategories of products, targeting entrepreneurs at different developmental stages and investors with various investment potential. Platforms, such as Kickstarter.com, raise a relatively small amount of SEK 700 (EUR 72) per backer on average, per project while others, like FundedByMe.com, report an average investment of SEK 52,500 (EUR 5,400) per investor per project.

Clearly, the target market of these two companies is very different. The recent growth of crowdfunding towards new fields like real estate, by platforms like Tessin.se, has increased the average investment amount to SEK 100,500 (EUR 10,400) per capital provider per project. Nevertheless, both Kickstarter.com and FundedByMe.com, as well as platforms like Tessin.se, are part of one industry defined as "crowdfunding."

Despite a lack of a commonly accepted classification of the types of crowdfunding on both the national and European and even international levels, listed below are the most common types of crowdfunding platforms (see table 1 next page):

TYPES OF CROWDFUNDING -
Classification of crowdfunding initiative (adapted from Baeck, 2014)

DONATIONS BASED CROWDFUNDING:
Purpose: Capital providers back a donation based initiative and expect nothing in return
Recipients: Individuals, early stage funding for founders, non-government organizations
Offering: No reward
Examples in Sweden: AGreatDay.com, Crowdculture.se, Takespace.se

REWARD BASED CROWDFUNDING:
Purpose: Capital providers back a project with the expectation of receiving a tangible (but non–financial) reward or product later in exchange for their contribution
Recipients: Individuals, founders at early stages of projects, a test of market fit, companies
Offering: Physical reward, like an actual product. Examples: books, apps, vouchers for food or beverages
Examples in Sweden: Kickstarter.com (foreign), Indigogo.com (foreign)

EQUITY BASED CROWDFUNDING
Purpose: Sale of a stake in the business to some investors in return for investment.
Recipients: Limited liability companies both private and public.
Offering: Stake in the company. The capital provider can purchase a certain number of shares.
Examples in Sweden: Pepins.se, FundedByMe.se, Crowdcube.com, (foreign) Invesdor.com, (foreign) Sciety.se (life-science projects only)

LENDING BASED CROWDFUNDING
Purpose: Debt-based transactions between individuals and existing businesses, mostly SMEs, with many lenders contributing to one loan
Recipients: Companies incorporated for at least 12-18 months, individuals with a positive credit score data.
Offering: Lender is purchasing secured-, unsecured- or convertible debt.
Examples in Sweden: Lendify.se (C2C), Saveland.se (C2C). Toborrow.se (C2B, B2B), Kameo (C2B, B2B), FundedByMe.com (C2B)

DONATIONS BASED CROWDFUNDING:
Purpose: Debt- or equity- based transactions between individuals and existing or future real estate owners
Recipients: Real estate owners
Offering: Purchase of equity oer debt in real estate
Examples in Sweden: Tessin.se, Kameo.se

GROWTH OF CROWDFUNDING

Since 2009, the Compound Annual Growth Rate (CAGR) of the crowdfunding industry has been doubling annually. By the end of 2015, according to a crowdfunding industry report, together all crowdfunding platforms had raised USD 34 billion globally per year (Massolution, 2015). This investment amount represents four billion USD more than the global Venture Capitainvestment, provided to entrepreneurs within a year. Four crowdfunding companies, that answered the survey for this chapter, reported a 100% CAGR. For example, FundedByMe.com, one of the equity-based crowdfunding platforms in Sweden, reported a growth of 100% in the amount of money raised by

campaigns during the year 2016. According to the platform representatives, the average investment per investor per project is around SEK 52,500 (EUR 5,500) (Sjölund, 2016). This growth has been exceeded by Tessin.se, which grew by 340% in terms of capital growth, and 452% in terms of revenue between Q1 2016 and Q1 2017.

Alina Lundqvist, Head of Business Development at FundedByMe.com stated in an interview on April 20th, 2017 that campaigns of five or six million SEK (EUR 500,000 – EUR 600,000) were relatively easy to finance at the end of 2016. This is a significant change in comparison with the year 2013, where none of the biggest funded campaigns in equity crowdfunding even exceeded SEK 100,000 (EUR 9,500)

FOCUS ON NONE FINANCIAL BENEFITS

Receiving funding via crowdfunding enables a range of additional benefits compared to traditional loans or government grants. Entrepreneurs receive not only funding, but additionally can utilize the support of an extensive informal network of capital providers. Entrepreneurs who seek funding typically launch campaigns on the platform of their choice, specifying how the funds will be used and which type of investors they are looking for. Besides fulfilling entrepreneurs' funding needs, crowdfunding offers significant marketing opportunities. The launch of a campaign might leverage the informal network of the crowdfunding platform and its user base for entrepreneurs.

Besides providing an alternative source of direct financing, crowdfunding can offer other benefits to capital seekers and provide the entrepreneur with insights and information that are crowdsourced during the campaign, which is invaluable if a campaign succeeds. Crowdfunding creates opportunities to turn large groups of people, who otherwise would not have access to traditional channels of finance, into small-scale entrepreneurs. It introduces competition to other sources of finance and it is often used by innovative, artistic and social SMEs.

The current state of crowdfunding research points out additional the benefits of using crowdfunding besides the funding itself:

Co-creation – Crowdfunding allows potential customers and capital providers to develop a relationship with the project owner to influence a particular product or development within a company.
Marketing – The online presence of the crowdfunding projects has simplified the sharing of information across geographical borders

(Agrawal, Catalini and Goldfarb, 2013). The presence of a crowdfunding project allows entrepreneurs to create awareness for potential capital providers, media and potential clients.

Market Research – Due to the high accessibility of crowdfunding campaigns online (Mollick, 2014), crowdfunding allows entrepreneurs to find the most efficient market-product fit. Campaigns, which have been overfunded, send a signal of reliability to the investors, the so-called 'acceptance test'. Such a positive signal may help attract other sources of funding like VC or business angels at a later stage of an SMEs development (Riedl, Blohm, Leimeister, and Krcmar, 2013).

Pre-sales – Crowdfunding allows entrepreneurs to collect funding for products in advance that will be delivered at a later point in time (Hemer, Schneider, Dornbusch and Frey, 2011). This particular type of benefit within crowdfunding has been mostly used for reward and real estate crowdfunding, where capital seekers collect funding before their engagement into the production or construction process.

CROWDFUNDING IN PRACTICE FOR ENTREPRENEURS

Crowdfunding platforms that operate in Sweden allow entrepreneurs, companies and individuals to create, upload and describe their funding needs on a multisided platform depending on the desired type of crowdfunding (Evans and Noel, 2008). Submitted projects are typically reviewed by platform employees. As each capital seeker is creating their own funding campaign, the platform operators can only recommend them to follow particular guidelines. The platform can reject campaigns based on a range of internal guidelines specified in the platform's terms of service (TOS). Generally speaking, platform employees review the completeness of requested documents, review the language, help to clarify the message of the capital seekers, or look for signals of bad quality such as image theft. Additionally, as most of the platforms receive a commission based on the total amount of received funding, it is in their interests to inform the capital seeker about particular tools that might increase the funding result, such as a video clip or audited annual report. It is important to note that most Swedish platforms do not hold a "financial advisory" license, thus they can only "inform" but not "recommend" or "suggest" the entrepreneur to modify their company's valuation. Often even if the platform's employees spot an unusually high valuation, they can only 'inform' the capital seeker that such a high valuation might diminish their funding result.

After being accepted the funding campaign is launched on the platform and is marked as "Go live." A "live" campaign will be visible around 40 to 90 days for capital providers. During this period, the capital seekers undertake a substantial marketing effort to attract new capital providers or entice investors who have invested in other projects on the same crowdfunding platform. Platforms differ strongly in their ability to activate their existing user base to particular projects. Some platforms have been organizing

offline investor meetings, where capital-seekers pitch their ideas, some perform an offline introduction by the platform's management, others distribute emails to their current user base or contact the biggest capital providers personally.

Swedish crowdfunding platforms are different from traditional financial providers like banks, VCs or business angels as they do not borrow, lend or invest money themselves. The funding mechanism is based on the facilitation of a digital meeting in which the capital seeker can meet the capital providers with the help of a particular platform. The platform's goal is to reduce the transaction costs and lower the uncertainty, while providing structured information about a particular campaign (Gierczak et al., 2016). If the desired amount of funds has been collected on the platform, the campaign is considered "successfully closed" and the funds are paid to the capital seekers. In case the capital seekers have not been able to collect the entire desired amount of funds, the payout process depends on each platform's terms of service.

PLATFORMS' PAYOUT POLICIES

Platforms usually/typically make money by charging a small initial fee and then a larger "success fee" deducted before the payout of collected funds. It is in both the capital seekers' and platforms' interest to keep the raised funding amount as high as possible in order to receive the highest possible commission. Nevertheless, as entrepreneurs specify an explicit goal in their online campaign, some of their goals may not be reachable if the funding amount has not been collected fully. This fact differentiates platforms' payout policies, which are split into one of the following subcategories:

All or nothing policy – Capital seekers receive the pledged amount only when their project reaches a pre-defined funding goal. Platform representatives of crowdfunding platforms that follow this policy argue that only this policy allows the entrepreneur to deliver on the promises specified in their campaign (Cumming, Leboeuf and Schwienbacher, 2014). If the anticipated volume of funds has not been collected with the help of the platform the funds are returned to the funders via bank wire or credit card transfer.

Keep it all – Capital seekers receive any collected pledges. This policy structure is mostly being executed on donation-based platforms that finance NGO and charity payments (Gerber, Bretschneider and Leimeister, 2014).

Additionally, crowdfunding platforms differ in internal policies on how to process projects that collect more funding than what was initially desired by the capital seekers. Overfunding occurs when Capital Seekers collect more funding than what was indicated as the "funding goal". This is a common industry practice for all types of crowdfunding except debt-based crowdfunding while crowdlending companies tend to limit the amount of collected funding to the funding goal. Furthermore, funds should only be paid out when both the capital providers' and campaign owners' identity have been verified in a procedure known as Know-Your-

-Customer (KYC) and Know-Your-Business (KYB) *, to diminish potential criminal activities like money laundering.

CROWDFUNDING CHALLENGES

The lack of a clear regulatory framework for crowdfunding has pressed a significant amount of risk on to the individual capital provider. As crowdfunding offers a range of unique tools to connect entrepreneurs with investors, it might result in a range of challenges described in this subsection.

* (KYC / KYB) is a term used in the compliance. Used to investigate the identity of a user who desires to perform both online or offline financial transactions.

ADVERTISING RISK

The advertised companies, projects, development and technology might not reflect the real situation within a company as the disclosure required by entrepreneurial firms is lower than by the prospectus regulation.

COST OF CAPITAL

Compared with other sources of financing, crowdfunding represents usually a more expensive cost of capital (Agrawal, Catalini and Goldfarb, 2013), averaging at around 10% of the raised capital and frequency charge.

DILUTION OF OWNERSHIP

Entrepreneurs might squander the proceeds of funding rounds with equity-based crowdfunding and then subsequently issue more shares to them which would cause diluting the equity values being held by the investors (Cumming, Hornuf, Karami and Schweizer, 2016).

INTELLECTUAL PROPERTY PROTECTION

Entrepreneurs might face imitation-based competitors while sharing their business ideas with the public over the Internet, as their ideas are exposed to competitors that specialize in imitation-based business models (European Commission, 2013).

LACK OR INSUFFICIENT SIZE OF THE SECONDARY MARKET

The purchased investment might not be transferrable to other investors or this transfer might be difficult as the secondary market might not exist or experience too low liquidity for a capital provider to transfer the shares or debt.

LOSSES

General project or product failures may lead to high losses. The company might face reconstruction or bankruptcy - the advertised technology might not be launched or delivered on time, or a loan might default.

OPERATORS BUSINESS MODEL OR BANKRUPCY

The level of risk strongly depends on the business models chosen by each crowdfunding platform. Most platforms act only as an intermediary between investors and entrepreneurs or between borrowers and lenders. This means the contracts are being facilitated between these different parties and outside of the platform. In such a business model, if a platform goes into bankruptcy, the agreements between the users who supported

a project and send in a project remain in place.

PAYMENTS

The way platforms facilitate payments, calculate interest rates, and issue refunds often rely on external payment service providers. This can lead to miscalculation of repayments, loss of funds or transaction errors.

RISK OF FRAUD

The risk that funds collected might be misused or used in another way than stated by the project's campaign page, can constitute fraud. But it is not illegal because the money was freely given.

In addition to the above risks, we have seen other examples of risks within the Swedish crowdfunding scene:

LACK OF A UNIFIED RISK ASSESSMENT METHODOLOGY

In crowdlending platforms act as a broker where companies or individuals apply for a loan as they would to a bank. The platforms evaluate the risk level using a "scoring model" and present a certain risk analysis to the potential lenders. The lenders, based on their own assessments and scoring provided by the platform, make their own decision if they would like to lend money to a potential borrower.

As risk analysis methodology is performed by each crowdfunding platform separately, it is not unified and differs from platform to platform. The lenders might have to compare the risk analysis models between the platforms which might be time-consuming and difficult for investors with a limited financial background.

LACK OF COMMONLY ACCEPTED INDUSTRY STANDARDS IN CORPORATE VALUATIONS

In equity crowdfunding the investors buy a certain amount of equity in a company. As there are different ways to estimate the value of a company, investors with a more limited financial background might find it difficult to review the foundation of a corporate valuation published by an entrepreneur. Investors that invest in equity crowdfunding usually await an Initial Public Offering (IPO) on a stock exchange of the company to perform an investment exit.
The IPOs of enterprises that were originally funded with equity crowdfunding in Sweden are still relatively few – only five to date.

CROWDLENDING PLATFORM DEFAULT

In 2015 the new management of a prominent Swedish funded high-yield C2C debt-based crowdlending platform, Trustbuddy, reported a "Misconduct of Activities" (Busch and Mak, 2016). The new management team uncovered a shortage of SEK 44 million in accounts containing the lenders' funds.
As a result Trustbuddy's lenders received information that the loans might not be repaid in full, or worse, not repaid at all. In personal communication with a former Trustbuddy funder, A.Smit in May 2017, it has been reported that the lender received 10% of his initial investment and had been informed an additional 10% might be released in the future.

REGULATION OF CROWDFUNDING IN SWEDEN

Crowdfunding has not yet been fully incorporated into the Swedish regulations. To date it has been regulated in different sections of the legislation that were passed a long time before the rise of FinTech.
On July 30, 2015 the Swedish Government commissioned the Swedish Financial Authorities (Finansinspektionen) to investigate and extend the knowledge about the two types of crowdfunding: lending- and equity-based, with an expectation of a financial yield and their conditions for growth and sustainable development (CrowdfundingHub, 2016a).
Swedish Financial Supervisory Authority published in December 2015 its results of the analysis on crowdfunding. The review states that under certain circumstances, for example if the platform is judged to require authorization pursuant to the Payment Service Act (2010:751), it is not clear if the responsibility for the supervision falls on the Swedish Financial Supervisory Authority or on the Swedish Consumer Agency (Finansinspektionen, 2015). Currently the Swedish Government performs an inquiry on crowdfunding that will be delivered by December 29th 2017.

As an equity-based platform acts as an intermediary that does't trade transferable securities in Sweden, it does not require to obtain a license to operate and therefore falls outside of the MiFiD regulation and are not subject to S-FSA'S supervision (CrowdfundingHub, 2016a). This is important for equity crowdfunding companies because the Swedish Private Limited Liability Company, or a Privat Aktiebolag in Swedish (Privat AB), is the most common SME company type for legal entities in Sweden.

Privat ABs cannot advertise their desire to sell shares to the public and cannot take in over 200 new shareholders in one share issue according to Swedish law. For potential investors to view financial information, business plans or financial forecasts of a Privat AB during an equity-based crowdfunding campaign on a Swedish platform without a MIFID license (MIFID, 2004), the platform requires the user to become an "exclusive member" when signing up. Even going so far as to require access to social media accounts.

After logging in as an "exclusive member" the investor has access to full information provided by the company seeking funding. The platform advertises no offerings from Privat ABs – it merely "informs" the reader that the project is seeking funds (being informed about a share issue process is not considered advertisement). Tessin.se and FundedByMe.com block the share issue process once the 200-investor limit is reached.
If the company would like to continue to raise funding, the Privat AB board of directors must decide to issue shares for a second or third time. In this way, regulating an intake of 200 investors can be enforced (CrowdfundingHub, 2016b). The rationale behind this regulatory burden of the maximal number of "200 new shareholders" per equity

crowdfunding campaign instead of 100 or 300 in Sweden remains unclear. As this regulation has been drafted before the rise of the internet, it might undergo a reform. Currently the Swedish Financial Supervision Authority has regarded equity crowdfunding campaigns (defined as offering as a pre-sale share purchase possibility), that are offered online and "inform" about crowdfunding campaigns more than 200 investors as a potential violation of legal prohibition (CrowdfundingHub, 2016a).

**According to the Securities Market Act (2007:528).
***Professional investors are being defined as individuals who earn a significant amount of their income with profits from their investments.

Until now there has not been an extensive study on crowdfunding platform investors, backers and lenders to review who is actually participating in financing companies and individuals on crowdfunding platforms. If the result of such a study concludes that professional investors participate mostly in equity-based crowdfunding and crowdlending, their level of investor protection should be significantly lower than that for private consumer investments.

POTENTIAL FUTURE SCENARIOS OF THE NATIONAL CROWDFUNDING LANDSCAPE IN SWEDEN

Assuming the Swedish crowdfunding market will follow the European trend and double yearly (Massolution, 2015), it might continue to offer numerous benefits to Swedish SMEs, helping to close the capital gap in their funding needs. Swedish crowdfunding remains relatively decentralized as many players offer services in their niches. We have seen a range of companies enter the crowdfunding market in both 2016 and 2017, for example co-owning.com, pepins.se, and tessin.se. This development has increased the public awareness of crowdfunding but additionally increased the competition within the market. The crowdfunding market benefits from accessibility but relies on the quality of the Internet infrastructure and the digitalization of trust. Several scenarios were introduced in order to investigate the impact of future developments on the crowdfunding sector:

Synergy – In this scenario, the Swedish crowdfunding platforms might form an organization that would facilitate self-regulation on the platforms. Such an organization could enforce "coercive isomorphic change" (DiMaggio and Powell, 1983) in the industry. Platforms could agree on types of valuation methods used for equity-based crowdfunding, scoring- and risk- analysis models used for crowdlending. Such a development would bring a stronger transparency into the market and allow investors to directly compare different campaigns offered on various platforms.

Winner-Takes-All Market – In this scenario crowdfunding platforms, both national and foreign, which have undergone the complex regulatory process of receiving an MIFID license or a banking license, might attract significant institutional capital. This increase in capital might result in

a merger and acquisition process of platforms with complementary assets. Such a strategic alliance would increase the rate of new features and product development and crystallize recognizable market leaders in crowdfunding. The scenario resonated with the theory of network effects as those merged platforms would have a bigger user base and these users would attract a more significant number of new users in a snowball effect.

**'Coercive isomorphic change – the pressure executed by society on particular organizations, groups or companies. Such development can lead to coercive isomorphism where organizations might copy behaviour. A crowdfunding industry organization in Sweden could agree on professional standards that would be imitated.

Participation of Public Funding – In this scenario public authorities in Sweden would allocate funding alongside the funds from a crowdfunding campaign. This process would recognize crowdfunding as a tool to diminish the so-called market failures resulting from funding gaps for entrepreneurs. This model is being executed in the United Kingdom. At the beginning of January 2017, Funding Circle, a crowdlending platform

*****Network effect - a phenomenon in which a good service or a product increases its value with the increasing number of users. AirBnB or UBER are good examples of organizations that are leveraging the network effect. Their service got more attractive while adding new hosts and travelers for AirBnB or drivers to the UBER network.

that allows entrepreneurs to seek funding received GBP 40 million. The UK government, in the form of British Business Bank, previously injected GBP 60 million into the platform.
This funding has been distributed to around 10,000 businesses in the UK and allowed the Bank to earn GBP 5 million in net interest over the past four years.

Such a cooperation allows the government to use the peer-to-peer side as a channel through which small businesses might be supported (Dunkley, 2017).
The participation of public funding might be available to small businesses via the platform.

Such a development might benefit the platforms, entrepreneurs and the governmental institutions.

Financial Supervision 2.0 (FI) as a new public catalyst for growth and moderator of the FinTech market – In this scenario financial supervision would change its position from a regulator to a moderator and facilitator. There would be an increase in the budget and active incorporation of new employees with FinTech backgrounds within this organization. The goal of the FI 2.0 would be not only to regulate but to promote alternative finance.

Financial Supervision 2.0 will take a membership seat in for example the Swedish Financial Technology Association and provide guidelines for high industry standards.
As Sweden is known for its formal and informal network structure across all types of boundaries, it enables knowledge sharing and innovation (Teigland, 2017).

This scenario might be particular likely. Furthermore, during the presentation of the FinTech Report performed by the "Blue Institute" and Swedish Government Agency for Innovation – "Vinnova" in May 2017 (Ståhl, 2017), members of the Swedish Financial Supervision already announced a launch of a roundtable program with meetings with members from different subsections of FinTech and Crowdfunding.

Regulator as 'moderator of the market model' – This scenario is being executed by the Securities Commission Malaysia in Kuala Lumpur.
The Malaysian regulator is not only responsible for regulating the equity- and lending-based platforms, but additionally, it ensures that any imposed regulation serves to develop the market. The Securities Commission is facilitating roundtables with all platforms two times a year
and it hosts and promotes alternative finance conferences. It issues best practice guides and meets with representatives of platforms regularly (Securities Commission Malaysia, 2016).

Partnerships with Traditional Financial Providers – In this scenario, which has been pursued in the United States and United Kingdom, banks would partner with crowdfunding platforms (Financial Times, 2016). In such a partnership banks could use the platforms as deal generators and thus co-finance loans of the entrepreneurs that would fulfil the scoring criteria from banks. The platforms and entrepreneurs would benefit as their campaign needs would be reached more quickly, which would increase the cash-flow liquidity in the market.

Provide Other Funding Options to Declined Loan Applications
This process has been initiated in the United Kingdom (Her Majesty Treasury of the United Kingdom, 2014) after the government issued a law that forces banks to ask small business owners to pass on their details to alternative finance providers. According to a survey only 3% of entrepreneurs were seeking alternative funding sources after being declined by a bank (Small Business, Enterprise and Employment Act 2015). This non-financial intervention aimed to reduce the funding gaps of entrepreneurs. Banks that inform entrepreneurs about alternative sources of funding might potentially receive a commission from alternative financial providers.

CONCLUSIONS

Crowdfunding has remained for years nearly a secret product for early adopters, until now. These digital meetings between capital seekers and capital providers allow entrepreneurs the ability to look for funding beyond banks, venture capital, business angels or their own family members. This funding might close funding gaps and enable new entrepreneurs that would benefit the entire Swedish economy. On the other hand, in a period of low-interest rates on saving accounts in the Western world, crowdfunding can be seen as an alternative source to conduct investments with return rates generally ranging from 5% to even 20% p.a. High-risk premiums indicate a substantial amount of risk, connected with companies that will go into bankruptcy, defaults or never

going public. After the collapse of the platform Trustbuddy, it has been clear that consumers with a limited amount of financial knowledge have to be protected from getting tricked by some polished websites that overpromise on the potential profits while using small font sizes to identify particular risks.

Robert Arnold once stated: "Investing in what is comfortable is rarely profitable". Indeed, everything is about the balance. As a high number of Swedes are already actively investing in various financial products, it cannot be assumed that everybody needs sophisticated protection because crowdfunding is less risky than many traditional financial products and it benefits a range of businesses on development stages.
It is important to remember that a growing crowdfunding sector, with all of its benefits and challenges, is not only a Swedish phenomenon.
Regulators in the United Kingdom have utilized crowdfunding, invested public funds in it and supported many entrepreneurs and platforms. They were even able to make a profit in the form of interest.
Regulators in Malaysia have been encouraged legally by the national government to not only regulate but to also develop the market. This change resulted in regulatory roundtables between regulators and all operators. In those meetings Malaysian regulation discussed concerns, reviewed platform development and suggested solutions. Indeed the best solutions do not necessarily have to be developed in our own "European backyard of regulation". It is a complex task to spot and review international developments, but it might be potentially worth adopting global solutions into the Swedish legal framework.

There is a range of positive solutions that have already been developed without the change of regulation.
The bottom-up movement that led to the creation of the Swedish Financial Technology Association and the Stockholm FinTech Hub could result in the creation of a team of experts dedicated only to a particular subsection of crowdfunding defined in this chapter.
Those experts could agree on internal industry standards similar to "self-regulation". Such a process could be performed together with the Swedish Financial Authorities and Swedish Consumer Agency.
The promptness of change in the industry makes it impossible to expect the regulator to respond instantly as the judicial system has not yet reached its full capacity.
Crowdfunding has its benefits way beyond the word "funding." It helps entrepreneurs to leverage from informal networks of investors, use free marketing exposure of a crowdfunding platform, ask for support, and facilitate connections that go beyond only money.

Crowdfunding can become "crowd-helping", where capital seekers and capital providers can find and help each other for a common benefit.
There might be a need to find a moderator and equip it with soft-powers, to leverage resources that are already available and allow them to puzzle them together in a new way.
As stated by Frank Zappa, "Without deviation from the norm, progress is impossible."

REFERENCES:

Agrawal, A., Catalini, C., & Goldfarb, A. (2013). Crowdfunding: Social Frictions in the Flat World?. NBER working paper, 16820.

Ahlers, G. K. C., Cumming, D. J., Guenther, C., & Schweizer, D. (2015) Signalling in equity Crowdfunding. Entrepreneurship Theory and Practice, 39.§

Baeck. P., Collins, L., & Zhang, B. (2014) Understanding Alternative Finance. The UK Alternative Finance Industry Report 2014, accessed 10 March 2017, https://www.nesta.org.uk/sites/default/files/understanding-alternative-finance-2014.pdf.

Busch, C., & Mak, V. (2016) Peer-to-peer lending in the European Union. Journal of European Consumer and Market Law, 5(4): 181–181 Buysere, D. K., Gajda, O., Kleverlaan, R., Marom, D. (2012) A Framework for European Crowdfunding, accessed 17 March 2017, http://evpa.eu.com/wpcontent/uploads/2010/11/European_Crowdfunding_Framework_Oct_2012.pdf.

CIA (2017) World Fact Books:Congo, accessed 17 April 2017 at https://www.cia.gov/library/publications/the-world-factbook/geos/cg.html, and Monaco, accessed 10 April 2017 at https://www.cia.gov/library/publications/the-world-factbook/geos/mn.html. CrowdfundingHub (2016a) Crowdfunding Crossing Borders, accessed March 2017, http://www.fglawyersamsterdam.com/wp-content/uploads/2016/03/20160331-Crowdfunding-Crossing-Borders-Report.pdf. CrowdfundingHub (2016b)

Current State of Crowdfunding in Europe, accessed 20 March 2017 http://www.sbs.ox.ac.uk/sites/default/files/Entrepreneurship_Centre/Docs/OxEPR2/current-state-Crowdfunding-europe-2016.pdf.

Cumming, D. J., Leboeuf, G., & Schwienbacher, A. (2014) Crowdfunding models: Keep-it-all vs. all-or-nothing. In Paris December 2014 finance meeting EUROFIDAI-AFFI paper (Vol. 10). Cumming, D. J., Hornuf, L., Karami, M., & Schweizer, D. (2016) Disentangling Crowdfunding from fraud funding. Max Planck Institute for Innovation & Competition. Research Paper No. 16-09, http://ssrn.com/abstract=2828919.

Dimaggio, P. J., & Powell, W. W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147–160.

Evans, D.S. & Noel, M.D. (2008) The Analysis of Mergers That Involve Multisided Platform Businesses. Journal of Competition Law & Economics. 4(3): 663-695

European Commission (2013) Consultation Document Crowdfunding in the EU - Exploring the added value of potential EU action, October 3, p.8 http://ec.europa.eu/finance/consultations/2013/Crowdfunding/docs/consultation-document_en.pdf; accessed 29 March 2017

European Commission (2016a) SME Performance Review, 24 November, accessed 24 March 2017, http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review-2016_pl.

European Commission (2016b) Commission Staff Working Document, Crowdfunding in the EU Capital Markets Union, 5 May, p.3; http://europa.eu/rapid/press-release_IP-16-1647_en.htm; accessed 1 May 2017

Financial Times (2016) Santander UK enters partnership with Crowdfunder; https://www.ft.com/content/5ee92158-8945-11e6-8cb7-e7ada1d123b1; accessed 20 March 2017

Finansinspektionen (2015) Crowdfunding in Sweden – an overview. http://www.fi.se/contentassets/0ffe196bc6ba4569bc16682da5faae14/grasrotsfinansiering_151214_eng.pdf ;Accessed 20 March 2017

FundedByMe (2015) AddMovement.com Debt Finance Campaign page. Available at: 7 https://www.fundedbyme.com/en/campaign/6167/addmovement-ab, accessed 15 May 2017

FundedByMe (2016) AddMovement.com Equity Finance Campaign page. Available at: https://www.fundedbyme.com/en/campaign/7641/invest-in-the-global-expansion-of-addmovement-ab/. Accessed, May 15th, 2017

Gerber, E. M., M., Bretschneider, U., & Leimeister, J.M. (2014) Is all that glitters gold? Exploring the effects of perceived risk on backering behaviour in reward-based Crowdfunding. Paper presented at the International Conference on Indormation Systems (ICIS), Auckland, New Zealand.

Gierczak, M., Bretschneider, U., Haas, P., Blohn, I., & Leimeister, J. M. (2016) Crowdfunding: Outlining the New Era of Fundraising. Crowdfunding in Europe. Springer International Publishing, Switzerland.

Hemer, J., Schneider, U., Dornbusch, F., & Frey, S. (2011) Crowdfunding und andere Formen informeller Mikrofinanzierung in der Projekt und Innovationsfinanzierung. Stuttgart: Frauenhofer Verlag.

Her Majesty Treasury of the United Kingdom 2014, SME finance: help to match SMEs rejected for finance with alternative lenders, accessed 20 March 2017,

https://www.gov.uk/government/consultations/sme-finance-help-to-match-smes-rejected-for-finance-with-alternative-lenders/sme-finance-help-to-match-smes-rejected-for-finance-with-alternative-lenders

Hurst, S. (2016) Crowdfundinsider, Wheelchair Brand AddMovement to Launch Second FundedByMe Campaign, accessed 15 May 2017, https://www.crowdfundinsider.com/2016/08/89481-wheelchair-brand-addmovement-launch-second-fundedbyme-campaign/.

Kickstarter.com statistics, accessed 17 March 2017, https://www.kickstarter.com/help/stats.

Kirby, E., & Worner, S. (2014) Crowd-funding: An infant industry growing fast. IOSCO, Madrid.

Massolution (2015) The Crowdfunding Industry Report 2015, Growth in Europe.

MiFID - The Markets in Financial Instruments Directive 2004/39/EC, accessed 3 May 2017, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004L0039.

Mollick, E. (2014) The dynamics of Crowdfunding: An exploratory study. Journal of Business Venturing, 29(1): 1-16.

Mollick, E. R. (2016) Containing Multitudes: The Many Impacts of Kickstarter Funding, accessed 16 April 2017, https://ssrn.com/2808000.

Rao, D. (2013) Forbes, accessed 11 February 2017, http://www.forbes.com/sites/dileeprao/2013/07/22/why-99-95-of-entrepreneurs-should-stop-wasting-time- seeking-venture-capital/print/.

Riedl, C., Blohm, I. M, Leimeister, J. M., & Krcmar, H. (2013) The effect of rating scales on decision quality and user attitudes in online innovation communities. International Journal of Electronic Commerce, 17(3), http://ssrn.com/abstract=2164362

Salomon, V. (2015) Emergent models of financial intermediation for innovative companies: from venture capital to crowdinvesting platforms in Switzerland. Venture Capital, 18 (1): 2016

Securities Commission Malaysia (2016) Guidelines on Recognized Markets, accessed 20 March 2017, https://www.sc.com.my/wp-content/uploads/eng/html/resources/guidelines/recognizedmkt/guidelines_recognizedMarket_160413.pdf.

Sjölund, S. (2016) Crowdfunding Overview – FundedByMe doubles total money raised FundedByMe Blog, December 2016, accessed 17 March 2017, http://blog.fundedbyme.com/.

Small Business, Enterprise and Employment Act 2015; Bank Referral Scheme; http://www.legislation.gov.uk/ukpga/2015/26/section/5/enacted; accessed 15 March 2017

Ståhl, B. (2017) Den digitala transformeringen av finansmarknaden (in Swedish), presentation, accessed 15 May 2017, https://www.vinnova.se/kalender/2017/05/presentation-av-rapporten-fintech/.

Teigland, R. (2017) Design at the Heart of Sweden's Innovation success, presentation, accessed 15 May 2017, https://www.slideshare.net/eteigland/design-at-the-heart-of-swedens-innovation-success.

This text is an excerpt of a chapter that will be published in an upcoming book: Gromek, M. (n.d.) [Digitial Meetings]. In The Rise and Development of Fintech: Accounts of Disruption from Sweden and Beyond, London: Routledge."

CROWDFUNDING - REGULATION

MARKET NEEDS MORE CLARITY. WE ARE GETTING THERE.

Interview by Michal Gromek, SSE

Sweden stands out because of its culture of open dialogue. Crowdfunding inquiries is not an exception to this rule.

Mapping the crowdfunding market in Sweden, exploring best regulatory practices on the global level, and reflecting on potential development scenarios in Sweden, are on the agenda points for the three-man team of experts working on the public inquiry regarding crowdfunding.

#PETER CLASON

INQUIRY SECRETARY
PETER.CLASON@REGERINGSKANSLIET.SE
SWEDISH GOVERNMENT OFFICES
MINISTRY OF FINANCE

The system of inquiries represents a lean system within the Swedish government where external experts are analysing complex topics for the public authorities for 12 to 18 months and present their recommendations subsequently. Since September 2016, the Deputy Minister of Finance Per Bolund, has launched an inquiry on crowdfunding, with the following goals:

Reflect upon the current state of regulation in various areas of crowdfunding. Incorporate best practices to ensure cohesion on crowdfunding market development, ensuring the best possible access to funding for capital seekers, while protecting capital providers, who are partially consumers themselves.

In this fast-changing environment of

STOCKHOLM FINTECH INTERVIEW

FinTech, our responsibility is not only to reflect on the current stage of the market but, additionally, to attempt to project potential market development scenarios. For example, as interest rates in Sweden currently remain at record lows, potential capital providers might be encouraged to provide funds to capital seekers in the form of crowdfunding.

At the current stage it remains uncertain if capital providers truly understand the level of risk associated to these investments. Crowdfunding offers an entire portfolio of financial and non-financial possibilities for both capital seekers and investors.
However, the recent breakdown of the debt-based crowdfunding platform, TrustBuddy, has shown that opportunities and risks might go in hand. Traditionally, the Swedish society is well-known for its open dialogue, so it is our pleasure to listen to representatives of different market forces acting in the area of crowdfunding in order to understand the direction where they would like the market to go.

We also strive to understand the challenges they will face and how to ensure even clearer rules of the game. As an effect, corporate governance is there to help, I would like to encourage everybody who shares this belief to become involved in contributing to efficient market development to contact me.
My email listed below. The investigation's results will be presented by the Vice Minister for Financial Markets, Per Bolund by the end of December 2017.

#ERIC DURHAN

HEAD OF CORPORATE GOVERNANCE
NORDEA

STOCK EXCHANGES MISS OUT ON CROWDFUNDING

Interview by Michal Gromek, SSE

Different types of crowdfunding platforms have steadily doubled their traffic nearly each year. We see a maturity in the market both regarding the amount of platforms and quality of the services offered. This development has allowed many current entrepreneurs to develop their projects and many potential entrepreneurs to launch their business ideas with smaller personal risk. There are currently different voices related to the regulatory challenges in the field of crowdfunding in Sweden, but it is worth pointing out at the beginning that this niche product has at least not been terminated by strict regulation from the authorities.

In a short amount of time we should see increasing transparency. Possibly following the model in the United Kingdom the platforms might form an association to collaborate and create self-regulation. This self-regulation might be needed as different equity crowdfunding platform ask companies to submit different valuation methods. Additionally, all of the crowdlending platforms perform risk analyses in a different way and call various risk classes in the same way as “A”. This mixed-approach has resulted in blurring the lines and might confuse potential lenders.

Considering the market of investments is about trust, clear communication of risks, transparency and exit strategies, the crowdfunding companies should implement more features that will apply these puzzle pieces into their products.
A significant development might be the provision of a place similar to a secondary market, where investors could sell their crowdfunding investment. This system might be based on something what we call: “central securities depository” which might act as a trusted broker for both debts from crowdlending and equity. Some platforms are considering moving forward with simple contact form pages to allow investors to get in touch with each other, but is this not what the stock exchanges have been developed for in the first place?

"There is a need for the secondary market in Equity Crowdfunding and Lending to grow and enhance the market. Of course, this could be facilitated by Crowdfunding platforms with a simple contact page, but is this not precisely what Stock Exchanges have been designed for?".

Additionally, as the Nordic markets are being characterised by high trust in peers, we should see a growth of pan-Nordic crowdfunding solutions. So, it might be a smarter move to create an active Crowdfunding Association or strengthen the existing structures like, for example the Nordic Crowdfunding Alliance.

ONE HOUR TO CROWDFUND A RESIDENTIAL PROJECT

Interview by Michal Gromek, SSE

"The first years we had difficulties to gain trust mainly from the real estate sector. On the investor side, it also took time, but they were more accustomed to investing through an online platform. Since last year, however, we have established ourselves as a serious player in the real estate finance market."

The introduction of a global regulatory framework, Basel III, in 2013 to provide structure to bank capital adequacy, stress testing and market liquidity risk helped the Nordic Banks decrease their overall Loan to Value (LTV) ratio towards the real estate sector. This reduction resulted in a significant funding gap. A gap that could partly be filled by Real Estate Crowdfunding companies. Due to the complexity of crowdfunding and real estate regulation this particular type of alternative finance is the latest newcomer to the crowdfunding industry. Due to the worldwide financial crisis around the year of 2009, regulators have established or reintroduced a range of legislative measures.

Those measures indirectly resulted in the decrease of available funds to invest into specific branches of the economy, like real estate. Other types of crowdfunding have helped to finance early-stage entrepreneurs as traditional financial providers, like banks, and venture capital companies have shifted their funding away from emerging ventures towards more established companies. Real estate crowdfunding is truly focused on an industry that has not been affected by FinTech ventures yet.

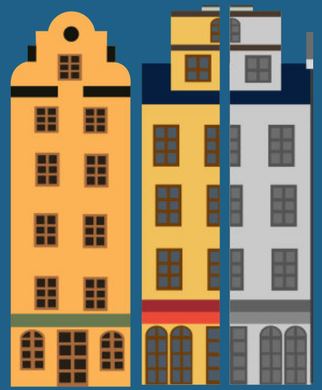
Two years after the implementation of the Basel III regulation in Sweden, Tessin was launched as the first real estate crowdfunding platform. The platform facilitates digital transactions between Real Estate companies and potential investors. Between 2015 and the second quarter of 2017, Tessin has been able to attract around 26,000 users, with a total of 2,500 active investors, that visit the website at least once every 30 days, that have invested in total into 40 projects. Investors have the possibility to finance real estate projects and acquisitions using one of the following models:

#Equity (preferential shares) – a property owner offers, on average 8% - 12% return on investment.
#Loans – a secured loan with a rate of return between 6-11% per annum.

At the end of the second quarter of 2017 Tessin's product portfolio consisted of 56% equity offerings and 44% loan offerings. Collected funding is mainly being used for real estate development purposes, but can also be used for regular property acquisitions.

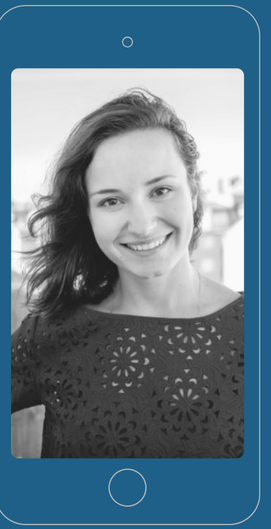
#JONAS BJÖRKMAN

CEO
TESSIN.SE



The real estate crowdfunding industry allows the investor to receive access to a previously closed market, as well as profit from the growing real estate market in Sweden, while accepting a risk connected with each project.
Between 2015 and 2016, Tessin has grown by more than 400% Compound Annual Growth Rate this growth has encouraged the company to expand from Stockholm and Sweden to other geographically close markets in the Nordics.
Average campaign sizes within real estate crowdfunding are around EUR 1,200,000, with an average investment of around EUR 10,000 per investor per project. To illustrate the diversity of products in the crowdfunding industry, Tessin's investment size per investor per project exceeds average Equity Crowdfunding platforms by around 100% and Reward-Based Crowdfunding by a factor of nearly two hundred.
Real estate crowdfunding could be growing even more efficiently if its regulatory framework was more transparent. Tessin's CEO Jonas wishes Sweden's regulatory framework was as transparent as the newly launched crowdfunding regulation in Finland.
In anticipation of this development, Tessin was intending to apply for a European-wide MiFID license, which would allow the company to operate in other countries within the European Union.
However, as the Swedish government investigates improved regulation

connected to Crowdfunding, both the scope and implementation time remain unknown. This uncertainty discouraged Tessin to apply for a full financial license (MiFID). The application process takes a minimum of one year and is connected to significant costs. It also remains uncertain if the new Swedish Crowdfunding regulation will remain within the scope of MiFID, possibly triggering extra costs associated with obtaining such license.
Currently, Tessin maintains a very strict 200 investors rule. As defined in the chapter about Crowdfunding, according to Swedish law, no more than 200 capital providers can join an investment project. It remains unknown where the 200 investor limit originated from, but as the regulation had been published before the internet age, there might be a possibility that the regulation was not aware of the potential of the Crowdfunding.
Capital providers for the real estate project tend to be a male between the ages of 35-45 and reside in the bigger Swedish agglomerations.
From the 132 investors that invest (on average) in each real estate project, one-third is being attracted by the campaign owner through their own marketing campaign locally.
Significantly, two-thirds of investors in real estate crowdfunding reside in either Stockholm, Malmö or Gothenburg, despite a geographic distribution of Tessin projects throughout Sweden.



HIGH TIME FOR THE SECONDARY MARKET

Interview by Michal Gromek, SSE

#ALINA LUNDQVIST

FORMER HEAD OF BUSINESS DEVELOPMENT
FUNDEDBYME

Both the turnover and amount of money raised on the platform have doubled in 2016 in comparison with previous year, which is reflected in the projections of the World Bank towards the development of crowdfunding. Equity crowdfunding (ECF) as a tool that "facilitates digital meetings" left its place as the niche product and has attracted companies at the more advanced development stage, that desired to raise more funding. A tendency that increased after first crowdfunding companies went public on the stock exchange.

Equity crowdfunding is clearly directed towards businesses which offer services, technology or products that consumers can relate to, like beverages, apps or coffee shops. We see a shift in the motivation of our entrepreneurs. In the past companies desired to use ECF to raise funding, now they view it primarily as marketing source to inform the audience about their products, services and technology.
Investors increased their investment amount per campaign that now ranges in three different classes on the levels between 25k and 50k SEK per investment. A steady growth was visible just after the summer holidays in third and fourth quarter 2016. As ECF serves various types of companies at different development stages, creating averages and medians remains a challenge,

but we discovered a tendency that companies are in some cases the primary source of new investors. We asked ourselves what is the percentage of investors that is being attracted to the platform by new campaigns and how often "established user base" is financing the project. Companies tend to raise between 30% up to 70% of their entire campaign goal from existing investor network. Interestingly, investors never reach out to us as a platform to ask about the credibility of particular campaigns.
The only time when investors are reaching out to the platform is when they experience difficulties in reaching out to entrepreneurs directly or would like express their gratitude.
When it comes to the plans for 2017: as the market grows and matures we see a growing tendency for the development of a secondary market and a more harmonized regulation in at least surrounding Nordic countries that view ECF very differently - as constant changing legal environment results in additional workload in agile FinTechs like FundedByMe.

"Equity crowdfunding doubled last years on our platform and as the market is maturing, there is a growing need for a secondary market and more unification in crowdfunding regulations in surrounding countries."

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

MANY ANGLES OF FINTECH'S FUTURE

#GAMIFICATION, RISE OF CHINA, GDPR, PSD2 AND BIGGEST DDOS ATTACKS IN HISTORY

Between Q4 2017 and Q1 Per Bolund, the Swedish Minister for Financial Markets and Consumer Affairs presents results from two FInTech related governmental inquiries.
The first inquiry was connected to the role of the Swedish Financial Supervisory Authority in the FinTech process. The second reviews potential gains, challenges and regulatory needs of crowdfunding.
The inquiries might be the foundation of public policies towards FinTech.

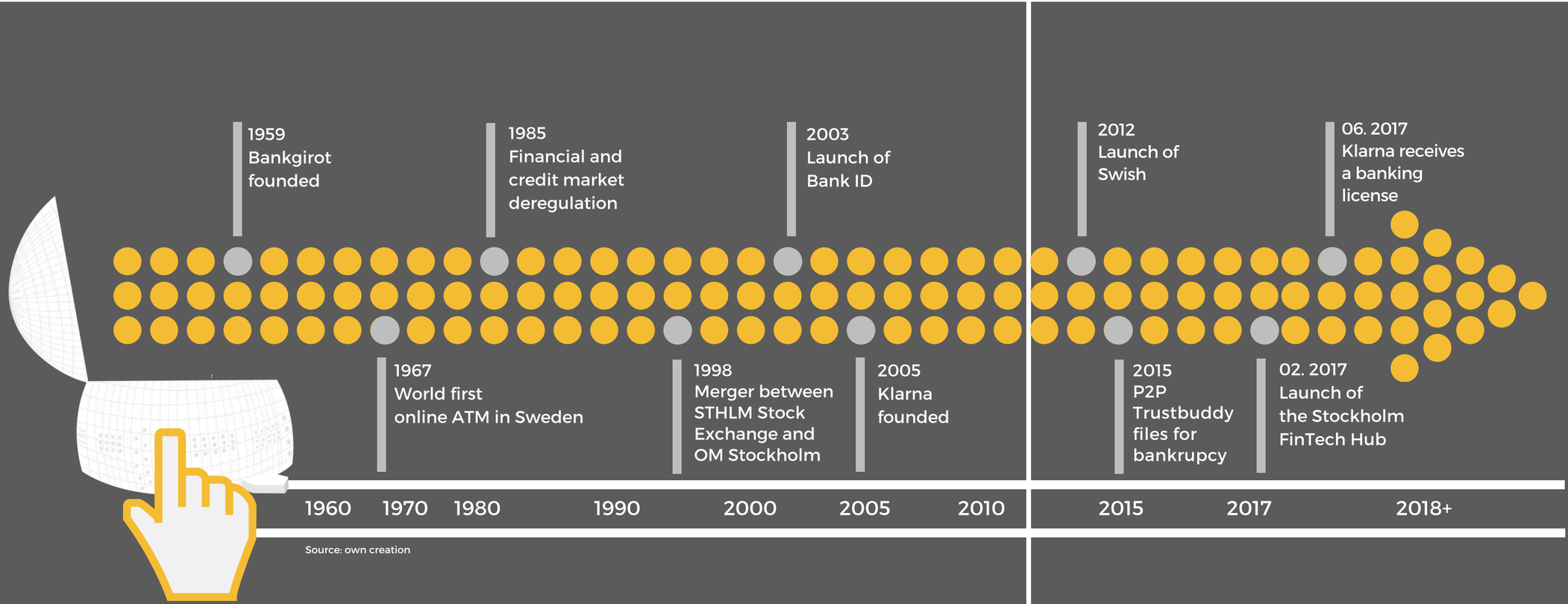
January 19th, 2018 has been marked in European FinTech calendars, as it marks the launch of the Second European Directive (PSD2) in all European Union Member States.

The Payment Service Directive defines the payment services and introduces new security measures. A new, stricter General Protection Regulation (GDPR) will take effect on May 25th, 2018.

The GDPR will allow the customers to be forgotten and force FinTechs to erase their user data completely. Predictions can be difficult, especially in the future.

In this section a range of Stockholmer FinTech experts disclose potential future trends from gamification of financial services, the view of Irish companies on the Stockholm Financial Ecosystem, the rise of China up to the effect of Brexit on Regional Financial Services.

STOCKHOLM FINTECH TIMELINE



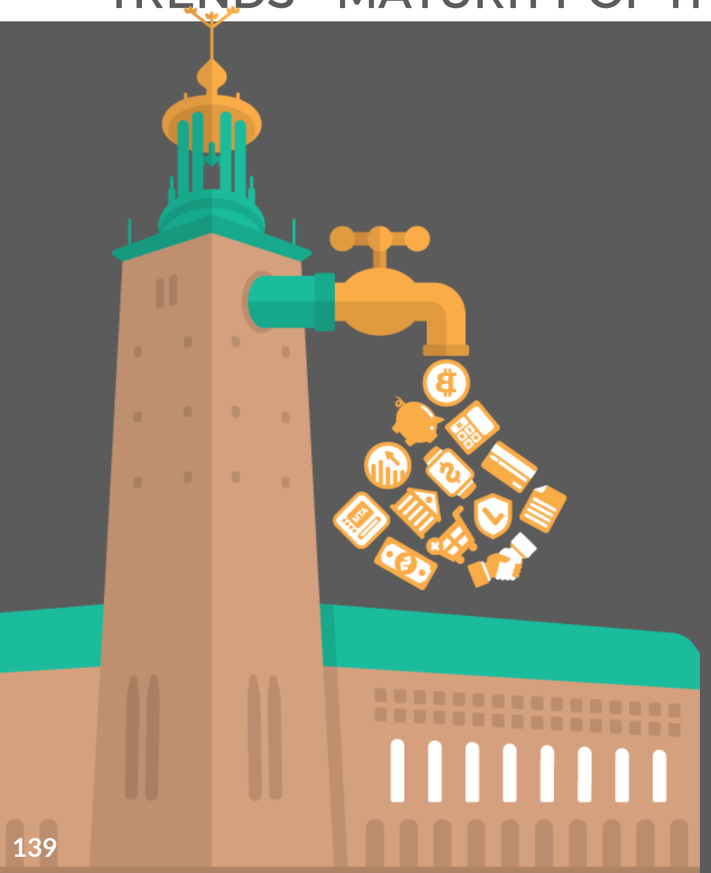
Source: own creation

After the first world's online ATM installed in Sweden by 1967 the country called for deregulation of the financial industry in 1985. Following by the investments into the internet infrastructure in 1990.

The launch of BankID in 2003. The regional FinTech investments reaching its peak values in the year of 2014. In 2015 the P2P lender Trustbuddy filed for bankruptcy, which resulted in an increased regulatory activity and STING launched its first acceleration program for FinTech companies.

In February 2017 Stockholm FinTech Hub launched, also the Swedish government launched two public inquiries how to upgrade the regulation on Crowdfunding and FSA. In June 2017 Swedish Unicorn Klarna received a banking license.

TRENDS - MATURITY OF THE DIGITAL ECOSYSTEM



- Active involvement of research
- Regular meetups
- Co-working space dedicated exclusively to FinTech
- Involvement of Public authorities and Banks
- Venture Capital dedicated exclusively to FinTech
- FinTech Startup Accelerators

PENDING

- Academic training on FinTech
- Public Funding for FinTech Companies, Research, R&D
- Regional FinTech Agenda
- National FinTech Agenda

PUZZLE PIECES ARE COMING TOGETHER

Stockholm as FinTech Center has achieved new checkmarks on the maturity index during the last 18 months.
Investment in the Stockholmer FinTech Venture Tink by SEB in May 2016, the launch of the Stockholm FinTech hub on February 8th, 2017, and approval of the banking license to Klarna on June 19th, 2017 might mark some of the leading developments in recent Regional FinTech history.
Since June 2017, regulators of the FinTech ecosystem have nearly experimented while meeting with companies at the Stockholm FinTech Hub multiple times.
Cooperation between high profile growth companies and venture capital firms like NFT Ventures, coupled with acceleration programs potentially may additionally foster innovation

THE REGIONAL FINTECH ECOSYSTEM HAS MATURED SIGNIFICANTLY DURING LAST 12 MONTHS

within the financial ecosystem.
Researchers in publications, like this report, observe and support public authorities in the exploration of this phenomenon.

Additionally, a pilot program announced by the Swedish government will anticipate applying Blockchain-based technology to solve challenges for public tender and the inclusion of small and medium enterprises. Furthermore, the recent launch of the Stockholm Green Digital Initiative displays the complex, rapid multipolar growth and a mix of collaboration and interconnection between different players.

GOVERNMENT TENDERS FOR COMPLICATED CONTRACTS START WITH THE IDEA OF AIRBNB

By Margareta Kowalska

For years speaking about Blockchain, deep learning and artificial intelligence was like speaking about living organisms on a different planet. Everybody confirmed the physical and biological possibilities of the existence of life in remote galaxies, but nobody has taken pictures and sent it back home. Today, in 2017, Blockchain technology is progressing daily to breakthroughs noticeable by the average Joe. Blockchain technology allows solving problems that were not efficiently resolvable with the currently available technology. One of such problems is the difficulty for Stockholm's small and medium enterprises to participate in large public tenders issued by different levels of governments or to offer their services as subcontractors. Governments and main contractors desire to allow only credible subcontractors to participate in public tenders. Rachel Botsman, in her work connected to 'collaborative economy' argues that 'trust' has become a commodity and a currency that allows us to bet on the future.

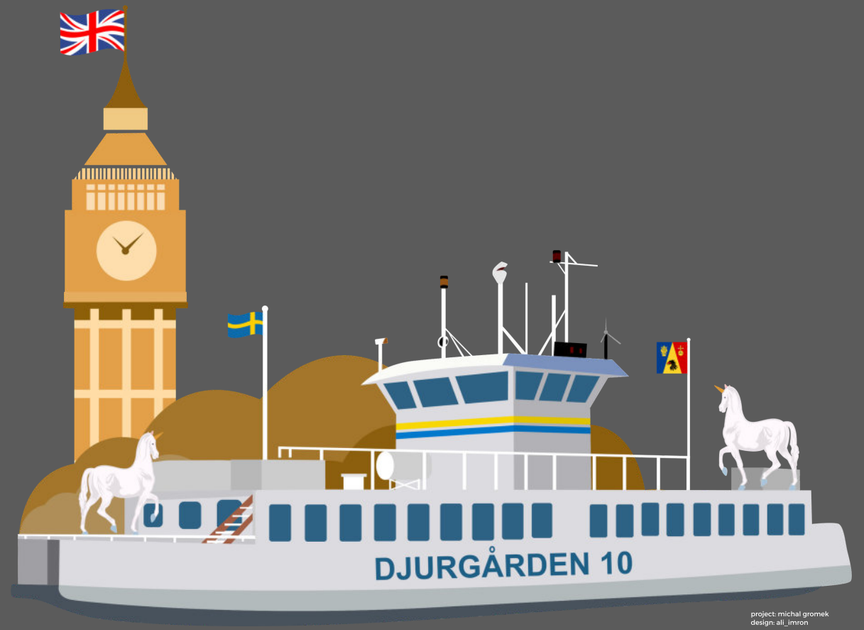
Gaining trust as a new SME, which is able to participate in tenders, is not easy with the systems of today. Those systems are based on credit scores which predict the probability that a company will go into default within 12 months and reflect if a particular business has been repaying a loan on time. But just only because a company pays back loans and leasing on time, doesn't prove that the bridges or steel delivered from that particular company are of a high quality. Governments and municipalities also want to know about employment history, showing whether SMEs are ethical employers and their tax history, which require extensive evidence and a burden on the small businesses.

To support the security contracts of the contractor, subcontractor and public side, a Blockchain solution has been developed. It introduces two main innovations:

- facilitation of government tenders and contracts with large retailers, using a Blockchain based multisided platform, that includes smart contracts, quality supervision and facilitation of payments;
- creation of a tailored rating system for companies in public tenders or large retail contracts, using relevant quality factors instead of traditional, opinion-based ratings with known platforms like Airbnb or Ebay.

PARTNERSHIP AGREEMENT WITH UNITED NATIONS AND PILOT STUDY WITH THE SWEDISH GOVERNMENT

A stronger participation of small and medium enterprises, which might increase the competitiveness, is not a Stockholmer but a global issue. This Blockchain-based solution, developed by hiveonline, resulted in a recent partnership agreement with United Nations and a launch of the pilot study with the Swedish Government.



STOCKHOLM SCHOOL OF ECONOMICS

#HUBBING
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REGULATION
TALENTFLOW

WHEN BRITAIN LEAVES THE EU

#WILL FINTECHS TURN TO THE VIKINGS?

Michal Gromek, Stockholm School of Economics
Timotheos.Mavropoulos, Stockholm School of Economics

Brexit status of the UK as a FinTech hub could affect Stockholm's development as well. It will underline the challenges, opportunities, and uncertainty arising after Brexit.

FROM THE HARBOUR OF FINTECH AND BACK?

For centuries rats have penetrated the food chambers of ships, which dropped their anchors in safe harbours during turbulent seas. In the wake of the referendum on British membership in the European Union, the "remain" and the "leave" voters agreed that the UK was like a rat in a food chamber of the ship called the "EU." What had not yet been decided was whether the ship's chamber was full of food or whether the ship was about to sink (Kraus, and Schwager, 2004). As the world awoke on June 24th, 2016, it became clear that 51% of the UK's citizens had been convinced that the rat needed to escape the ship. This chapter will reflect on whether the current post-

Statistically speaking, while travelling on a crowded bus in a random city in the UK, you can be sure that at least one out of every sixty bus passengers is working in the financial industry (Magnus, Margerit, and Mesnard, 2016). More than one million employees contribute to this sector in the UK, generating a significant amount of state revenue. When it comes to FinTech ventures in the UK, in 2015 British FinTech companies employed more than 60,000 professionals, such that one out of every twenty

employees working in the financial sector was engaged in services connected to FinTech ventures. For years, the UK has been a European leader in attracting FinTech investments. In 2015, this sector generated over USD 700 million in investments and USD 9.4 billion in revenues (Ernst & Young, 2017). Sweden has overtaken the UK in FinTech investments per capita by as stated in the previous chapter on investments, but the distance in total values remained unreachable, until now at least.

Even accounting for the fact that the UK has 65 million inhabitants and Sweden only around 10 million, the ratio of FinTech employees to the total population is three times higher in the UK. Also, bearing in mind that Sweden has a more conservative definition of FinTech, specified in the chapter discussing the Genome of FinTech in this book, the transaction value generated by Swedish FinTech reaches just about 10% of that of the UK's.

Is the rat itself maybe sinking? The Digital Market Outlook on the FinTech sector in United Kingdom by the statistics portal for market data, Statista.com, predicts a decline of the FinTech transaction value growth in consumer and business finance by nearly two-thirds between 2016 and 2021.

*This text is an excerpt of a chapter that will be published in an upcoming book: Gromek, M. (n.d.) [When Britain leaves the EU, will FinTechs turn to the Vikings?]. In The Rise and Development of Fintech: Accounts of Disruption from Sweden and Beyond, London: Routledge."

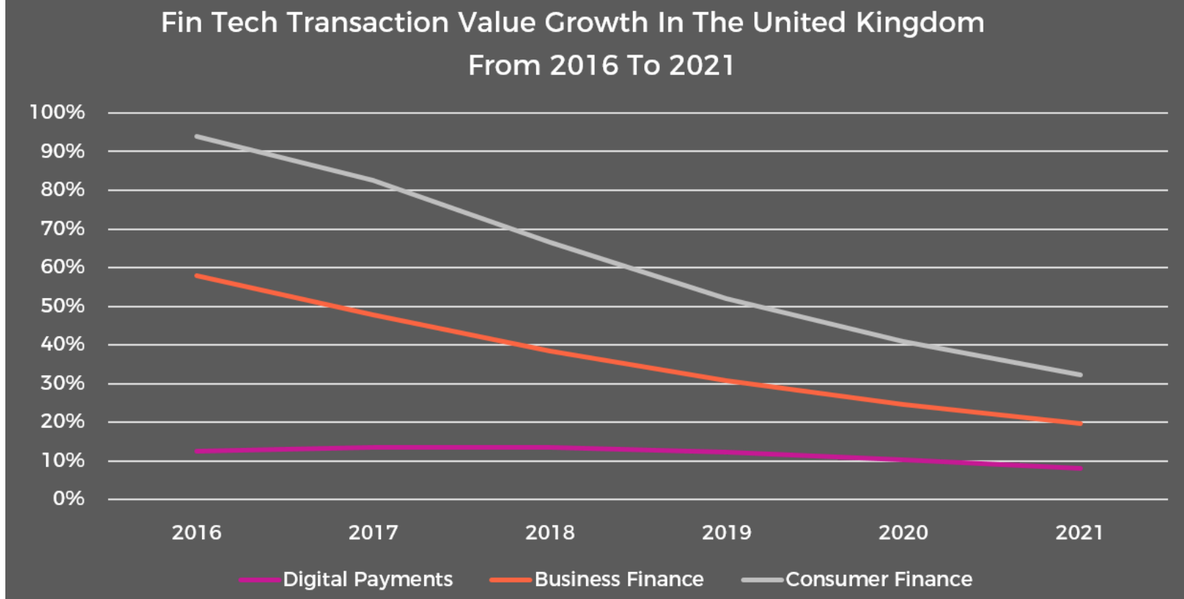

Figure 1 FinTech transaction value growth in the United Kingdom (UK) from 2015 to 2021, by segment. Source: Statista (Digital Market Outlook) 2017

The Digital Market Outlook on the FinTech sector in United Kingdom by the statistics portal for market data, Statista.com, predicts a decline of the FinTech transaction value growth in consumer and business finance by nearly two-thirds between 2016 and 2021.

Such a significant decline might have multiple origins, which do not necessarily have connections to Brexit at first glance. One such impact might be the growing impact of China on the FinTech market. FinTech investments grew from USD 19.1 billion in 2015 to USD 21.2 billion in 2016, and China's investments were responsible for a significant part of this growth. While European investments in European FinTech enterprises decreased by more than one-fourth, China's presence in this field doubled (Meola, 2017).

On a European level, London's position as a leader in FinTech might be heavily impacted by how political leadership of both the European Union and the United Kingdom decide to execute the "divorce" triggered by the so-called "Article 50" (Morales, Hutton, and Datoo, 2017). From a FinTech perspective, the "rat" may sink after jumping off the ship depending on whether financial licenses obtained in the UK may be transferable to other EU countries.

Additionally, FinTech employees remain a rare breed because of their unique mix of skills that combine a sociological understanding of financial products with technological innovation. The current UK Prime Minister Theresa May underlined a desire to limit or even terminate the free movement of the labour force between different member states of the EU in relation to the UK (Financial Times, 2017). Such a limitation might trigger the diplomatic practice defined as the "reciprocity rule".
Such a "race to the bottom" due to a scarcity of FinTech talent in the European market and the growing presence of China could significantly decrease UK competitiveness in the field.

In every case, a soft Brexit, whereby the UK leaves the EU but remains in the single market, would be a less risky option for the UK's financial services and FinTech because it would enable the financial services firms to continue to rely on certain benefits and regulatory passporting rights (Armour, 2017) in particular.

In summary, the growing effect of China on FinTech investments and the relation between FinTech and Brexit is a blend of complex interrelations between politics, international relations and capital flows, which cannot be analysed as a stand-alone phenomenon.

LEARNING FROM HISTORY: BREXIT VS. 1997 "HONGEXIT"
Analytical reports by the International Monetary Fund predict that the Bank of England and Her Majesty's Treasury abandoning the EU will have overwhelming economic consequences for the UK (BoE, 2016; IMF 2016; HM Treasury, 2016).

***Transaction Value: The price paid or payable for a good or service.

*****Reciprocity is defined as a social rule in which an individual receives a repayment for what has been provided to them.

In particular, a substantial proportion of the pound depreciation has been related to the Brexit referendum, yet these huge drops in the value of the pound have so far failed to yield a lasting improvement in the UK's trade deficit (Tombs, 2017).
Indeed, one might be worried about these recent exchange rate movements that are resulting in the UK vying for the award for the most unsuccessful currency depreciation in history almost a year after a historic Brexit vote.

As standard econometric models, may miss relevant inputs as well as not entirely account for the interaction among various effects on labour, trade, capital flows, and productivity, there is a motivation to search for historical occurrences that are analogous in key aspects to a Brexit shock.

Finding such episodes is not easy as there are no fully comparable instances. Historically, there have been many instances of "sudden stops" leading to financial crises and recessions (for a more detailed explanation behind the "sudden stops" see for example Calvo, Izquierdo, and Talvi, 2003), but such episodes are not applicable in the case of Brexit, as they are typically cases in which investor confidence evaporates as a sovereignty tries to maintain its exchange rate. However, the transfer of sovereignty of Hong Kong from the UK to China in 1997 could be comparable in nature and provide some insight.
On July 1, 1997, the sovereignty of Hong Kong was returned to China from the United Kingdom. As specified in three treaties (Tsai, 1995) between 1842 and 1998, the UK governed the territory of Hong Kong

Hong Kong - 150 years under a leasing agreement

for around 150 years under something that today would be defined as a leasing agreement (Henderson, 1995).

The transfer of Hong Kong's sovereignty from one country to another could be seen as a relevant historical example of transferring jurisdiction and control which led to economic and entrepreneurial uncertainty (Carroll, Feng, and Kuilman, 2014). The transfer of sovereignty of Hong Kong did not happen overnight and, similar to Brexit, investors had to cope with a range of uncertainty. To soften the effects of uncertainty, China introduced a policy called "One Country. Two Systems" for a transition period of 50 years after the handover in 1997 (Lambert, Mariam, and Susan, 2010).

During the negotiation process before the transfer, the central government in Beijing made specific pledges connected to Hong Kong's monetary and financial systems, which are contained in official documents like the Sino-British Joint Declaration, Chen Seven Principles, and Basic Law. Those documents specified the free flow of currency and confirmed that the district would use its financial revenues exclusively for itself. It is important to underline that not only did Hong Kong have to pay HK 1 billion annually for the last three years to the British garrison, but it also received an exclusive privilege to be exempt from contributing to the Central People's Government Budget.

This particular privilege of not contributing to the centrai budget is unique in China and has been kept in place to date, which distresses governors of other Chinese cities that transfer a significant amount of their tax revenues for this reason (Jao, 2001).

Hong Kong's return to China not only resulted in challenges but also an assortment of opportunities. On the one hand, while "returning" to China, Hong Kong found not only access to one billion potential customers at its doorsteps but also a fast-pace growing economy that has increased its GDP by double-digit growth. Such an abundance of investment opportunities might be paradoxically the seed, soil, and water for the growth of financial players, which were located in Hong Kong. In absolute numbers, shortly before the handover to China, a local government report quoted the following, "From March 1996 to March 1997, finance, insurance, real estate and business services have had 8 per cent employment increase" (Economic Analysis Division, 2010). It is important to note that the period of the handover was prior to the so called "dotcom crash" and before the Asian financial crisis. Thus, a Chinese diaspora and a mix of stable and predictable financial markets provided one of the explanations for Hong Kong's rise as a financial hub (Lees, 2012).

Hong Kong has been able to preserve its own currency and to avoid making significant payments to the Central Budget. Until recently, the political representatives of Hong Kong have been able to balance the line between stability, capitalism, and a Chinese "socialist market economy" (Yang and Dunford, 2017). This political situation has been a masterpiece of 'having your cake' of advantages and 'eating it too' in the market economy.

Not everything will be a bed of roses by 2047 when the transition period finishes. Similar to Brexit, everybody knows that the end of the transition period for Hong Kong will happen. What remains unknown are the implications this transformation. However, the danger of a flight of capital and talent remains fairly real (Brown, 2016), and a contemporary version of Hong Kong might find itself in windy waters.

China and Hong Kong need to be able to combine two frequently contradictory sides to the "One Country. Two Systems" arrangement, which might carry encouragement for both the UK and the EU.

FROM HARBOUR TO HUB... AND BACK?

Recently, Article 50 was added to the pool of European treaties because it had been assumed that once a country had exerted so much effort to come into the EU, it would not be interested in leaving it. If London would like to maintain the free flow of capital, it would potentially have to obey the regulatory frameworks issued by the European Securities and Markets Authority (ESMA), which governs a substantial volume of the financial regulation. The UK would not be the only country that would benefit from the EU market while not being an EU member. In 1960, countries (Carmona, Cîrlig, and Sgueo, 2017) that wanted to benefit from the advantages of the European membership formed a European Economic Area (EEA) and its sub-

-organisation the European Free Trade Association (EFTA). The UK was an EFTA member before the EU Accession in 1973. The Parliament of the UK, in one of the alternative scenarios to EU membership, expressed a potential return to EFTA (House of Commons, 2013). The Minister for European Affairs in Norway, which is an EFTA member, stated in an interview that the participation of the UK in EFTA could disturb the balance of this organisation, which might adversely affect the Norwegian position (Wintour, 2017).

The relation between EEA, EFTA and the EU might appear quite complex. Generally speaking, while joining the EEA and EFTA, the UK would enjoy the benefits of using a legal framework that has existed since 1994. On the one hand, the capital movement would remain unrestricted and the UK would not have to implement a range of European policies in the field of judicial affairs, foreign policies, etc. Even in a positive scenario, being an EFTA member means to accept the decision of the internal market, competition, state aid, and financial regulation.
What is significant for EFTA and EEA is that none of the representatives of those organisations may participate in the meetings and cooperation between the European Parliament, the Council of Ministers, or the EU Commission.
Practically speaking, if the United Kingdom wanted to receive more independence from the EU, it would have to implement regulation on the financial markets, an extremely important pillar of the economy, without having the right to contribute

veto a regulation or directive (Piris, 2016).

CHALLENGES

Brexit adds challenges to an already turbulent industry, which currently operates under a high degree of uncertainty. The trade (re)negotiation position of the EU is much stronger than that of the UK, and there are no guarantees that the UK can achieve a position comparable to EFTA members, such as Norway. Under the current definition of passporting, a company that has applied and received a banking license in Sweden (for example) does not have to apply for the same license when conducting business in other countries within the European Union.
The company “only” has to notify a particular Financial Supervision Authority that it intends to perform its services in a particular scope in another country. The complexity of such a “notification” differs from country to country within the EU and can hardly be summarized as an effortless adjustment for the FinTech companies.

OPPORTUNITIES

Similar to the case of the handover of Hong Kong to China, Brexit does not necessarily have to lead to an expensive price tag or a decrease in FinTech activity. While executed well, the gravity pole of FinTech can quickly move back towards the UK. Losing ties from common European jurisdictions might allow the UK to respond more quickly and efficiently to the changing world of FinTech. A more liberated FinTech regulator could re-establish the UK more successfully as all EU-member

countries have to agree on a common policy towards financial technology ventures, Brussels mills the FinTech regulation grind slowly.

Thus, leaving the EU may position the UK not as a follower but as an advantageous “first mover” and a smart FinTech player avoiding the “winner’s curse”. As of May 2016 (MAS media release, 2016), the UK regulator FCA has established the first regulatory bridge with the Singaporean counterpart MAS. Such a regulatory bridge allows the sharing of information on financial services, sharing of knowledge, and creates coherent regulation that allows FinTech companies to expand into other jurisdictions. This cooperation is just one case of how easily the UK could follow the example of Singapore, which has already established its own distinctive FinTech Agenda.

Opportunities for other FinTech players, including Sweden, might also be rising. Negotiating from a tabula rasa FinTech perspective may lead to previously hidden synergies and establish “win-win” FinTech collaborations and projects that enhance the positions of all the collaborating parties. The FinTech game is not “the only game in town”. By seemingly alienating the UK from an EU umbrella, Brexit may well create a combination of opportunities in other fields that need immediate regulatory support, like InsTech, RegTech, or its conjunction with Artificial Intelligence.

*****Winner's curse describes a situation in an auction with incomplete information, where the winner tends to overpay.

THE SPRINT TOWARDS A CASHLESS SOCIETY AS STOCKHOLM’S BENEFIT FROM BREXIT

Brexit and its effect might influence international FinTech companies looking for a door opener in Europe to reconsider their plans to open an office in the UK. German politicians have paid for billboards and letters to startups, which promote Berlin as a business location. The region of Paris has sent a letter to executives. The city of Dublin launched a marketing campaign, and Milan expressed their desire to host the Headquarters of the European Bank Regular (Deen and Doyle, 2017).

As somebody’s losses are someone else’s gain, it might be argued that uncertainty connected with Brexit could result in benefits for Stockholm, which is unquestionably on the European FinTech forefront.

It should also be noted that the uncertain climate during the Brexit negotiation process will provide Stockholm FinTech with possibilities to incorporate British companies.

The EU provides access to 500 million potential consumers, while the UK alone only offers 65 million (Allen et al., 2015). Potential incoming FinTech companies might consider locations like Berlin, Madrid, or Stockholm continuing to enable stable access to the “other” 500 million potential users with a clearer regulatory structure.

****** InsurTech refers to the use of technology innovations and digitalised processes to generate new business opportunities, increase quality, savings and efficiency at various value-added steps in the insurance industry model.

RECOMMENDATIONS FOR GREATER STOCKHOLM REGION TO PROFIT FROM BREXIT:

Heading towards a cashless society with a focus on digitalization, high internet accessibility, and having an already existing strong base of FinTech companies, Stockholm can easily benefit from the uncertainty connected to Brexit to advance its image as a Unicorn breeding ground (Financial Times, 2015). The Swedish capital, with its flat structures, a high level of English proficiency, a high degree of knowledge diffusion through informal networks, and a currently synergistic FinTech business environment could provide a safe harbour for incoming FinTech talent. Additionally, nothing works as well as the first-hand internal feedback from FinTech companies from a well-functioning FinTech business environment of the city. Instead of providing funding for expensive marketing campaigns, authorities might establish some economically-shrewd quick fixes that might benefit incoming or future FinTech companies.

Fintech@Stockholm.se?

The establishment of a FinTech one-stop-shop information centre could operate in English and be able to support international companies considering Sweden as their future FinTech location. Companies could send in their requests connected with regulatory questions and receive practical how-to-brochures, such as: "Conduct your Cryptocurrency business in Stockholm? This is how!" Such a centre would not have the rights to advise FinTech companies, but it could "inform" and provide guidance on which particular FinTech representatives could be consulted for a particular issue. The Stockholm FinTech Hub could facilitate this service in partnership with Invest in Stockholm or Business Sweden representative office in London.

Fintech Transparency Centre It is comprehensible that information connected with FinTech changes quickly. Nevertheless, from a position of a foreign startup, the jungle of FinTech regulations remains impenetrable. A constantly updated webpage, fintech.stockholm.se could provide one single place to draft and display case studies of companies, aggregate external reports, and provide material for fintech@stockholm.se.

This centre could leverage informal networks in Stockholm and work with existing organisations like the newly formed Swedish Financial Technology Association – Swefintech.

Fintech Co-Living Spaces

FinTech companies that establish their FinTech offices in Stockholm and successfully complete an approval process (conducted, for example, by the Stockholm FinTech Hub) could receive access to a publicly supported FinTech package. A time-limited package would include access to an accelerator office space or co-working space as well as a place in a newly established FinTech residential apartment community. In the beginning, such support could at least provide incoming companies with solutions to a challenging housing situation in Stockholm.

However, developments in the Swedish taxation policy and tax increases in particular could hamper these opportunities (Lind, 2017). Talent follows money, and billions of dollars in capital investment flooding into the FinTech ecosystem worldwide may

urge Stockholm to position itself competitively in order to attract the FinTech stars and grow sustainably (U.N.E.P., 2016).

Additionally, the idea of an extended "transition period" after Brexit is currently gaining more and more ground. If this alone will be enough to help maintain stability in the financial markets remains questionable. However, the more prolonged this period is, the more prepared Stockholm can be to receive the talent pool that can strengthen its position on the global FinTech scene.

CONCLUSIONS

One million professionals in the UK work in Financial Services while FinTech companies employ 60,000 individuals — four times the amount of the employees of the Swedish railway system and SAS airline combined employ.

In absolute numbers, the FinTech sector in the UK has 20 times more employees in London than Stockholm does. While London has been the European Hub for FinTech ventures. Brexit in its complexity remains a unique phenomenon and it is uncertain as to how Brexit will affect London's position as a FinTech hub. As predictions about the future have been challenging for economists, the already pronounced signs of depreciation of the British Pound signal some deterioration in investor trust. A peaceful change of sovereignty was conducted on July 1, 1997, with the handover of Hong Kong from the UK to China. As the year 2017 marks the 20th anniversary of this event, not everything has been a bed of roses, but the local representatives managed to align with the central government in Beijing and to create a pioneering arrangement called "One Country. Two Systems". When the Hong Kong government has been able to establish such a respected deal with China, representing a radically different political angle, hopefully, the UK will be able to establish similar efficient trade ties with EU countries. As the exact terms triggered by Article 50 remain blurry, other locations such as Stockholm could benefit from this storm of uncertainty. Back in the days of the Vikings, Swedes proved themselves as reliable sailors in uncharted waters. **As of today, no one argues that this fact has changed.**

REFERENCES:

Allen, K., Oltermann, P., Borger, J. and Nelsen, A., 2015. Brexit–what would happen if Britain left the EU?. The Guardian, 14.

Armour, John, Brexit and Financial Services (January 2, 2017). Forthcoming, Oxford Review of Economic Policy (Brexit Special Issue). Available at SSRN: https://ssrn.com/abstract=2892679 Arner, D.W.,

Barberis, J.N. and Buckley, R.P., 2016. FinTech, RegTech and the Reconceptualization of Financial Regulation. Bank of England, 2016. Inflation Report. Available at: http://www.bankofengland.co.uk/publications/Documents/inflationreport/2016/may.pdf

Calvo, G.A., Izquierdo, A. and Talvi, E., 2003. Sudden stops, the real exchange rate, and fiscal sustainability: Argentina's lessons (No. w9828). National Bureau of Economic Research.

Carmona, J., Cîrlig, C.C. and Sgueo, G., 2017. UK Withdrawal from the European Union: Legal and Procedural Issues.

Carroll, G.R., Feng, M. and Kuilman, J.G., 2014. The Handover in Hong Kong: Impact on Business Formation. Sociological Science, 1.

Deen, M. and Doyle, D. (2017). Paris Tries Letters, Berlin Billboards in London Jobs Quest. [online] Bloomberg.com. Available at: https://www.bloomberg.com/news/articles/2016-07-06/paris-tries-letters-berlin-billboards-in-race-for-london-jobs.

Economic Analysis Division. 1997 Financial Services Bureau half-year Economic Report, Government of the Hong Kong Special Administrative Region, Hong Kong Printing Department, Hong Kong SAR, p. 121.

Ernst & Young. 2017. An evaluation of the international FinTech sector. Available at: http://www.ey.com/Publication/vwLUAssets/EY-UK-FinTech-On-the-cutting-edge-Executive-summary/$FILE/EY-UK-FinTech-On-the-cutting-edge-exec-summary.pdf

Financial Times. 2017. “Theresa May stands by pledge to keep cutting net migration”. Available at: https://www.ft.com/content/ae0b6066-25e9-11e7-a34a-538b4cb30025.

Financial Times. 2015. “Stockholm: the unicorn factory”. Available at: https://www.ft.com/content/e3c15066-cd77-11e4-9144-00144feab7de

Garver, J.W. 2015. China's Quest: The History of the Foreign Relations of the People's Republic of China. Oxford: Oxford University Press, p.585.

Henderson, J.H., 1995. The Reintegration of Hong Kong into the People's Republic of China: What It Means to Hong Kong's Future Prosperity. VAND. J. Transnat'l l., 28, p.503.

HM Treasury analysis: the long-term economic impact of EU membership and the alternatives, 2016. Available at: https://www.gov.uk/government/publications/hm-treasury-analysis-the-long-term-economic-impact-of-eu-membership-and-the-alternatives House of Commons Library, Research Paper 13/42 Leaving the EU, July 2013.

Jao, Y.C., 2001. The Asian financial crisis and the ordeal of Hong Kong. Greenwood Publishing Group.

IMF Country Report No. 16/169, 2016. Available at: https://www.imf.org/external/pubs/ft/scr/2016/cr16169.pdf

Kraus, M. and Schwager, R., 2004. EU enlargement and immigration. JCMS: Journal of Common Market Studies, 42(1), pp.165-181.

Lambert, S., Mariam, T. and Susan, H. (2010). Transfer of Sovereignty Over Hong Kong. 1st ed. VDM publishing, pp.1-134. Lees, F.A., 2012. Financial exchanges: a comparative approach. Routledge.

Lind, J. 2017. Regeringen kommer att förändra det förslag till ny finanskatt, även kallad bankskatt, som ligger på bordet. Available at: http://www.dn.se/ekonomi/regeringen-ska-andra-forslag-om-finansskatt/

Magnus, A., Margerit, A. and Mesnard, B. (2016). Brexit: the United-Kingdom and EU financial services. European Parliament.

Meola, A. (2017). THE FINTECH REPORT 2016: Financial industry trends and investment. [online] Business Insider. Available at: http://www.businessinsider.com/the-fintech-report-2016-financial-industry-trends-and-investment-2016-12 accessed May 3rd 2017.

MAS Media Release, First Ever FinTech Bridge Established between Britain and Singapore, http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/First-ever-FinTech-Bridge-established-between-Britain-and-Singapore.aspx, accessed May 23rd 2017.

Morales, A., Hutton, R. and Datoo, S. (2017). The Brexit White Paper, Annotated. Bloomberg.com. Available at: https://www.bloomberg.com/news/features/2017-02-02/what-s-in-the-brexit-white-paper-and-what-does-it-mean Piris, J.C., 2016. accessed May 23rd 2017.

Scanner, V. (2017). Insurance Technology - Average and Median Age by Insurance Technology Category – Q2 2017. Venturescannerinsights.wordpress.com. Available at: https://venturescannerinsights.wordpress.com/category/insurance-technology/

Staff, I. (2017). Winner's Curse. Investopedia. Available at: http://www.investopedia.com/terms/w/winnerscurse.asp

Tombs, S. (2017). Britain's Pound Depreciation Isn't Working. WSJ. Available at: https://www.wsj.com/articles/britains-pound-depreciation-isnt-working-1484859707

Tsai, J.F., 1995. Hong Kong in Chinese history: community and social unrest in the British Colony, 1842-1913. Columbia University Press. U.N.E.P. Inquiry, 2016. Fintech and sustainable development. Assessing the implications. Available at: http://unepinquiry.org/wp-content/uploads/2016/12/Fintech_and_Sustainable_Development_Assessing_the_Implications_Summary.pdf

Wass, S. (2017). UK steps up to attract fintech talent | Global Trade Review (GTR). Global Trade Review (GTR). Available at: http://www.gtreview.com/news/asia/uk-steps-up-to-attract-fintech-talent/

Wintour, P. (2017). Norway may block UK return to European Free Trade Association. The Guardian. Available at: https://www.theguardian.com/world/2016/aug/09/norway-may-block-uk-return-to-european-free-trade-association

Yang, Z. and Dunford, M., 2017. Cluster evolution and urban industrial dynamics in the transition from a planned to a socialist market economy: the case of Beijing. Spatial Economic Analysis, 12(1), pp.50-71

"This text is an excerpt of a chapter that will be published in an upcoming book: Gromek, M. (n.d.) [When Britain leaves the EU, will FinTechs turn to the Vikings?]. In The Rise and Development of Fintech: Accounts of Disruption from Sweden and Beyond, London: Routledge."

CUSTOMERS ARE DIFFERENT. BANK OFFERING IS THE SAME

Interview by Michal Gromek, SSE

We see that independently if your country of residence is Germany, Sweden, Denmark, etc. the bank offering that you receive as nearly the same.
What the banks have done, was mostly to unify their offering and provide a one-solutions fits type of customer interphases. From our perspective, this is actually an issue as none of the users are the same, people shop at the different store, have different saving behavior and do other things outside of work.

This means that despite the fact that the users are all different, the current banking proposition remains unfortunate still the same.

We as customers would like to see the relevant products, with the relevant offering that support the future of our needs in our banking interface and it is a curtain that bank profits pool from such structures might even go up. Banks in the way like the telecommunication providers are on the way to unfortunate became utility providers called „dump pipes" instead of creating values and became the „smart pipes."
Unfortunate the banks and telecommunication providers somehow concluded that they could only compete in terms of price as the customer offering is equal.

#JOHAN LUNDBERG

CEO
NFT VENTURES

Some of our Fintech companies target the very heart of the bank business with their solutions more accurate and efficient than the internal banking solutions. Unfortunately the banks don't realize the size of the thread until it might be too late. This might be because employees within the banks are not rewarded for taking the risk, so they have no benefits from accessing innovative but riskier technologies.
The key challenge for FinTech companies remains to drive customer acquisition in the financial industry which is not considered „hot." We are convinced that values like tailored accessible solutions will raise and the customer might be paying more for customized services but be happier with the offering which they receive in comparison with today

We are a strong supporter of the regulation as FinTech companies work with trust and reputation. It is important to accept regulation and follow them. As Sweden has lowest bank branch offices network penetration per inhabitants.
The amount of bank branch offices goes down and is even ahead of City Banks projection from 2015.
This means that we have strong regulation and still a fast-growing startup scene, what is a positive paradox in itself.
There is one thing that might be upgraded, what is the behavior of some government bodies, in particular, the Swedish Financial Supervision. Sometimes we receive feedback, which specifies that we can't do this or that. Advisable, would be a tool to facilitate a proactive dialogue with a regulator

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"The FinTech companies in the Nordic often tend to develop and perform better than what we have planned. And I am convinced that we will continue to lead the FinTech development."

that would engage into a conversation and specify, what additional measures should be taken in order to allow to facilitate the service still within the same regulatory framework. Today, unfortunately entrepreneurs tend to break down in tears before a meeting with the Financial Supervision instead as seeing them as a partner of the FSA can close down their business without a particular reason. We suggest that regulation might stay in place, but the behaviour of the authorities might be upgraded.


Photo: Ateljé Uggla

ARE OUR FINTECHS REALLY READY FOR GDPR AND PSD2?

Interview by Michal Gromek, SSE

Entrepreneurs may have felt empowered by recent investments in FinTech businesses such as Klarna and iZettle. We have not only experienced a great increase in the number of companies and funding thereof within the FinTech area, but we have also noticed a significant increase in the number of business ideas in this field as well as an increased complexity and internationalization of the ideas and businesses.

Globalization, unification of regulation and growing mobile phone internet usage has led to the discovery of various niches between target groups as well as geographical markets. The Market development resulted in a need to review applicable rules and regulations which led to the conclusion that there was a need for change to be able to adapt to the new market.

The reviews have resulted in the adoption of new and updated rules on the EU level which will have a great impact on the FinTech area.

It is likely that many FinTech ventures have not yet reviewed or understood the implications of the forthcoming changes brought to us by the so-called PSD2 and GDPR which will apply as from the first half of 2018.

#JOSEFINE KARLSSON

ASSOCIATE
EVERSHEDS SUTHERLAND ADVOKATBYRÅ AB
STOCKHOLM

The new changes are more than significant and will require immense transformations for many FinTech companies and consequently, it is high time to take the next steps and prepare for the new future.

During 2016 and the beginning of 2017, we have witnessed a growing complexity of FinTech businesses and, the area has, in our experience, developed from innovative payment services and the like to increased complexity and innovativeness which we, for example, can see with intra-bank products. .

Here at Eversheds, we can see that FinTech companies have their eyes set on Central and Eastern Europe as well as South America which more and more are becoming markets of interest for these undertakings.

"It is possible that we would benefit from something like a "FinTech legal advisor's roundtable" that would allow for experts within this field to exchange experience and potentially suggest regulatory upgrades.".

This development of the geographical trend may, at first sight, seem surprising, but it reflects the hunger of Swedish entrepreneurs to capture a piece of those emerging economies while at the same time spreading Nordic innovations and ideas.

Due to the fast progress and development of technology and innovative service, it is not surprising that the public authorities were unable to adapt and update the legal framework to fit the pace of the latest trends and development in the area such as blockchain, mobile payments or business to business platforms and cryptocurrencies.

PSD2 GDPR

#SUMMARY
General Data Protection Regulation (GDPR)

The GDPR replaces current legislation regarding data protection and will apply to the processing of all personal data. There will be no exceptions for small businesses or small scale processing of personal data.

The GDPR is to provide protection for the rights of the individuals whose data is processed and this should be kept in mind when interpreting the provisions of the GDPR. There are many new regulatory factors introduced by the GDPR, such as introducing the right to be forgotten and the right to data portability. Essentially, this means that an individual, under certain circumstances, may be entitled to have his or her personal data erased or to have a personal data file transferred to another data controller, i.e. another entity which processes the individual's data.

On the 25th of May, 2018, the General Data Protection Regulation (GDPR) will take effect in all countries within the European Union

GDPR - APPLIES DIRECTLY TO ALL EU COUNTRIES

In addition to the above mentioned, the GDPR also introduces stricter rules regarding the processing of personal data, imposing sanctions in the form of administrative fines of up to 4% of the total worldwide annual turnover or EUR 20,000,000, whichever is higher. It is worth noting that the GDPR is an EU regulation, which means that it applies directly all EU members as if it was national legislation. Part of the background of the GDPR is that the investigations, discussions and impact assessments during the legislation process showed that personal data had become a commodity. Therefore, there is a need for stricter rules and increased protection of the privacy of individuals.

In conclusion, any entity processing personal data benefits from performing an analysis of the business to assess what personal data is processed within the organization. Since the changes introduced with the GDPR are so extensive, it is advisable to initiate such a process as soon as possible to ensure compliance before the 25th of May, 2018.

#SUMMARY
Payment Services Directive 2 (PSD2)

The PSD2 replaces the current Payment Services Directive and following implementation into national legislation, it will apply in relation to all payment services provided within the member states of the EU. The PSD2 must be implemented in all EU countries by updating or replacing current national legislation regarding payment services.

There are many new regulatory factors introduced by the PSD2, such as the broadening of the definition of payment services to include third party services, i.e. account information services and payment initiation services and it also introduces stricter requirements on security measures.

WE MIGHT SPICE UP THE BANKS WITH OUR GAMING INDUSTRY

Interview by Michal Gromek, SSE

Banks might profit from FinTech as they will give better user-experience, introduce gamification to savings products and maybe upgrade their business model to "Amazon of financial services." Given that Fintech's want to be wrappers on top of Banks, competitive Banks can look forward to increasing market share, without effort"

#MAGNUS KRUSBERG

COUNTRY HEAD SWEDEN & PARTNER FINANCIAL SERVICES
PA CONSULTING
STOCKHOLM

For Sweden to continue to be one of the leaders of cashless societies, we might need inspirations from a range of business sectors to enable closing the banking gaps in the society. Despite a high penetration of the reliable internet and strong industrial history, we might face demographic challenges. We must encourage the young generations to embrace not so various products such as saving products for the pension. Today banking offering might not be considered "fun" enough for younger consumers and I think we must adjust our offering to their needs and wants.

To be innovative and successful we might need to consider interlinking financial products with the gaming industry. As our Swedish gaming industry has recently absorbed

a range of talented individuals from areas like art, design and artificial intelligence, we might bring them together with fund managers and await potential innovations.

Overall the current business models of banks might benefit from an update. Currently, all banks have very similar offerings. Each bank has, for example, own equity funds that invest in pharma companies. There is a tendency that a bank has to have a portfolio of everything to everyone. It seems that instead of concentrating on niche markets where each bank might be the most competitive, most banks want to offer the same ranges of products with very similar pricing. Our current banking landscape from consumer's perspective might be too homogenous.

A hypothetical example of such a market might be a situation where there are three car producers in a country, which offer the same car, with the same horsepower and functionality, but just a slightly different type of bodywork paint.

In order, not to become utility providers, banks might use this year before the implementation of PSD2 and GDPR, to upgrade their reliable but often outdated IT landscape and focus on more sophisticated business models. There are reasons why Amazons multisided platforms business model might be incorporated into banking and spiced up with gamification from our thriving gaming industry. This might even trigger a Pareto result, where part the of the ecosystem might be better off, even the gaming industry.

FINANSINSPEKTIONEN: MAPPING OF FINTECH

Interview by Michal Gromek, SSE

Instead of speaking to experienced compliance teams of bank employees in sharp suits, with FinTech we experienced to speak to the representatives of financial companies dressed in T-Shirts, representing a different compliance structure with a different angle of view and lingo.

#STIG JOHANSSON

HEAD OF FINTECH
SWEDISH FINANCIAL SUPERVISORY AUTHORITY
(FINANSINSPEKTIONEN)

Recently, we did a series of open-ended coffee meetings with FinTech representatives at the Stockholm FinTech Hub, with the goal to increase knowledge on both sides and foster the kind of open dialogue that the Swedish society is known for.
By December 1st, 2017 a list of potential improvements for the role of Swedish Financial Supervisory Authority (FI)in respect to FinTech, intends has been presented.
At the beginning of March, 2017, the Deputy Minister of Finance Per Bolund launched a governmental assignment to the Swedish Financial Supervisory Authority (FI) with the goal to explore the following topics:
#Mapping the current FinTech environment in Sweden
#Mapping of the issues or obstacles that companies in the Fintech

environment feel are slowing or stopping their ability to create new innovative services
#Reviewing FI's internal processes, laws and regulations and international best practices in our field
#Suggesting if (and how) some of these issues or obstacles could be met in Sweden and what that would require
The results of this will be presented in a report to the Ministry of Finance on December 1st, 2017 at the latest. The Swedish FI is not issuing any financial regulation itself - as the authority, it can only work within particular mandates that it has been issued in the past. What can be done today within the scope of the mandate might e.g. be further clarification of the existing regulation

It is not yet clear if, or how, such a clarification might take place. However, there is a range of possibilities from publishing brochures or leaflets, to online decision matrixes that would allow for an understanding of the currently regulatory framework for current and future FinTech companies.

At the beginning of June, 2017 we had our soft-session at the Stockholm FinTech Hub, where companies spoke to us in one-on-one settings. Since then, we have learned that a range of founders were not familiar with the complexity of the regulatory framework and some even underlined that they would have chosen a different approach or even career path if they had known the full perspective of regulations in this field.

Generally speaking, we are pleased to clarify particular procedures at any time, so companies shouldn't be afraid to reach out to us. However, companies should keep in mind that there is a thin line between clarifying existing regulation and advising them about a particular business model. Today the authority does not in general provide advice, but that might be reconsidered for the future.

Since 2016 we have seen a change in which a range of bottom-up initiatives, like the Swedish Fintech Association and the Stockholm FinTech Hub, have been created to enhance the development of the financial sector. Such organizations might foster an intermediary role in the future, where companies could join forces to promote self-regulation, as this has been quite successful in the United Kingdom. With regard to the government inquiry, through the fall we are investigating possibilities to adjust regulation, licensing and supervisory practises to promote a more efficient environment for fostering new FinTech services in Sweden.

A key aspect that might need a closer look is the way in which policies and regulations are being communicated today. This particular process is not really about the regulation itself but about the way the regulation is being described and understood. The FI's responsibilities have for a long time been very clearly underlined, as the office is responsible for enhancing the financial stability of Swedish financial institutions, a well-functioning financial system with a high level of consumer protection.

Recent years, the FI's mandate has been extended to also include a macro-prudential mandate.

With the introduction of digitization nobody argues that our mandate cannot be expanded to include other responsibilities, such as the development of FinTech companies or the fostering of financial innovation. However that is for the policymakers to decide.

FinTech companies might want to mark down December 1st, 2017 to see what our recommendations might be to ensure a balance between progress, stability and consumer protection.

We hope to be able to host some sort of event where the industry can get a presentation of our findings and recommendations.

01.12.2017

the launch date of FinTech related recommendations of the assignment accomplished by the Swedish Financial Supervisory Authority

Click here for more pieces of information on the proposed changes

THE HUB - A PLACE FOR KNOWLEDGE ACCIDENTS

Interview by Michal Gromek, SSE

The core work of the Stockholm Fintech Hub is creating a community. Building bridges that increase "knowledge accidents" between players of our FinTech ecosystem in Sweden. We have everything from single person with great ideas, teams working on the first launch of their product, to established banks moving into the hub.

#MATTHEW ARGENT

CEO
STOCKHOLM FINTECH HUB

While mapping the FinTech community in Stockholm, we realised that most of the companies are located in walking distance from each other in subleased office spaces with limited knowledge-sharing possibilities. They were all making similar mistakes. So, we thought, what if we get them all together, rubbing shoulders in one space? They could accelerate their development just by learning from one another.

When it comes to FinTech companies, this sector is broad and narrow at the same time. What that means is that FinTech companies might experience mostly similar challenges connected with compliance, PSD2, AML, KYC or credit card processing that we could gather at the hub. Helping them to resolve those challenges will free up the entire ecosystem and help one of

Stockholm's industry verticals to grow even faster. The FinTech Hub should be an independent facility, where companies can review the regulations, engage in contacts with investors and get connected with the Global FinTech Hub Federation.

The last FinTech report from the Stockholm School of Economics made us think beyond just the startups. It convinced us to join forces with a range of public and private partners to create a place that supports synergy.
Hub is there to involve the ecosystem and make a specific product, a specific service which is the center of gravity for FinTech. This isn't just about startups, it is also about banks, insurance companies, financial institutions and about getting the regulators on board.

As the regulator can respond based upon on what they see the market is needing here locally. We want to work with FSA to be constructive and to become a better communicator and a better collaborator here in Sweden. We work on an open, honest, but positive dialogue with the regulators and from what we have seen so far, they are very receptive to that.
For too long we have experienced more walls than bridges being built between different sides of the FinTech ecosystem.
As tomorrow's financial space will look very different, we are creating solutions, opportunities and cooperation's to other FinTech Hubs to provide the Swedish ecosystem a jump start ahead of the global competition at all stages of their venture's development.

INTERGRATING FINTECH INTO SYLLABUSES

FinTech remains on the intersection between technology, finance, strategy and legal studies which traditional have been placed in different "silos of education".

Consequently a comprehensive FinTech education on the academic level might require a joint-venture assessment not only between the various Centers, Departments but among Universities, what increases the complexity in both planning, execution and financial reimbursement as students tend to enroll at one university and one-degree program.

Luckily for the Stockholm Greater Area such a joined cooperation of five universities in Entrepreneurship and Innovation has been already established what allows academics to use already available infrastructure.

Established in 1998 the Stockholm School of Entrepreneurship (SSES) is a platform for inter-institutional and interdisciplinary entrepreneurship, which unites:

- Stockholm School of Economics,
- Stockholm University,
- Royal Institute of Technology,
- Karolinska Institute
- University College of Arts, Crafts and Design

will possibly facilitate the first Master level elective course in FinTech. Under the lead from Robin Teigland and Claire Bogusz-Ingram from the Center for Strategy

and Competitiveness at the Department of Marketing and Strategy at SSE, the elective Master course on FinTech awaits approval from three partner universities and might launch within the next 12 months. It will focus on business elements of entrepreneurship - it, therefore, touches on technologies as enablers of new business models.

Additionally, outside of the SSES, potential discussions connected with additional FinTech courses for university students, with further financial focus, have also been initiated by the Swedish House of Finance, Sweden's national research centre in financial economics founded in 2011, to strengthen financial research in Sweden.

EXECUTIVE EDUCATION-

Furthermore, in spring 2018, a pilot workshop of Executive Education will be taught in Stockholm by the author of this report also a member of Center for Strategy and Competitiveness at the Department of Marketing and Strategy at SSE in a cooperation between the Stockholm FinTech Hub and SSE Executive Education with a potential to develop programs for both traditional financial providers, startups and policy makers within next 12-18 months. Listed dynamics reflect only actions taken in two divisions of Stockholm School of Economics as pieces of information about not yet approved FinTech course in educational institutions remains scarce. Very scarce in fact.

STOCKHOLM - IRISH HUB IN THE NORDICS

Interview by Michal Gromek, SSE

There is a growing interest of Irish FinTech companies that view Stockholm as a development hub for the Nordics. Sweden is on the path of becoming a cashless society, and there are many Swedish solutions that could easily spill over to cash-heavier countries like Ireland.

There are six areas of interest in this field, which I see as both growing and upcoming in our bilateral exchange in 2018:

- Cashless currency C2B transfers.
- Innovative receipt management services.
- Increasing amount of cyber security solutions.
- Solutions that increase the usage of Big Data within large financial organizations.
- Technological problems when integrating innovative FinTech solutions on often outdated IT systems for telecommunication companies and traditional financial players, which use language programs like Turbopascal.
- A potential shift in the market after the implementation of the PSD2 (Payment Service Directive 2) and to comply with GDPR (General Data Protection Regulation).

#TOM HOLGERSSON

MARKET AND BUSINESS DEVELOPMENT ADVISOR (FINANCIAL-TECHNOLOGIES)
ENTERPRISE IRELAND
AT THE IRISH EMBASSY IN STOCKHOLM

This growth of interest is particularly visible in business to business solutions in areas of RegTech, mostly in the fields of Know-Your-Customer (KYC) and Anti-Money-Laundering (AML) while supporting traditional financial institutions.

Fields which are up and coming would be onboarding of new customers, environment for agile testing on-premise and in the cloud solutions, enterprise-level service virtualization, data management and data integration. Another hot topic, especially for the banking and gaming industry, is to transform network data into intelligence to get a better transparency, performance and surveillance of the users.

This goes hand in hand with machine learning and deep learning. A lot of companies have come quite far in machine learning to make basic predictions about a probable future. But to make a significant difference for the financial industry (any industry) deep learning must be applied.

#Sharing same challenges

Ireland and Sweden share a similar challenge in general lack of one widely accepted FinTech definition. This is significant as one of the biggest Irish company that works in the systematic tracking of collateral management solution (STOC) has started collaborating with a Swedish bank.

We are not particularly sure if collateral management companies should be accounted to FinTech or not.

IOT CHALLENGES FINTECHS

Interview by Michal Gromek, SSE

We live in an age where automation has a significant influence on our lives. Our utility bills are paid automatically at the end of the month, our wearable devices monitor our health, our smartphones notify us about breaking news or weather changes and our cars lock themselves up on their own if we forget to do so.

#GEORGIOS KRYPAROS

INFORMATION SECURITY SPECIALIST

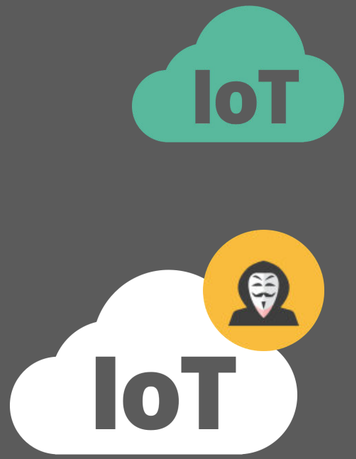
KLARNA

Soon, our bank loans will get extended or renegotiated without us needing to do anything, our shoes will tell us to speed up or slow down when we go running, our fridges will order new supplies on their own and our cars will come pick us up if we have a drink too many. All this is made possible by the evolution of Artificial Intelligence (AI) and the Internet-of-Things (IoT). But what if all this intelligence and ever-increasing interconnectivity of everyday devices turns against us?

It might sound a bit like overly-dramatic science fiction but we are not referring to an apocalyptic "rise of the machines" scenario. We are simply reflecting on the extremely viable possibility of "smart" devices getting abused by malicious users connected to the Internet in order to perform

actions that the devices were not designed for by their manufacturer or instructed to do so by their rightful owner. This possibility is now more than just a possibility; it has become a certainty, since it already happened last year.

On September 20th 2016, one single person used hundreds of thousands of internet connected devices, such as internet-connected cameras, home routers and digital video recorders to launch the largest cyberattack we have seen up to date. This person did not need to do much to take control of these devices, since their owners had not changed from the default administration password. After, the attacker, forced the devices to send excessive network traffic to the website of a technology journalist, Brian Krebs. Krebs was exposing criminals committing this type of attacks against others and, apparently, bringing down his website was a way for the criminals to gain revenge. But, what if the attacker had used a similar attack against FinTech customers by exploiting a software vulnerability in a FinTech's mobile application and commanded these internet-connected devices to operate as money mules, transferring unsuspecting customers' money to different places? The scale of such financial fraud is not merely an issue of compliance that can be handled by paying a penalty fee to the regulatory authorities. The impact will be great, if not devastating, for any FinTech company, particularly since the prime currency of FinTechs is trust and reputation.Therefore, despite the significant progress, we enjoy due to the Internet economy,

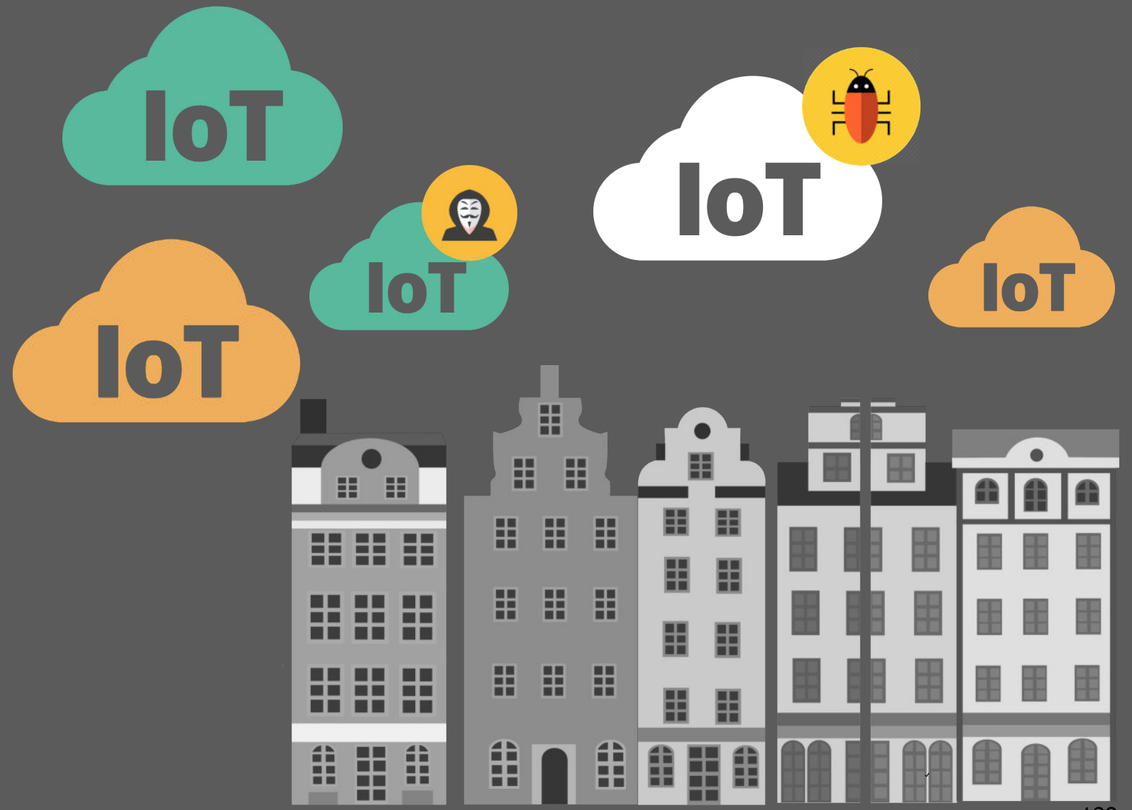


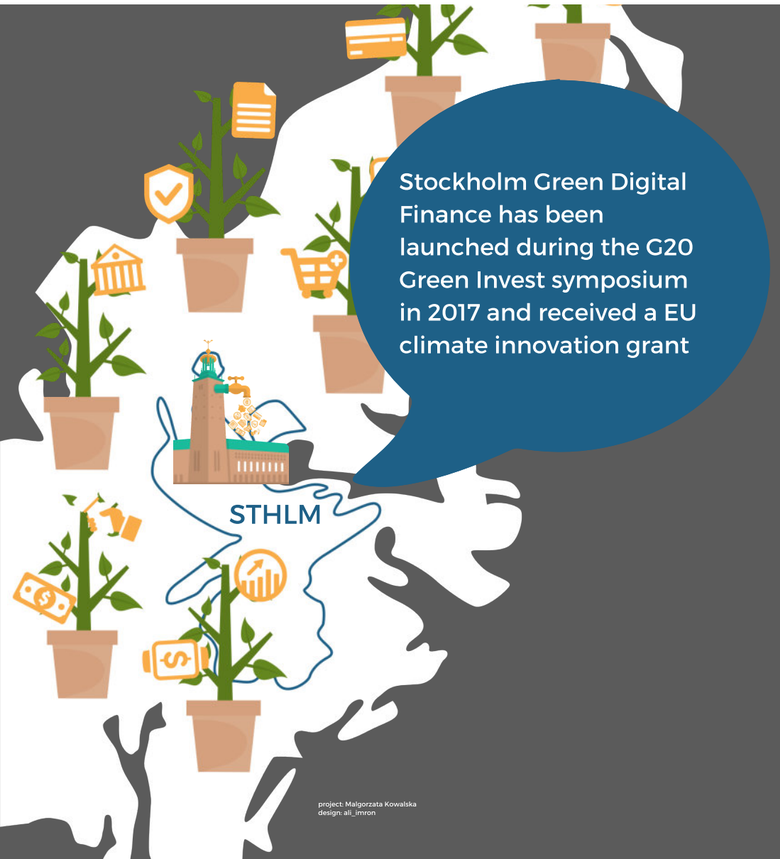
we should not forget that there is a lot of responsibility placed not only on companies, but also on customers, who according to my experience, often tend to be the weakest link of the information security chain.

The information security community has been in the spotlight for the last couple of years, with events such as the Snowden revelations against the US government and the alleged hacking of the Democratic party's email services during the 2016 American presidential elections. Information security has become a common topic of discussion even among, business leaders in company board rooms.
Information security specialists are now tasked to work even more proactively than before so as to prevent such cyberattacks. In order for this to happen, the IT and information security teams of every company, and even more so the ones in FinTechs, need to have a stronger relationship with the business, products and software developers of their respective companies.

Developers of products and services will also have to be concerned about the security threats which are not theoretical anymore and stay informed about the possible solutions.

Cooperation between product developers and security specialists will become commonplace in product development, as it is a necessity if we want to protect the assets of our companies from the explosion of IoT and AI and continue the customer's journey of digitalization of trust. 2017 remains exciting for the entire industry.





STOCKHOLM SCHOOL OF ECONOMICS

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

UNLOCKING THE FULL POTENTIAL

#OF GREEN FINANCE

Cecilia Repinski, Executive Director at Stockholm Green Digital Finance

Will FinTech be a catalyst for the transition to sustainable societies and what role can Sweden play? An estimated EUR 4.5-6.5 trillion of annual investment will be needed to deliver on UN Sustainable Development Goals and the Paris Agreement on Climate Change (Brookings, 2016). Unprecedented mobilization of both public and private financing will be required, and alignment of the operational and incentive structures in the financial system with these development priorities. The FinTech sector has the potential to realize the potential of green finance and secure this mobilization by drawing on its innovational character and innate organizational agility.

For its part, Sweden has become a hotbed of innovation with several FinTech success stories and favorable regulation.

Around EUR 4.5-6.5 trillion per year will be needed to deliver on UN Sustainable Development Goals and the Paris Agreement on Climate Change.

Over recent years, green finance has progressed significantly – in terms of the integration of environmental, social and governance (ESG) criteria into financial decisions as well as the financing of environmental solutions such as renewable energy, improved water quality, efficient natural resource use. The G20 Study Group on Green Finance specifically classifies as ‘green’ only a small fraction of bank lending, less than 1% of global bonds

are labeled, and less than 1% of the holdings by global institutional investors.
While witnessed clear policy support and industry level leadership, yet international capital redeployment remains low.

In response, actors ranging from governments to investors are asking how the barriers can be effectively overcome to scale green finance and investment.

The focus of this chapter is the relationship between innovative financial technology
both startups and established players can help unleash the full potential of green finance to deliver solutions to people and the planet. In particular, how green FinTech innovations can address persistent problems associated with:

- Extending capital to green start-up firms Ensuring green investments
- Lowering the threshold for consumer action
- Valuing nature's assets and providing practical solutions to sustainable lifestyles

In addition:

Green Finance might be an opportunity for Sweden to consolidate its leadership within green financial technology and innovation and move societies towards sustainability.

Financing Green Innovators The finance sector plays a central role in extending capital to new companies offering environmental solutions and technologies that facilitate the transition to sustainable societies. However, asymmetric information, difficulties in measuring assets, and other requirements to putting forward collateral, pose critical barriers and can make the cost of raising external funds especially high for green start-ups (Lööf, Martinsson and Mohammadi, 2016).

These barriers are especially present in debt finance with the IFC estimating that 75 percent of loans worldwide require borrowers to put forward collateral. It can also be difficult for equity investors, such as venture capitalists, to fully monetize the potential success of the business proposition.

FinTech solutions can help green start-up firms bypass the constraints of traditional financial systems and bring entrepreneurs closer to their funders through, for example, peer-to-peer (P2P) solutions. An example of this is Dutch company Bundles, which offers consumers a lease on washing machines and an app to reduce their laundry footprint and failed to raise funding from banks. Instead, the startup embraced crowdfunding – thanks in part to the company's positive track record from past business transactions (Toxopeus, Achterberg, & Polzin, 2016).

Green finance start-ups here in Sweden share similar experiences. One such example is TRINE, which successfully used crowdfunding to extend access to electricity through off-the-grid solar power in Sub-Saharan Africa (Morlin-Yron, 2016).

Others are Bzzzt, who followed the same route to put electric taxi pods on the streets of Stockholm, and Urban Green that works together with Pepins to scale green tech solutions. FinTech could offer financial actors new models for assessing risk and reward that help extend capital to green innovators. Traditional credit assessments exclude relevant data concerning the borrower.

This is especially troublesome for smaller companies, especially circular entrepreneurs, due to the very nature of such businesses – i.e. not to own goods, but rather offer a service in support of sustainable lifestyle choices (Achterberg et al, 2016). In the case of Bundles, the washing machines were leased and could not be qualified as collateral and, in the case of TRINE, nor could the solar panels.

people and the planet. In particular, how green FinTech innovations can address persistent problems associated with:
This not only poses a barrier to green innovators and society at large, it also prevents banks from successfully engaging with exciting new firms. Even though finance is a critical barrier in the transition towards a circular economy, banks are interested (Fischer and Achterberg, 2016).
Blockchain technology that can enable asset and interaction based reputation systems to help SMEs demonstrate value and build trust.
By using alternative data, FinTech applications can identify creditworthy companies not identified by traditional bank measures (Blue Institute, 2017). Particularly, blockchain technology that can enable asset and interaction

based reputation systems to help SMEs demonstrate value and build trust (UN Enviroment Inquiry, 2017). Nordic FinTech company hiveonline (featured in this report) offers blockchain technology that enables small companies to effectively demonstrate their trustworthiness and sources of income through a reputation based system using smart contracts. Such solutions could help bridge the gap between finance and green innovation.

Scaling From The Bottom Up

Green finance has focused largely on top-down approaches for mobilizing funds for green investments. **There are some efforts underway seeking to complement this with bottom-up approaches empowering consumers Svanen, the Nordic eco-label for investment** funds, is an example of this as are investment funds in Sweden that make green bonds available to the retail segment.

FinTech applications can take such efforts to the next level by lowering the threshold of consumer power as well as investigating new domains for scaling citizen action.

FinTech applications can take such efforts to the next level by lowering the threshold of consumer power as well as investigating new domains for scaling citizen action. Ålandsbanken has teamed up with the World Wildlife Fund in Finland to launch a credit card that enables users can trace their environmental footprint by analyzing their purchasing behavior. This initiative not only makes environmental impact more easily understood by consumers

but also offers clients the option to donate money to green projects.

THE IMPACT OF GREEN INITIATIVES SHOULD NOT BE UNDERESTIMATED.

A similar initiative by Ant Financial Services Group in China has managed to engage a remarkable number of people around climate action.

The initiative encourages users to reduce their carbon footprint through a combination of mobile payment platforms, big data, and social media. Since its inception in January 2017, more than 200 million people have voluntarily joined the program, which corresponds to 3 percent of the world population.
Behavioral change over this period resulted in the reduction of 150,000 cubic tons of carbon emissions and over a million trees planted (GDFA, 2017).

According to the Bank of America, 85 percent of millennials want to invest with a purpose.

These examples suggest that markets are ready to offer opportunities for citizen action through FinTech applications. Looking ahead, wealth will be transferred to millennials, a group characterized not only by their tech savviness but also their preference for impact investments. According to the Bank of America, 85 percent of millennials want to invest with a purpose (Wharton, 2017). This should pave the way for even more impact through bottom-up solutions.

Verifying Green Investments. UN Principles for Responsible Investment has a record-high of 1700 signatures, representing 62 trillion USD committed to integrating ESG issues into investment decisions (PRI, 2017).

The G20 Green Finance Study Group identifies a growing number of investors are looking for opportunities to make green investments, yet companies not disclosing relevant environmental information creates added search costs for green assets (G20 Green Finance Study Group, 2016). This poses a barrier for green investments to take off at scale.

Additionally, investors are increasingly concerned about being able to understand and demonstrate the positive impact of their green investments. Swedish finance authority Finansinspektionen states that access to relevant information to calculate environmental risk is a prerequisite for financial markets to contribute to sustainability (Finansinspektionen 2016). However, when companies or projects provide environmental information

there is a lack of consistent and reliable 'labeling' of green assets, according to the G20 Green Finance Study Group (G20 Green Finance Study Group, 2016). This has led to the excess demand for green bonds as they represent one of the few trustworthy investment products that abide by certain principles and require third-party verification on a green use of proceeds.

The application of blockchain technology and big data offers companies and investors a cost-effective tool to ensure sustainability claims and the greenness of investments. Everledger has built a global digital ledger that collects dozens of cross-referenced data points on each recorded diamond to develop transparency within the market and eliminate criminal activity.

The technology can be used to verify other sustainability claims as well, such as fair trade, green foreign direct investment, property rights, or the use of green bond proceeds, especially in less transparent markets.

Tokenizing Green Assets

"We treasure what we measure". This saying is often used by the environmental community when investigating ways for successfully incentivizing better environmental stewardship through valuing what is green. In 2013, the Swedish government commissioned an inquiry to identify ways to make nature's assets more visible so they could be safeguarded and efficiently integrated into economic positions and other decisions in society, which is an unique FinTech angle (Ministry of the Environment, 2013). The FinTech sector has the potential to revolutionize the way biophysical assets are valued and monitored, says the UNEP Inquiry (UNEP Inquiry, 2016), while a growing number of actors are increasingly interested in the opportunities for moving real-world assets onto blockchains (Cameron-Huff, 2017).

This technology can be used to convert physical assets in the real economy into digital tokens. This presents opportunities for placing a value on natural assets, or the rights to a green asset, thereby creating incentives for better management or growth SolarCoin, a digital currency whose value is tied to solar energy produced and consumed within a community, stimulates and grows solar power production worldwide by rewarding individual solar power producers. The currency is currently being used in local markets in 19 countries (SolarCoin, 2017).

The Blockchain technology for tokenizing physical assets can be used for rewarding other types of green assets.
The Natural Capital Alliance has applied blockchain technology to protect critical biodiversity assets such as rainforests, mangroves, and coral reefs.
The UNEP Inquiry highlights how new currency can represent biodiversity assets and help empower issuers to digitize and monetize natural capital (UNEP Inquiry, 2016).
Another potential could, for example, be putting carbon credits on Blockchain for more effective carbon trading (Gogerty, 2017). Technologies and capabilities applied in FinTech, such as blockchain, the Internet of Things (IoT), and artificial intelligence (AI) can be extended beyond the traditional borders of the financial markets in support of sustainable lifestyles and a circular economy. Bundles managed to create incentives for producers to expand the life expectancy of their products as well as develop incentives for efficient use of the same products by consumers. Microgrid systems for solar power generation, smart homes, and sharing economy are other areas that can benefit and scale from FinTech solutions.

Evaluating The Risks

Just as FinTech is positioned to address some critical barriers in the financial system to scale green finance, there are risks associated with the technology. Calculations suggest that each bitcoin transaction consumes about the same amount of electricity for validation as the

average American home does for 1.5 days (Malmo, 2015). The next generation of blockchain technology shows promise to be much more energy efficient.

CALCULATIONS SUGGEST THAT EACH BITCOIN TRANSACTION CONSUMES ABOUT THE SAME AMOUNT OF ELECTRICITY FOR VALIDATION AS THE AVERAGE AMERICAN HOME DOES FOR 1.5 DAYS.

Another set of risks concerns robotized solutions. Some studies suggest algorithmic trade increases the risk of large price-swings in commodity markets, resulting in rapid shifts in commodity production landscapes (Galaz, Gars, Moberg & Repinski, 2015). While cost efficient, the growing use of robo-advisors risks disregarding the investor's value systems and direct clients to a bank strategy whose. investment strategy doesn't align with that value system such as fossil fuel investments (UNEP Inquiry, 2016). Policymakers and regulators should engage early in the FinTech revolution to ensure that the positive benefits for society are harnessed, while minimizing the potential risks.

The Role of Sweden

Sweden and Stockholm have been at the forefront of green finance in areas such as green bonds, disclosure and reporting, as well as scientific research. With just 13 years to go until 2030, and with much demonstrated willingness to deliver, the leveraging opportunities presented by fintech to mobilize green finance at scale needs to be urgently explored.

International policy forums have more recently started to fully apprehend the potential for delivering sustainable development and green finance through solutions underpinned by FinTech.

There is now demand for a champion to systematically test out the opportunities in this domain.

Sweden with its capital Stockholm are uniquely positioned to pick up on this call-to-action and lead the pathway in how financial technology and innovation can speed up the transition to sustainable societies. Possibly using one of the following examples:

- In Sweden, there is broad political commitment to deliver on the Sustainable Development Goals and the Paris Agreement, as well as an understanding of the key role of financial markets to succeed with the task at hand (Government Offices Sweden, 2016).
- Sweden has both a history and a future of demonstrated leadership in green finance. The Government is currently investigating multiple ways for scaling green finance, and has also (together with Nordic partners) explored how experiences and practices to green transformation and financing can be relevant in a global context (Nordic Council of Ministers, 2016).

- Sweden's relatively small but well-developed finance system offers opportune conditions to explore market solutions. Should a new green digital service be developed in collaboration with three to four banks, it becomes a market standard. Sweden is one of the most tech savvy and FinTech-dense countries in the world demonstrating the market friendliness to power technology innovation.

The conclusion is that Sweden can complement its ongoing efforts in green finance and sustainability innovation, while at the same time be a first mover internationally and offer the needed experience to scale global green finance. This is the way to unlock the full potential of green finance to deliver on UN Sustainable Development Goals and the Paris Agreement on Climate Change.

REFERENCES:

Achterberg and van Tilburg, 2016. Guidelines to empower financial decision-making in the circular economy.

Blue Institute, 2017. FinTech. Den digitala transformeringen av finansmarknaden.

Brookings, 2016. Global Views, no. 5, sept 201. Links in the chain of sustainable finance. Accelerating private investments for the SDGs, including climate action.

Cameron-Huff, A., 2017. Bitcoin Magazine, Opinion, May 30, 2017. Op Ed: How Tokenization Is Putting Real-World Assets on Blockchains. Available at: https://bitcoinmagazine.com/articles/op-ed-how-tokenization-putting-real-world-assets-blockchains/ Accessed June 7th 2017

Finance Working Group, 2016. Money makes the world go round (and will it help to make the economy circular as well?)

Finansinspektionen, 2016. Hur kan finanssektor bidra till en hållbar utveckling. 7 November 2016. G20 Green Finance Study Group, 2016. G20 Green Finance Synthesis Report. 5 September 2016

Galaz, V., Gars, J., Moberg, F. and Repinski, C., 2015. TREE 1973 No. of Pages 10. Why Ecologists Should Care About Financial Markets

GDFA, 2017. Scaling Citizen Action on Climate. ANT Financial's Efforts Towards a Digital Finance Solution. May 2017

Gogerty, N., 2017. Personal conversation (15 June 2017).

Government Offices Sweden, 2016. Kommittédirektiv. Gröna obligationer Beslut vid regeringssammanträde den 14 December 2016. Dir. 2016:109

International Finance Corporation, 2013. How movable collateral gets credit moving. World Bank study for the first time confirms link between movable collateral registries and access to finance in poor countries. Available at: http://www.ifc.org/wps/wcm/connect/7b0e2e804782fbfa9644f7299ede9589/How+movable+collateral+gets+credit+moving.pdf?MOD=AJPERES Accessed June 3rd. 2017

Lööf, H., Martinsson, G., Mohammadi, A., 2016. MFS Working Paper 1/16, 14 December 2016. Finance and Innovative Investment in Environmental

The Case of Sweden.

Malmo, C. (2015). Bitcoin Is Unsustainable. Motherboard. Available at: http://motherboard.vice.com/read/bitcoin-is-unsustainable Accessed June 4rd 2017

Ministry of the Environment, 2013. Making the value of ecosystem services visible. Proposals to enhance well-being through biodiversity and ecosystem services. Summary of SOU 2013:68. Stockholm 2013.

Morlin-Yron, S., 2016. CNN Money, December 13, 2016. Start up hopes to get 1.2 billion people out of energy poverty. Available at: http://edition.cnn.com/2016/12/13/africa/trine-crowdfunding-platform/index.html. Accessed June 8th 2017

Nordic Council of Ministers, 2016. Green Financing –The Nordic Way. ISBN 978-92-893-4624-5 (PRINT). ISBN 978-92-893-4625-2 (PDF) Available at: http://dx.doi.org/10.6027/ANP2016-748 ANP 2016:748 Accessed June 8th 2017

PRI, 2017. https://www.unpri.org

SolarCoin, 2017. https://solarcoin.org/

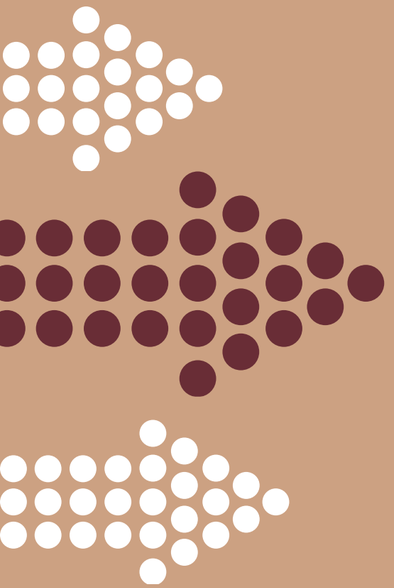
Toxopeus, H., Achterberg, E. and Polzin, F., 2016. A Banker's Perspective on (sustainable) Business Models. UNEP Inquiry, 2016. FinTech and sustainable development, Assessing the implications. December 2016.

UNEP Inquiry FinTech GreenInvest paper, 2017. FinTech, Green Finance and Developing Countries

Wharton, 2017. Why Impact Investing Has Reached a Tipping Point, 30 may 2017. Quote by Surya Kolluri, managing director for policy and market planning at Merrill Lynch, a subsidiary of Bank of America.

Available at: http://knowledge.wharton.upenn.edu/article/social-impact-investing-interest-manpower-and-money-pour-in/ Accessed on June 5th 2017

i) There are numerous initiatives at the policy level and in the finance sector ranging from the FSB Task Force on Climate-related Financial Disclosures (TCFD), the G20 Study Group on Green Finance, the UN Principles for Responsible Investment etc., as well as the many voluntary initiatives by financial institutions to tackle climate change and other urgent challenges.



CLOSING REMARKS

Update: February 26th 2018

Only during the short review process of this report, the Stockholmer Financial Technology Unicorn “Klarna” confirmed its banking
license on June 19th, 2017. Eight days later Visa has confirmed an 18M Euro investment into Klarna. This investment displays only ONE FinTech venture out of many, which happened after data collection closure for this report.

Depending on the way what is decided to account as a FinTech company, it is nearly rebelling to keep track of the all of the investments within 135+ most unlisted limited liability companies.

In contradiction to traditional financial providers like banks, a majority of FinTech companies remain in private hand and have to disclose a limited amount of information to the public, what makes the comparison demanding.

FinTech disrupts the intellectual-silos in which we have organised our society, regulation, supervision and even academia. Luckily with the growth of the maturity of FinTech companies the available data amount increases. This increase can be explored by academics to further bring a more comprehensive understanding of the causes, effects and correlations that drive FinTech.

It is being said, that even the best sailor, who sails with full speed, will not be successful unless she or he knows what the destination harbour is. It's high time to consider to formulate

a national and regional FinTech Agenda with goals, similar to countries like Singapore. We might decide where we would like our FinTech community to be in 12, 24, 36 months from now both on the national and international level.

As academia provides a more historical view and explores the causalities, correlations and effects of FinTech our Center for Strategy and Competitiveness at SSE will continue to explore and provide further insights into the Swedish FinTech scene with upcoming books and publications.

In the next column, we named just a few of the projects that have been recently released or will be launched within the next six months:

- Report: "Next Wave of FinTech" focusing on InsurTech and RegTech has been released in 12.2017 (here)
- Book: Accounts of Disruption from Sweden and Beyond, published by Routledge will feature 20+ chapters and provide insights into the geography of crowdfunding, data tracing or usage of Blockchain. The book with open access is expected by March 14th 2018

- Exploration of Equity Crowdfunding, its investors, valuations, users and intrinsic and extrinsic motivation expected to be started in January 2018.
- The launch of potential pilot workshops for the Stockholm FinTech Hub by SSE Executive Education has been scheduled for March 2nd, 2018.

#ACKNOWLEDGEMENTS

I am honoured to have received such extensive support from all those who provided me with the opportunity to complete this report.

A special gratitude for the continued assistance and financial support is being directed to the team of Invest Stockholm, in particular, Torbjörn Bengtsson, Negar Sabaghzadeh and Erik Hellsing.

I am particularly grateful for the extensive input and proactive knowledge exchange from Matthew Argent, Lan-Ling Fredell, Howard Riminton, Magnus Krusberg and Margareta Kowalska. Assistance provided by Adam Strandberg in designing the visualisation of Primary-FinTech companies was invaluable

Furthermore, I would also like to acknowledge, with much appreciation, the crucial role of David Ban, Rachael Ahn and Natalia Wielogorska for the extensive scope of data collection, in particular long, manual reviews of Linkedin profiles.

There is a high level of indebtedness for Dylan Boot, for his suggestions and hard work on the proofreading and editing.

Finally, I wish to recognise both Richard Wahlund and Örjan Solvell from the Stockholm School of Economics for supporting my doctoral studies, and last, but not least, Robin Teigland for setting the bar high and the continuous encouragement.

APPENDIX 1

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

BLURRY LINES OF FINTECH

#OPENING THE PANDORAS BOX OF CORE-FINTECH CATEGORISATION - USED MODEL

Model of the Zone of Proximal Development (ZPD), (Daniels, Colek, Vertusch, 2007), which has been popularized by the psychologist Lev Vygotsky (1896–1934). This model has attracted attention from psychologists and educators. Vygotsky's main idea was to place the “learner” (in his example: a child) at the centre of the circle. In the visualisation used for FinTech, the learner has been replaced with the “user.” He argued that the learner cannot reach the outskirts of the circle without the support of a teacher or a guide. he “learner” (in his example: a child) at the centre of the circle. In the visualisation used for FinTech, the learner has been replaced with the “user.”

the argued that the learner cannot reach the outskirts of the circle without the support of a teacher or a guide. In his assumption, some tasks were too difficult to achieve for the average user alone. However, they could be mastered with the guidance and assistance of adults or more skilled, usually older children (Hook, Watts, 2002; 195). In the adoption of this model, we argue that FinTech companies that perform back-end services are only visible with the support of companies facing the user with front-end services. These companies are the “guide” that helps the user to reach the outskirts of FinTech services, which are in the ZPD between the user and back-end companies.

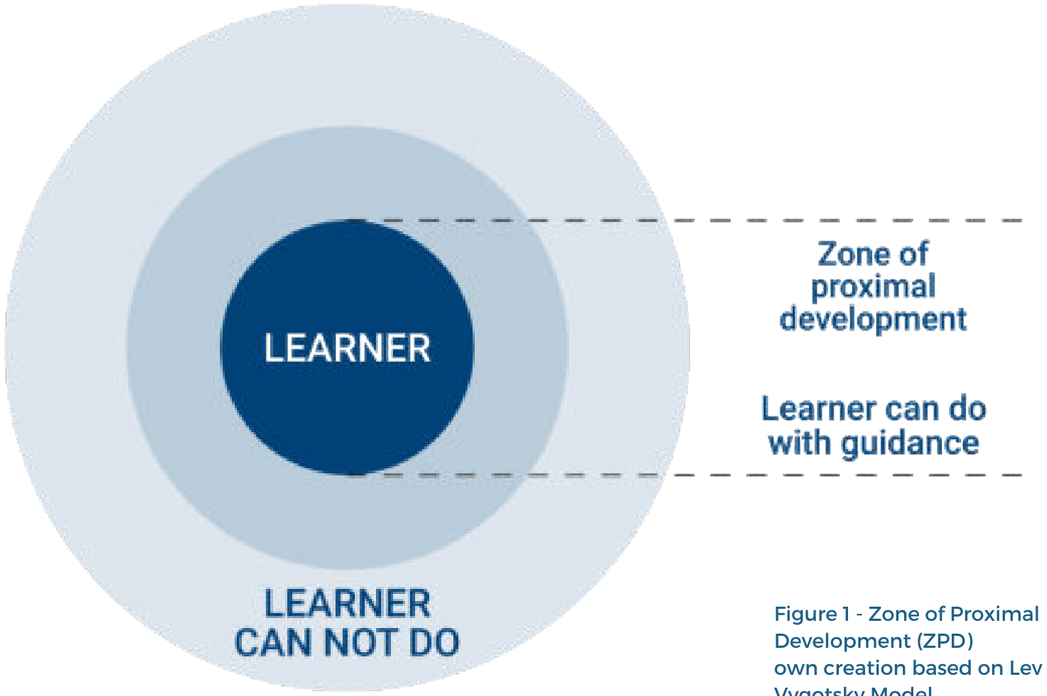


Figure 1 - Zone of Proximal Development (ZPD)
own creation based on Lev Vygotsky Model

It has been decided to move one step further and incorporate aspects of another model used in psychology: **Bronfenbrenner's Bioecological Model.**
This model studied a development within a particular environment in which users (in his example again, children) live. Bronfenbrenner argued that interactions determine specific health outcomes and that a well-established cooperation can benefit the entire environment (Freudenberg, Klitzman, 2002; 65). The Bronfenbrenner Model claimed that the borders between different parties are blurry. The blurriness between different players is visible as well in the FinTech environment as many companies tend to offer more than one type of solution and influence each other with multiple services. Additionally, this model introduces the proximal process to the structure.

In his model, Bronfenbrenner specifies four layers surrounding the environment of the child, or in the case of FinTech, the user:
 # Microsystem - Closest layer surrounding a user, the user's family, or in the context of the FinTech model, companies that interact with the user directly.
#Mesosystem - More distant aspects of the child: family friends, mass media, extended family, or in the FinTech context those that mostly provide background services rarely visible to the user.
#Exosystem - Identified as a broad ideology, laws and customers of one's culture, social class. Translated into our FinTech model, enterprises that perform back-end services or supply the infrastructure but are not visible to the user.
#Macrosystem - Broader cultural values and resources from public authorities.

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Additionally, this model introduces the proximal process to the structure.

As argued previously, FinTech companies do not necessarily provide new services but rather focus on providing them more efficiently. The subcategories of FinTech have been kept as close as possible to the services provided by banks.

The categorisation mostly overlaps in both the corporate and individual circles. However, similar to traditional banking, some categories (like clearing technology or hedging) have been reserved for corporate customers only.

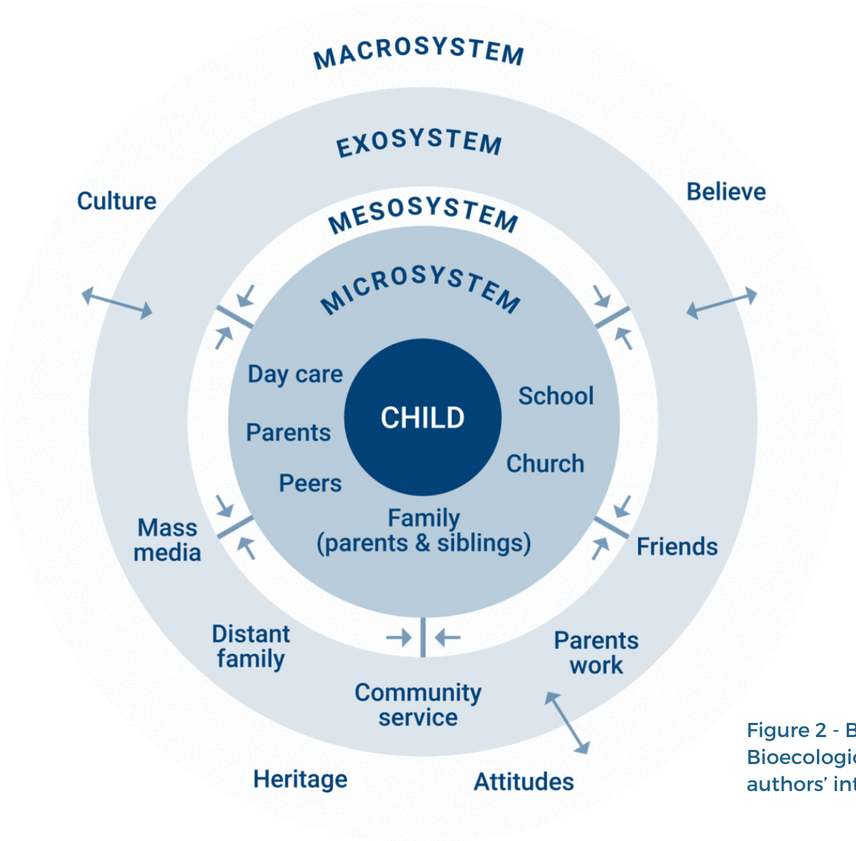

Figure 2 - Bronfenbrenner's Bioecological Model, authors' interpretation

APPENDIX 2

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

BLURRY LINES OF FINTECH

TAXONOMY OF THE SUBSECTIONS OF FINTECH

FinTech companies conducting Business-to-Consumer, Consumer-to-Business, and Consumer to Consumer business are placed in this category.

WEALTH & CASH MANAGEMENT

- **Crowdfunding Equity** – investments in equity via a crowdfunding platform
- **Crowdfunding Debt Investment** – investments in a loan product via a crowdfunding platform Execution only – services introduced by a financial regulator that describe the sales process in which the individual chooses to propose a specific instrument without advice
- **Investment Advisory** – registered brokers in investment products
- **Market Place** – type of a platform with products, services, or technology from third service providers
- **Private Equity** – publicly traded equity and debt securities in operating enterprises
- **Robo-Advisory** – type of financial advisory with minimal human intervention that provides digital financial advisory based on mathematical algorithms
- **Savings Accounts** – accounts that are bearing interest

CAPITAL DEBT & EQUITY

- **Broker** – registered adviser and arranger of capital services in debt and equity

- **Consumer Lending** – debt capital seeking products for individuals
- **Crowdfunding** – reward and donation capital seeking products for individuals without a legal entity
- **Mortgage Lending** – products supporting or facilitation real estate lending
- **Savings Accounts** – accounts that are bearing interest

PAYMENTS & TRANSFERS

- **Bill Payment** – support in payments of liabilities, e.g. bills, invoices
- **Cryptocurrency** – exchange, storage and transfers of cryptocurrencies
- **Domestic Transfer** – domestic monetary transfers in various currencies
- **International Transfer** – international monetary transfers and remittances in various currencies
- **Transaction Accounts** – escrow, checking, transaction accounts; similar to a bank account

INSURTECH (INSTECH)

- **Crowdfunding** – allows the crowd join in an insurance project and insure each other
- **Customer Acquisition** – services as an additional sales channel that provides different rates for insurance providers
- **Disability Insurance** – protecting from a physical or mental condition that limits a person's movements, senses or activities
- **Health Insurance** – covers costs of medical care
- **Insurance Brokerage/Advisory** – advises users on offers from insurance providers
- **Life Insurance** – protects against financial loss which results from premature death
- **Property and Casualty Insurance** – covers legal liability costs of property and casualty, for example car and house insurance
- **Long-Term Care Insurance** – covers costs of long-term care not covered by health insurance or public insurance

WEALTH AND CASH MANAGEMENT

- **Debt Collection** – services collecting and purchasing accounts receivable
- **Factoring/Invoice Trading** – services managing debt owned by others
- **Forex (FX)** – currency trading services
- **Investment Management** – services to achieve a particular investment goal, connected with the purchase or selling of investments in a particular portfolio
- **Liquidity Management** – services to limit the risks between the cash on hand and outstanding accounts payable
- **Portfolio Management** – passive investments into an umbrella of securities in a portfolio with the goal to receive a certain rate of return
- **Risk Management** – services that identify, manage, and control threats to earnings
- **Savings** – allows corporate partners to optimise savings

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- **Secondary Market Equity** – buying and selling established investments in equity
- **Trade Finance** – services to invest in specific investments such as debt and issuing letters of credit

CAPITAL DEBT AND EQUITY

- **Consumer Acquisition** – offers additional channels to acquire new customers
- **Corporate Finance** – increases shareholder value and supports the improvement of the capital structure
- **Real Estate Crowdfunding** – financing real estate projects with the support of the crowd
- **Crowdfunding Debt** – funding with a debt investment from the crowd
- **Crowdfunding Equity** – funding with an equity investment from the crowd
- **Primary Market Equity** – funding into primary equity of companies

PAYMENTS & TRANSFERS

- **Accounts payable** – services in the area of outstanding liabilities to the clients
- **Accounts receivable** – provides services in the area of outstanding liabilities of clients
- **Customer Acquisition** – offers additional channels to acquire new customers for payments and transfer services
- **Payment Method** – type of compensation that is accepted by the buyer and seller in a transaction
- **Payment Service Provider** – services for accepting a range of payment methods
- **Technology** - services in the field of payment and transfers technology
- **Transaction Accounts** - escrow, checking, transaction accounts, similar to a bank account

INSURTECH (INSTECH)

- **Crowdfunding** – allows customers to join in an insurance project and insure each other
- **Customer Acquisition** – services as an additional sales channel
- **isability Insurance** – protecting users from the hardship of a physical or mental condition that limits a person's movements, senses or activities
- **Health Insurance** – services covering the costs of medical care
- **Insurance Brokerage/Advisory** – advises users on offers from insurance providers
- **Life Insurance** – protects against financial loss, which results from premature death
- **Property and Casualty Insurance** – covers legal liability costs of property and casualty, e.g. car and house insurance
- **Long-Term Care Insurance** – covers costs of long-term care not covered by health insurance or public insurance

INDIVIDUAL FACING CIRCLE:

A mapping of individual facing circle FinTech companies reveals a nearly equal spread of FinTech companies across the different segments. However, this distribution clearly demonstrates that a high number of companies are active mostly in consumer to business and less in consumer to consumer.

#Payments and Transfers – companies exclusively focusing on the interaction between business and consumers primarily in Bill Payment and Domestic Transfers. International transfers and consumer to consumer payments have not reached their potential yet.

#Insurtech – A relatively new area with companies concentrating on brokerage and insurance advisory. One company Teambrella offers blockchain based insurance crowdfunding services, which are relatively hard to categorize. • Capital Debt and Equity – companies active in the field of consumer lending and brokerage

#Wealth and Cash Management – Execution only and Market-spaces remain relatively free from Stockholmer FinTech involvement, with savings accounts and equity crowdfunding remaining on the most active side of the individual facing circle.

CORPORATE FACING CIRCLE

Corporate facing circle: the services provided by FinTech companies for other legal entities with the focus on SME's enterprizes. We notice concentration of FinTech companies in Payments & Transfers, Wealth Management and Customer Acquisition for both Insurance, Wealth and Cash Management. Companies can be divided into four main areas of FinTech.

#Trading and Exchange - according to this initial review, there are only two players active in the business to business field, Cryex and Cinnober

#Capital, Debt and Equity – companies in this area remain clearly in the category of consumer acquisition and crowdfunding. All of the crowdfunding companies, regardless of the type, offer services for both businesses to business and business to consumers.

#Payment and Transfers - these are clearly situated in the technology area, mostly in the accounts payable or accounts receivable sections

#Wealth and Cash Management – there is an explicit concentration in Investment Management

APPENDIX 3

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

SHOPPING FOR STOCKHOLMER FINTECH

SIZE OF EMPLOYMENT HAS BEEN RETRIEVED FROM FOLLOWING COMPANIES

Accumulate
Advisa AB
Aidough AB
Algoritmica
Aliopass Scandinavia AB
Aphelion
Archib Venture Advisers AB
Asteria AB
Babs Payling AB
Baymarkets Technology AB
BehavioSec Inc. (Swedish Reg. Behaviometrics AB)
Betalo AB
Billecta AB
Billhop AB
Billogram AB
BlueAccess AB
Bokoredo AB
Captor Investment Management AB

- Chainvine
- ChromaWay AB
- Cinnober Financial Technology AB
- CMA Small Systems AB
- MittBolan.se (Compricer AB)
- Consector AB
- Cookey
- Cool Company Skandinavien AB
- Co-owning Sweden AB
- Cryex Group AB
- CryptoWell
- Depos AB
- DIBS Payment Services AB
- Digital Portfolio Control AB
- Dooer AB
- Dreams Nordic AB
- Driv AB
- Egreement AB
- Electronic Parking
- Emric AB

Tnetwork AB - Kwick
Expensia AB
Crowdculture (initiative of Fabel Kommunikation AB)
Fakturino Sverige AB
Fidendum
Fidesmo AB
Trusted Journal
Financial Tech Sweden AB
Finansiell ID-Teknik BID AB (Bank ID)
FundedByMe Crowdfunding Sweden AB
Funder Sweden AB
Primepilot AB
Försäkringsarkivet Nordiska AB
Gimi
Veckopengen (app made by Gimi AB)
Give AB
Global Fund Watch GFW AB
Goobit AB
Greater Than Svenska AB
HappyX AB
EXCLUDED: Helpline AB
Bolånegruppen
Identitrade AB
Inkassogram
Insplanet
Instantor AB
Insurance Simplified Europe AB
Insurello
CameronTec Group (Itiviti AB)
Itransa / Joosanihandel ab
iZettle AB
Kaching AB
Kameo AB
Kaptena Sverige AB
Klarna Bank AB
Klirr

Kortio AB
LeaseOnline Sweden AB
Leasify AB
Lendify AB
Lendo AB
Lenovium AB
LoanWallet (Lenovium AB)
Lidodevelopment
Limina Financial Systems AB
Qvitoo (Logibit AB)
Evolumi (by Lucapps AB)
Lysa AB
Market2Member
Meniga
Bima Mobile (MILVIK AB)
Mitigram AB
Modular Finance AB
Mondido Payments AB
Mopper
- Neonet Securities AB
Norbloc AB
Nordkap AB
Northbricks
NOWO (Resurs bank)
Opti (Optise AB)
Optise AB
Pantor Engineering
Payair Technologies AB
Payer Financial Services AB
PayGround
Payson AB
PE Accounting Sweden AB
PEI Development
Pensionera förmedling i Sverige AB
Pensiono Life AB
Pensionskraft Medlemsservice Sverige AB
Pepins Group AB

Phenix ID
Prello Group AB
Privasee
Project Cosimo
PunktB
Qapital Insight AB
Qliro AB
Red flag AB
RQ Group AB
Safello AB
Savelend Sweden AB
SAVR AB
Sciety AB
Scrive AB
Shareville AB
Sharpfin AB
Mr Shoebox (Shoebox Solutions AB)
Sigmastocks
Lånbyte i Sverige AB
Sitoo AB

Slipp AB
SoftRobot
Sparlån Sverige AB
Speed Ventures
SplitEx AB
Splitgrid AB
Stockaboo
Stockholm FinTech Hub
stoEr AB
Swiftcourt
Swish
Trivec T&V Holding AB
Target Aid AB
Teambrella
Tessin Nordic AB
Tieless AB
Tink AB
Toborrow AB
TOView FinanceSystem AB
TradeVenue
TradingSolutions Sverige
TransferGalaxy AB
TriOptima AB
Trustly AB
Trustweaver AB
Wrapp Operations Sweden AB
XBT Provider
Zenconomy AB
Zignsec AB

APPENDIX 4

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

SHOPPING FOR STOCKHOLMER FINTECH

OPERATING REVENUE HAS BEEN RETRIEVED FROM FOLLOWING COMPANIES

- Accumulate
- Advisa AB
- Aidough AB
- Algoritmica
- Aliopass Scandinavia AB
- Aphelion
- Archib Venture Advisers AB
- Asteria AB
- Babs Payling AB
- Baymarkets Technology AB
- BehavioSec Inc. (Swedish Reg. Behaviometrics AB)
- Betalo AB
- Billecta AB
- Billhop AB
- Billogram AB
- BlueAccess AB
- Bokoredo AB
- Captor Investment Management AB

Chainvine
ChromaWay AB
Cinnober Financial Technology AB
CMA Small Systems AB
MittBolan.se (Compricer AB)
Consector AB
Cookey
Cool Company Skandinavien AB
Co-owning Sweden AB
Cryex Group AB
CryptoWell
Depos AB
DIBS Payment Services AB
Digital Portfolio Control AB
Dooer AB
Dreams Nordic AB
Driv AB
Egreement AB
Electronic Parking

- Emric AB
- Etnetwork AB - Kwick
- Expensia AB
- Crowdculture (initiative of Fabel Kommunikation AB)
- Fakturino Sverige AB
- Fidendum
- Fidesmo AB
- Trusted Journal
- Financial Tech Sweden AB
- Finansiell ID-Teknik BID AB (Bank ID)
- FundedByMe Crowdfunding Sweden AB
- Funder Sweden AB
- Primepilot AB
- Försäkringsarkivet Nordiska AB
- Gimi
- Veckopengen (app made by Gimi AB)

Give AB
Global Fund Watch GFW AB
Goobit AB
Greater Than Svenska AB
HappyX AB
EXCLUDED: Helpline AB
Bolånegruppen
Identitrade AB
Inkassogram
Insplanet
Instantor AB
Insurance Simplified Europe AB
Insurello
CameronTec Group (Itiviti AB)
Itransa / Joosanihandel ab
iZettle AB
Kaching AB
Kameo AB
Kaptena Sverige AB
Klarna Bank AB

Klirr
Kortio AB
LeaseOnline Sweden AB
Leasify AB
Lendify AB
Lendo AB
Lenovium AB
LoanWallet (Lenovium AB)
Lidodevelopment
Limina Financial Systems AB
Qvitoo (Logibit AB)
Evolumi (by Lucapps AB)
Lysa AB
Market2Member
Meniga
Bima Mobile (MILVIK AB)
Mitigram AB
Modular Finance AB
Mondido Payments AB
Mopper

Neonet Securities AB
Norbloc AB
Nordkap AB
Northbricks
NOWO (Resurs bank)
Opti (Optise AB)
Optise AB
Pantor Engineering
Payair Technologies AB
Payer Financial Services AB
PayGround
Payson AB
PE Accounting Sweden AB
PEI Development
Pensionera förmedling i Sverige AB
Pensiono Life AB
Pensionskraft Medlemsservice Sverige AB
Pepins Group AB
Phenix ID

- Prello Group AB
  Privasee
  Project Cosimo
  PunktB
  Qapital Insight AB
  Qliro AB
  Red flag AB
  RQ Group AB
  Safello AB
  Savelend Sweden AB
  SAVR AB
  Sciety AB
  Scrive AB
  Shareville AB
  Sharpfin AB
  Mr Shoebox (Shoebox Solutions AB)
  Sigmastocks
  Lånbyte i Sverige AB
  Sitoo AB
  Slipp AB
  SoftRobot
  Sparlån Sverige AB
  Speed Ventures
  SplitEx AB
  Splitgrid AB
  Stockaboo
  Stockholm FinTech Hub
  stoEr AB
  Swiftcourt
  Swish
  Trivec T&V Holding AB
  Target Aid AB
  Teambrella
  Tessin Nordic AB
  Tieless AB
  Tink AB
  Toborrow AB
  TOView FinanceSystem AB
  TradeVenue
  TradingSolutions Sverige

TransferGalaxy AB
TriOptima AB
Trustly AB
Trustweaver AB
Wrapp Operations Sweden AB
XBT Provider
Zenconomy AB

APPENDIX 5

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

SHOPPING FOR STOCKHOLMER FINTECH

INVESTMENT DATA BETWEEN 2005.01.01 UNTIL 2017.05.11 HAS BEEN ABLE TO BE RETRIEVED FROM FOLLOWING COMPANIES

- Akredo
- Alnair AB
- Benchtell AB
- Betalo
- Betalo
- Betalo
- BetterWealth
- Billhop
- Bima Mobile
- Bokio
- Bokoredo
- Bokoredo
- Bolånegruppen
- Bricknode AB
- Capcito
- Century Analytics
- ChromaWay
- Covr Security
- Cryex Group
- Dooer
- Dreams
- Driv Redovisning
- Egreement
- ETNetwork - Kwick
- Evolumi
- Försäkringsarkivet
- Fidesmo
- FundedByMe
- Funder
- Gimi AB
- Greater Than
- Happy X
- Hemsiten.se
- Identitrade
- Inkassogram
- Insplanet
- Insurance Simplified
- iZettle
- Kaching
- Kameo

- Klarna
KNC Miner
Kollektiva
Länbyte
Leaseonline
Leaseonline
Leasify
Lendify
Lenovium
Limina Financial Systems
LoanWallet
Lysa
Market2Member
MarQts
Metafore
Minatjä¤nster.se
Mitigram
Moank
Mobill Scandinavia
Modular Finance
Mondido
Monetise
Mr Shoebox
Nordkap
NOWO
Onslip
OpenSolution
Pagero
Paydrive AB
PE Accounting
Pensionera
Pensiono.se
Pepins Group AB
Primepilot AB
Qapital
Red Flag
Savelend Sweden AB
SAVR
Sciety
Scrive
Sharpfin AB
Sigmastocks

Slipp
Splitgrid AB
Stabelo
Stabelo
stoEr
Swiftcourt
Tessin
Tink
Toborrow
TransferGalaxy
TRINE
Trivec T&V Holding AB
Trustly
ValueQard
Veckopengen
Wint
Wrapp
Wrebit
ZaverSoftRobot
Sparlån Sverige AB
Speed Ventures
SplitEx AB
Splitgrid AB
Stockaboo
Stockholm FinTech Hub
stoEr AB
Swiftcourt
Swish
Trivec T&V Holding AB
Target Aid AB
Teambrella
Tessin Nordic AB
Tieless AB
Tink AB
Toborrow AB
TOView FinanceSystem AB
TradeVenue
TradingSolutions Sverige

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

BLURRY LINES OF FINTECH

#OPENING THE PANDORAS BOX OF PRIMARY-FINTECH CATEGORISATION - LIST OF 128 PROPOSED PRIMARY FINTECH COMPANIES

- Abonea
  Accumulate
  AdvaaH
  Advisa AB
  Aidough AB
  Airfill Prepaid AB (Bitrefill)
  Akredo
  Algoritmica
  Aliopass Scandinavia AB
  Aphelion
  Asteria AB
  Babs Payling AB
  Bambora AB
  Baymarkets Technology AB
  Betalo AB
  Billecta AB
  Billhop AB
  Billogram AB
  Bima Mobile (MILVIK AB)
  BlueAccess AB
  BTCX
  CameronTec Group (Itiviti AB)
  Capcito Finance AB
  Capin Solutions AB
  Captor Investment Management AB
  CFinanceAB
  Chainvine
  Chipper Cash
  ChromaWay AB
  Cinnober Financial Technology AB
  Co-owning Sweden AB
  Consector AB
  Creditstar Sweden AB
  Crowdculture (initiative of Fabel Kommunikation AB)
  Cryex Group AB
  DBT Capital
  Depos AB
  DIBS Payment Services AB
  Dooer AB
  Dreams Nordic AB
  Ecster AB

- Fakturino Sverige AB
  Fidesmo AB
  Finansvalpen
  Finevate
  Försäkringsarkivet Nordiska AB
  Froda (Monetise Capital AB)
  FundedByMe Crowdfunding Sweden AB
  Funder Sweden AB
  Goobit AB
  Greater Than Svenska AB
  HIPS AB
  Identitrade AB
  Insplanet
  Insurance Simplified Europe AB
  Itransa / Joosanihandel ab
- Itello
  iZettle AB
  Kaching AB
  Kameo AB
  Klarna Bank AB
  Kortio AB
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  LeaseOnline Sweden AB
  Leasify AB
  Lendify AB
  Lendo AB
  Limina Financial Systems AB
  LoanWallet (Lenovium AB)
  Lysa AB
  MARQTS.com (by Groapp AB)
  Metafore AB
  Mitigram AB
  MittBolan.se (Compricer AB)
  Moank AB
  Modular Finance AB
  Mondido Payments AB
  Monetise Capital AB
  Näktergal Finance
  Nordkap AB
  Nordnet AB
  Northbricks
  Northmill AB
  NOWO (Resurs bank)
  Opti (Optise AB)
  Pantor Engineering
  Payair Technologies AB
  Paydrive AB
  Payer Financial Services AB
  PayEx Customer Care
  PayGround
  Payson AB
  Pensionera förmedling i Sverige AB
  Pensiono Life AB
  Pensionskraft Medlemsservice Sverige AB
  Pepins Group AB
  Prello Group AB
  Primepilot AB
  Qapital Insight AB
  Qliro AB
  Relenda AB
  S&A Sverige AB
  Safello AB
  SAVR AB
  Sciety AB
  Sitoo AB
  Sparlån Sverige AB
  SplitEx AB
  stoEr AB
  Swish
  Target Aid AB
  Teambrella
  Tessin Nordic AB
  Tieless AB
  TikkR (at Nordea Startup Accelerator)
  Tink AB
  Toborrow AB
  TransferGalaxy AB
  Trioptima
  Trivec T&V Holding AB
  Trustly AB
  Vaulted Payments AB
  Veckopengen (app made by Gimi AB)
  Waizer

- Wrapp Operations Sweden
- WyWallet
- XBT Provider
- Zimpler AB

APPENDIX 7

#SECONDARY FINTECH

#HUBBING
ECOSYSTEM
REGULATION
TALENTFLOW

BLURRY LINES OF FINTECH

#OPENING THE PANDORAS BOX OF PRIMARY-FINTECH CATEGORISATION - LIST OF 128 PROPOSED PRIMARY FINTECH COMPANIES

AidHedge
- Archib Venture Advisers AB
- Asedo Fintech AB (beta)
- Bank ID
- BehavioSec Inc. (Swedish Reg. Behaviometrics AB)
- Bokoredo AB
- BonumID
- Bolånegruppen
- Börshajen Sverige AB
- CMA Small Systems AB
- Cool Company Skandinavien AB
- Core.Tech.Chain
- CryptoWell
- Digital Portfolio Control AB
- Egreement AB
- Etnetwork AB - Kwick
- Financial Tech Sweden AB
- Finansiell ID-Teknik BID AB (Bank ID)
- FinTech Partner International
- Fractal Labs Ltd
- Global Fund Watch GFW AB
- HappyX AB
- Hemsiten.se
- Hiveonline
- Inkassogram
- Insurello
- Kaptena Sverige AB
- Klirr
- Lånbyte i Sverige AB
- Luna Way
- Market2Member
- Mr Shoebox (Shoebox Solutions AB)
- Norbloc AB
- Nordea Accelerator
- OMX Technology
- Orc Group AB (https://www.itiviti.com/)
- PE Accounting Sweden AB
- Phenix ID
- Prello Group AB
- Privasee

- Project Cosimo
- Qvitoo (Logibit AB)
- Red flag AB
- Scrive AB
- Shareville AB
- Sharpfin AB
- Sigmastock
- Sitoo AB
- Slipp AB
- Smartförsäkring
- Stockaboo
- Stockholm FinTech Hub
- Stockholm Green Digital Finance
- TradingSolutions Sverige
- TransferGalaxy AB
- TriOptima
- Trustweaver AB
- Vertex GRC
- XMLdation Oy
- Zignsec AB