

Stockholm FinTech

An overview of the FinTech sector
in the greater Stockholm Region

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Introduction

FinTech, a contraction of Financial Technology, has become an increasingly “hot” sector among policy makers and investors across the globe. This growing sector has attracted investments at an estimated USD 12.2 billion globally in 2014 as well as interest in a number of regional hubs: Silicon Valley, New York, London, Stockholm, and Australia. Stockholm, similar to many other regional financial hubs, has seen considerable investment and activity in this sector. For example, in 2014 alone 15 FinTech deals attracted USD 266 million in investments, accounting for a remarkable 18 percent of the total USD 1.5 billion FinTech investments across Europe, as well as 32 percent of Sweden’s total USD 826 million in investments in private companies. Furthermore, looking historically across the EU, Stockholm comprises 18.3 percent of the past five year and 15.9 percent of the past 11 year (as far back as there are accessible statistics) total EU FinTech investments, putting Stockholm as the second highest funded city in the EU in the past 10 years, second only to London and solidly ahead of the third place city Amsterdam. This report looks into this activity and paints a picture of the FinTech investments and activities in the Stockholm region during the past five years and discusses some of the drivers and limitations in this burgeoning sector.

History of FinTech in Stockholm

The tech environment in Sweden and Stockholm has historically been very successful, and many of Sweden's largest companies today are the result of technological innovations that have developed over time. Examples of such inventions are dynamite by Alfred Nobel leading to the establishment of the Nobel Prizes, the self-aligning ball bearing that created Svenska Kullagerfabriken (SKF), the gas fueled lighthouse that created the AGA gas company and the packaging solution that created Tetra Pak. Indeed, Sweden is known for its industrial and manufacturing innovations.

Until 1985 Swedish laws and regulations surrounding the finance market limited the degrees of freedom to invent new products and solutions. However, in the early 1980s Sweden experienced a very high inflation rate - between 2.5 and 6 percent higher than in other European countries, and high levels of household indebtedness.¹ This, together with the growth of an active money market in certificates of deposit and Treasury Bills in the early 1980s, drove a call for deregulation in Sweden, culminating in the removal of liquidity ratios for banks in 1983, the lifting of interest ceilings in the spring of 1985, and finally the lifting of lending ceilings for banks and placement requirements for insurance companies in November 1985.²

Following this, Optionsmäklarna (OM) was created in 1984. Not only was OM the first options exchange in Sweden but also the first exchange ever to enable remote trading and one of the first electronic exchanges globally. The initial innovative approach taken by OM set the stage for a first wave of companies specializing in software for electronic trading

¹ Englund, P. 1999. The Swedish banking crisis: Roots and consequences, *Oxford Review of Economic Policy*, 15 (3).

² Englund, P. Supra.

such as Cinnober and Front, companies that we would now call FinTech today.

The deregulation in the mid-1980s also led to a massive credit expansion in Sweden, which culminated in another financial crisis just five years later. This coincided with a housing market crash, with prices in downtown Stockholm dropping by 35 percent in 1991, and a currency crisis.³ These multiple crises led to two financial outcomes. First the banks experienced substantial liquidity problems, notably the state-run bank Nordbanken, into which the Swedish state injected more capital, and the floundering Första Sparbanken, for which the Swedish state provided a guarantee. Assets from these and other state-supported financial actors were then divested in the mid-1990s. Second, the Swedish currency was actively devalued. Recovery in the mid-1990s was largely driven by Swedish exports, and the ICT sector in the country began to grow - driven largely by Foreign Direct Investment (FDI).⁴

At the same time, in the late 1980s, personal computers started to spread in Sweden. This spread of personal computers was particularly strong as Sweden is a country of early adopters and the Swedish government in the 1990s provided tax subsidies for purchases of personal computers⁵. The penetration of computers in Swedish households grew from 28 percent in 1995 to 76 percent in 2000, thereby creating considerable computer experience among the population⁶. Furthermore, during the late 1990s and early 2000s, Sweden had a rapid expansion of its Internet infrastructure, which led to Sweden having the world's third highest Internet penetration by 2013⁷ and the fourth highest smartphone penetration, ahead of the UK and US.⁸

These deregulated financial markets, together with FDI, the expansion of the ICT sector, and high Internet and smartphone penetration, have created an advantageous climate for FinTech businesses in Stockholm, as evidenced by examples such as Klarna and iZettle as well as by

³ Englund, P. Supra.

⁴ Jonung, L., Kiander, J., & Vartia, P.. 2008. The great financial crisis in Finland and Sweden: The dynamics of boom, bust and recovery, 1985-2000. Available online at: http://ec.europa.eu/economy_finance/publications/publication13551_en.pdf

⁵ Steen, R. 2002. Persondatorer - En utvärdering av arbetsmarknadseffekter. Available online at: http://www.itkommissionen.se/dynamaster/file_archive/020702/efa62b27bc3b27ab04e0fa1db5e429fa/hempcrappport.pdf

⁶ Statistiska kontoret. 2000, Internet och datoranvändning i Sverige år 2000. Available online at: <http://www.statistiska.se/upload/Publikationer/2001/200128.pdf>

⁷ International Telecommunications Union, Percentage of Individuals using the Internet, accessed: 2015-03-25 Available online at: http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/Individuals_Internet_2000-2012.xls

⁸ <http://blogs.wsj.com/tech-europe/2013/05/29/europe-tops-global-smartphone-penetration/>

Nordnet and Avanza, which are competitors to the traditional banks. History reveals thus not only a development of the technology prerequisites but also of the market possibilities in the financial market, and these combined have paved the way for strong future development of FinTech in Stockholm and Sweden. For more historical data see figure 1.

Stockholm's recent history as both a Finance and an IT hub has included a number of high profile exits in the form of IPOs, acquisitions, and buy-outs. For example, one of the most well-known IT acquisitions was the acquisition of database software developer MySQL by Sun Microsystems for USD 1 billion in January 2008, of which USD 800 million was in cash. In the Finance industry, OM, which later became OMX, merged with US-based exchange Nasdaq in 2008, which paid USD 3.7 billion to form the Nasdaq OMX group. This large deal included the OMX Exchanges in the Nordic and Baltic countries and OMX Technology, the division responsible for creating the backend systems for many global exchanges.

Another well-known deal was the IPO of Avanza, an online trading platform founded in 1999, when it was listed on the Stockholm Stock Exchange in 2003. By the end of 2003 Avanza's value had risen to approximately SEK 11 billion (USD 1.5 billion at December 2003 exchange rates). Neonet, an electronic equity exchange founded in 1996,

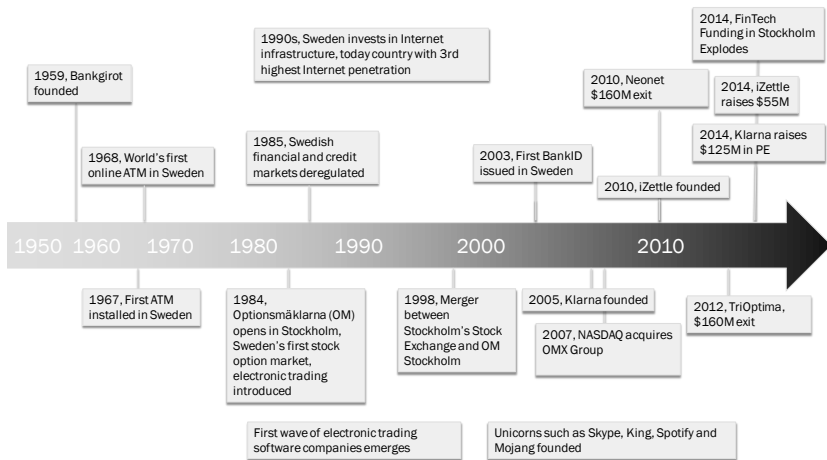


Figure 1. Important historical events related to FinTech in Stockholm

was listed on the Stockholm Stock Exchange in 2000, and in 2010 it was delisted and purchased for USD 17.7 million by the Orc Group. In February 2012, the Orc Group was then acquired by the private equity firm Nordic Capital for USD 290 million, and a decision was made to split the Orc Group into three independent companies: Orc, Neonet, and CameronTec. Tbricks, an app-based trading platform for market makers, proprietary traders and banks was then acquired by Orc in 2015 for an undisclosed amount.

More than 30 years ago some of the banks started to integrate IT with marketing operations. While this created internal competition as the new technology (telephone banking, credit cards, terminals for corporate customers, and then Internet banking) competed with the old technology and organizational structure (branch offices), it also helped create a culture to foster innovation and bring it to the marketplace. Today, the same tradeoff between more radical changes and the need to move more slowly to make sure that the whole organization is adapted to new challenges is even more important. But the Swedish banks have learned that it is important to be foresighted and to develop solutions that are anchored in future market needs and not only the technology. Moreover, people are becoming less afraid of expressing their ideas, and they have the competence to handle the internal conflicts that arise when implementing new ideas and changing the ways things are being done.

Jan Dahlin, IT Consultant and Styrelseordförande,
Dataföreningens Servicebolag

The Stockholm area is on the leading edge of financial services development. Don't forget that technology is not everything. You have to have the knowledge to succeed in this globally competitive sector, and Stockholm is at the forefront of knowledge development as it has built up extensive competence during the past 30 years.

Olof Stenhammar, Nasdaq OMX, Founder of OMX

What is FinTech?

FinTech is a difficult “sector” to define. Based on the name, it should be where technology is used in the Finance industry – but this very broad definition, today, encompasses almost the entire Finance industry since every area uses technology in some way: from SWIFT as the basis of the global digital transfer system to retail banks operating digital portals to stock exchanges and clearinghouses. Much of this digitalization is even automated – reducing the risk of human error. Furthermore, there are almost no standardized indices of FinTech investment and activity.

Past research into FinTech has relied overwhelmingly on a definition proffered by Accenture and CB Insights, which defines FinTech companies as “those that offer technologies for banking and corporate finance, capital markets, financial data analytics, payments and personal financial management”.⁹ However, other reports have used different definitions. A Silicon Valley Bank report on London and Global FinTech activity never explicitly defines FinTech but includes those firms that use technology in lending, personal finance, payments, retail investments, institutional investments, equity financing, remittances, consumer banking, financial research and banking infrastructure – a significantly broader definition than that used by Accenture and CB Insights. Still other definitions include both e-commerce and cybersecurity as included in the definition of FinTech.

For simplicity’s sake, we have chosen a definition that would enable us to compare our data with data from other widely cited sources. We have therefore used the Accenture/CB Insights definition of FinTech, *which includes technologies for banking and corporate finance, capital markets, financial data analytics, payments, and personal financial management*, as mentioned above. Although the greater Stockholm region boasts a large number of

⁹ See Skan et al. 2014, The Boom in Global Fintech Investment: A new growth opportunity for London, *Accenture Report*, p15.

e-commerce (including e-commerce backends like Tictail), we have specifically excluded these in this report.

Furthermore, similar to Accenture and CB Insight, our definition includes all private equity and venture capital investments in privately held companies while buyout transactions are excluded from these numbers.

Data Collection

Unsurprisingly, given the fluidity of the definition and the relative newness of FinTech, there was no database from which we could draw to identify FinTech companies in the Stockholm region. Instead, we had to rely on more “organic” methods to source the data. Our first step was to turn to the general public and we began with a presentation of the project to the Stockholm FinTech community, together with an online map that we hoped would help to crowdsource information about FinTech companies. This had limited uptake, unfortunately, but we placed all the firms that we ultimately found onto this map (See figure 2).

Our next step was to delimit the geographic area for which we were to collect data. Although Stockholm is a regional hub for the Finance and Technology industries, there are nevertheless a number of smaller cities in the region that are integral parts of the Stockholm region. We therefore relied on the Stockholm Business Region definition of the “Stockholm Region”, which includes both the county of Stockholm and the municipalities within the Stockholm Business Alliance, notably Uppsala, Katrineholm and Södertälje (figure 3).¹⁰

We then began with a rigorous search of online media and databases, using search terms in both English and Swedish (see Appendix one). From this we identified a number of companies providing technology services in the Finance industry. We also relied on a “snowball” method of inquiry, identifying a number of key actors and asking them how they defined FinTech and to mention some companies that they considered to be FinTech. We then inquired at a number of incubators and co-working spaces in the broader Stockholm region. Lastly, we looked at

¹⁰ "SWE-Map Combo2007CountyBorders" by Lokal_Profil. Licensed under CC BY-SA 2.5 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:SWE-Map_Combo2007CountyBorders.svg#/media/File:SWE-Map_Combo2007CountyBorders.svg

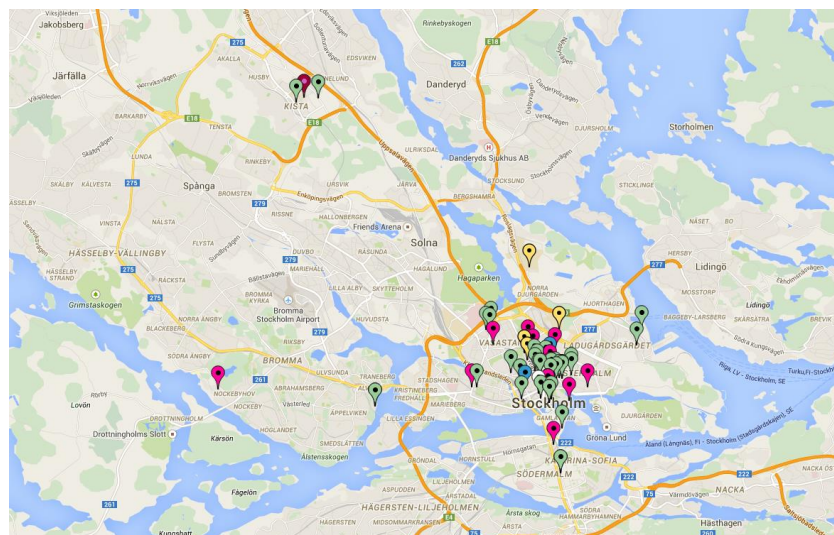


Figure 2. Partially crowdsourced map of the FinTech businesses and supporters in the greater Stockholm region

definitions of FinTech used in other studies, the aim being to make our report's data comparable with other reports on the same sector in other countries. In doing this, we eliminated firms that were obvious outliers that might skew our data, notably e-commerce firms.

The obvious limitation of this mode of firm identification is that it identifies only the companies that are known to investors and/or that have a media presence. However, given that much of the data in this report are around employment and investment, it is precisely these companies that are the largest employers and receive the largest amount of investment. When applicable, we converted all investment data not originally denoted in USD and that were not publically available in USD to USD using the exchange rate on the day of the transaction.

In addition to the above, we also conducted 16 semi-structured interviews with key individuals and organizations in the FinTech sector. Interviewees ranged from individuals who had been active in FinTech since its early days in the 1980s to individuals active today in a number of different organizations, e.g., startups, funding organizations, established businesses (see Appendix three).

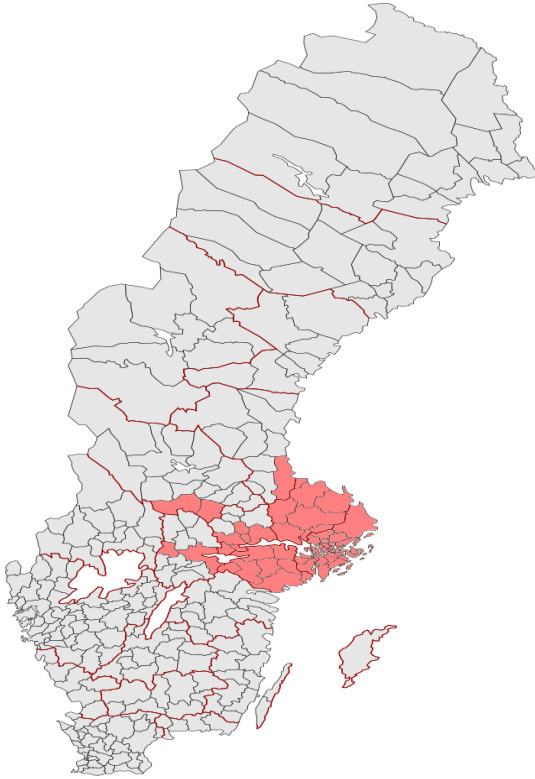


Figure 3. The greater Stockholm Region, as defined by Stockholm's Business Region

Overview of Stockholm’s FinTech Companies

Investments

The year 2014 was a landmark year for investments in Stockholm-based FinTech companies. In total USD 266 million were invested in 15 deals, accounting for 17.9 percent of the total FinTech investments of USD 1.5 billion across Europe.¹¹ The largest five deals accounted for USD 250.3 million with Klarna receiving the “lion’s share” of USD 125 million (table 1).

Firm	Investment USD million
Klarna	125.0
iZettle	55.5
Trustly	28.8
Bima Mobile	22.0
KnCMiner	14.0
Other	15.7
Total	266.0

Table 1. 2014 Investments in Stockholm FinTech

This massive amount of investment in Stockholm FinTech puts it as the third largest city in Europe by 2014 investment volume. Only London’s USD 539¹² million and Amsterdam’s USD 306¹³ million are ahead of

¹¹ Accenture 2014 Report on FinTech

¹² London & Partners

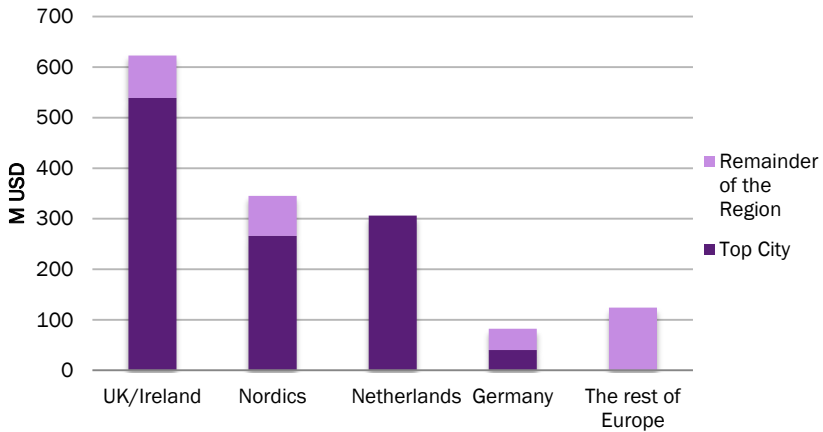


Figure 4. EU FinTech Investments 2014 Totals¹⁴

Stockholm. Germany's total USD 82¹⁵ million trails behind these three leading cities in a distant fourth place (figure 4). More remarkable is that Stockholm's 2014 investment volume alone is half of the past five year total of USD 532 million invested in FinTech in the Stockholm region (figure 5).¹⁶

Looking across the EU historically, Stockholm comprises 18.3 percent of the past five year and 15.9 percent of the past 11 year (as far back as there are accessible statistics) total EU FinTech investments, a very impressive figure for a region the size of Stockholm.¹⁷ These high funding numbers put Stockholm as the second highest funded city in the EU in the past 10 years, second only to London and solidly ahead of the third place city Amsterdam, which did not receive any significant funding until 2014. Analyzing funding concentration, it is clear as illustrated in figure 6 that the payments segment attracts almost all the FinTech investment dollars within Stockholm.

In 2014 FinTech accounted for 32 percent of Sweden's total USD 826 million¹⁸ in investments in private companies, a notable accomplishment for an industry that until recently was not even on the map.

¹³ Accenture 2014 Report on FinTech & SSE research

¹⁴ Total numbers from CB/Accenture, City numbers from London & Partners, and SSE research

¹⁵ Accenture 2014 Report on FinTech

¹⁶ SSE research

¹⁷ Accenture EU totals updated with SSE researched numbers

¹⁸ CB Insights

This is particularly impressive when one realizes that the approximate 4600 FinTech workers¹⁹ in 2014 only represent roughly 0.05 percent of Sweden's entire population²⁰.

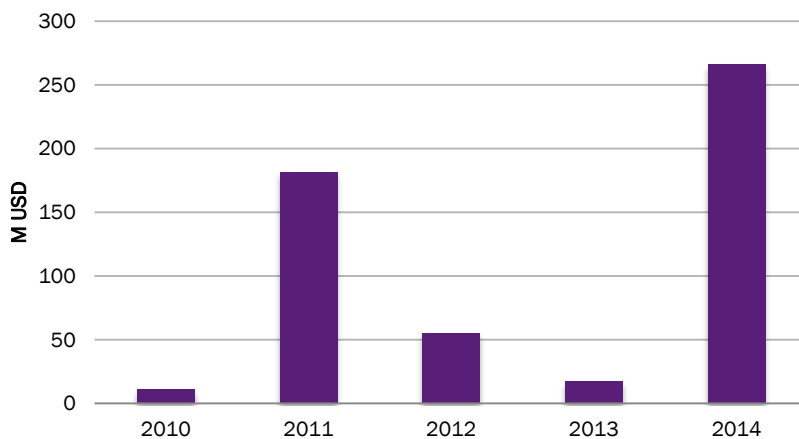


Figure 5. Annual Investments in Stockholm FinTech Companies

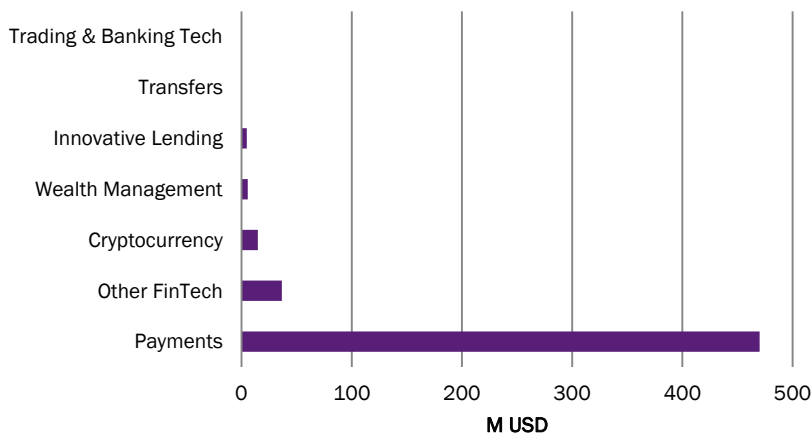


Figure 6. 2010-2014 FinTech Investments in Stockholm by Segment

¹⁹ SSE research, data from Retriever Database

²⁰ Using population estimate of 9.5 million for Sweden

Investors

The capital flowing into Stockholm FinTech firms comes from many sources, and during the past five years there has been a significant increase not only in the number of local investors but also in investors from the EU and US. These investors include some of the biggest names in the industry, such as Sequoia, Accel, and Greylock. From 2013 to 2014, the number of unique investors grew by a factor of five - from 5 to 25 (figure 7). Large US corporations are even starting to note the Stockholm FinTech scene. For example, Intel Capital, Mastercard Worldwide, and American Express Ventures have invested in Stockholm FinTech during the past two years.

A recent exciting development on the local investor front is the establishment of NFT Ventures, a specialty venture capital firm focused on FinTech in the Nordics with Stockholm as its base.

The big players are really looking at Stockholm now.

Erik Engellau-Nilsson, Vice President Communications, Klarna

We believe that the banking industry is going through the same radical transformation that the airline, music, and newspaper industries have undergone in recent years. With the number of success stories rapidly growing, the Stockholm region is leading this transformation on a global scale. So a natural next step was for us to establish NFT Ventures in Stockholm since this would enable us to not only successfully leverage the region's extensive financial services competence and conducive entrepreneurial environment but also its longstanding tradition of innovation within the banking sector.

Johan Lundberg, CEO & Founder NFT Ventures,
commenting on why he established NFT Ventures in Stockholm

Another recent development is an initiative to put Stockholm's Finance sector, including FinTech, on the global map. A recent report commissioned by Nasdaq OMX Stockholm and the Stockholm Chamber of Commerce titled "Growth Stockholm: The Financial Ecosystem as a Growth Engine"²¹ highlights how the Finance Sector contributes 5 per-

²¹ *Tillväxt Stockholm – Det finansiella ekosystemet som tillväxtmotor*

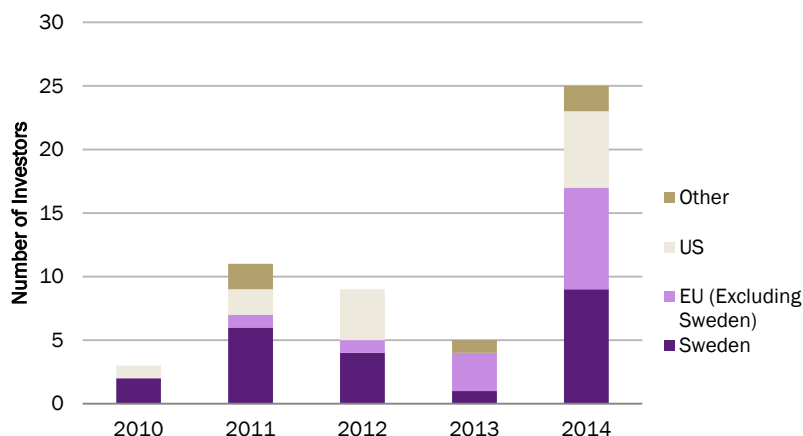


Figure 7. 2010-2014 FinTech Investors in Stockholm

cent of Sweden's GDP and two percent of its employment but is the fourth largest sector in terms of value in the Swedish economy. Topped by only the Retail, Construction and Business Services sectors, the Swedish Finance and Insurance sector was valued at SEK 147 billion in 2013.²²

The financial sector is important for the Swedish economy. It fulfills a basic function to finance growth. Measured by GDP, the Nordic and Baltic countries are, in terms of size, the fifth largest in Europe, and Nasdaq [OMX] Nordic operates the fifth largest European stock exchange. With that in mind, I think that it is a reasonable target to elevate Stockholm into one of the top five financial centers

Magnus Billing, CEO of Nasdaq OMX Stockholm.

Revenue

In addition to the fast pace of growth in FinTech investment, the revenues of FinTech firms have also seen consistent strong growth with

²² http://www.nasdaqomx.com/digitalAssets/96/96139_tillvaxtstockholm141120.pdf

2013 revenue estimates for Stockholm's FinTech sector at USD 1.3 billion, an increase of 25 percent over 2010 values.²³

The main segments driving FinTech revenue in the Stockholm region are 1) Trading & Banking Technology with 38.8 percent of total revenue and 2) Payments with 33.0 percent of the total (figure 8). These two types of firms make for a very interesting contrast. On the one hand, the Trading & Banking Technology segment is led by classic heavyweights from the region's first wave of FinTech companies, such as OMX Technologies and Cinnober. On the other hand, new entrants, such as Klarna, Payex and iZettle, have been driving much of the revenue growth in Payments. The contribution of these new payment firms is very significant as can be seen in figure 9 and corresponds to the recent concentration of funding into the Payments segment as seen in figure 6. The remaining 28.2 percent of firms are from a number of segments: innovative lending (5.2 percent), transfers (1.9 percent), wealth management (9.4 percent), Crypto Currency (0 percent) and other (11.7 percent).

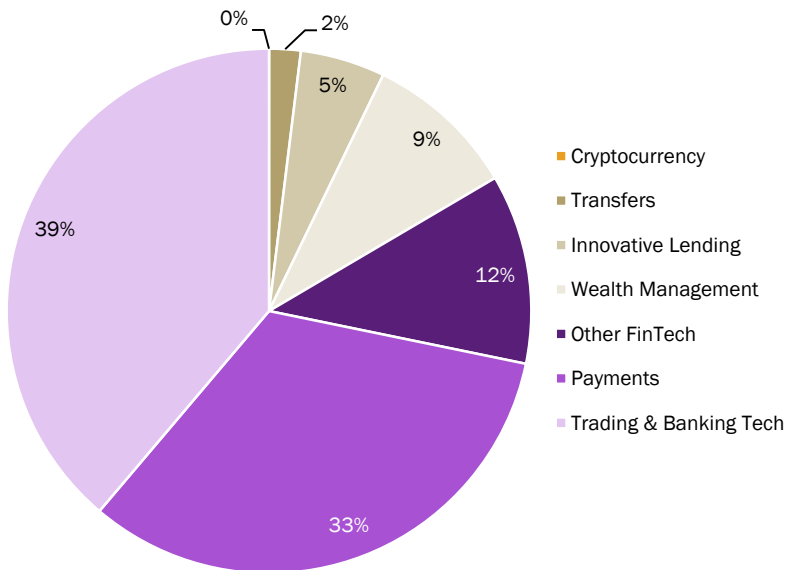


Figure 8. 2013 FinTech Revenue in Stockholm by Segment

²³ SSE research, data from Retriever Database

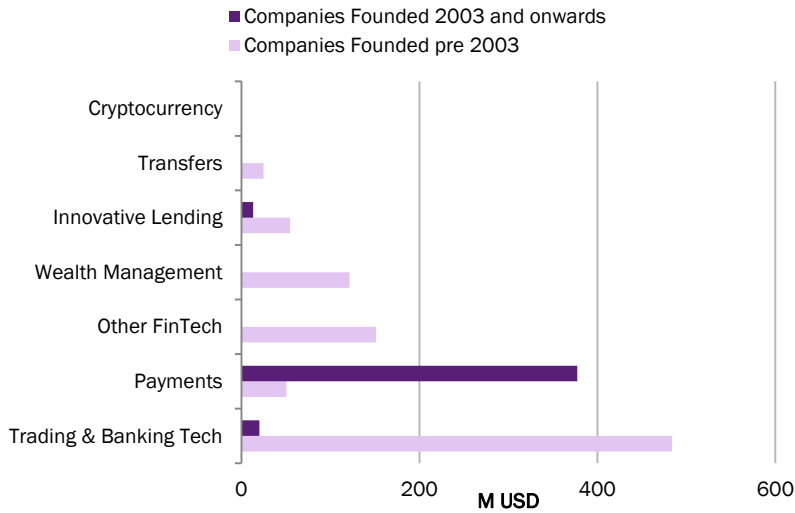


Figure 9. 2013 FinTech Revenue in Stockholm, company establishment date highlighted

Existing Companies and New Entrants

While Payments and Trading & Banking Technology may be more mature due to large volumes of investments and attention, new entrants to the FinTech scene have now appeared in almost every segment (figure 10). The total number of companies in 2014 was 68, an increase from 63 in 2013. There has been particular activity in the Cryptocurrency and Innovative Lending segments. The Cryptocurrency sector, which barely existed four years ago, now contains a small but vibrant set of firms.

For example, KnCMiner in 2014 received USD 14 million in investment from both Swedish and UK companies, with a 2014 USD 15 million follow-up round disclosed in early 2015 from Swedish, UK, and US investors. These investments make KnCMiner one of the best-funded Cryptocurrency companies of all time. Additionally, one small company, ChromaWay, was noted as the 13th most exciting Bitcoin startup in the world.²⁴ The Innovative Lending segment, although not yet a significant contributor to total revenue, in Stockholm has seen a significant increase from five to 12 companies and a more than tripling²⁵ of the workforce

²⁴ <http://uk.businessinsider.com/25-most-exciting-bitcoin-startups-in-the-world-ethereum-21-coinbase-coindesk-2015-3?op=1>
²⁵ SSE research, data from Retriever Database

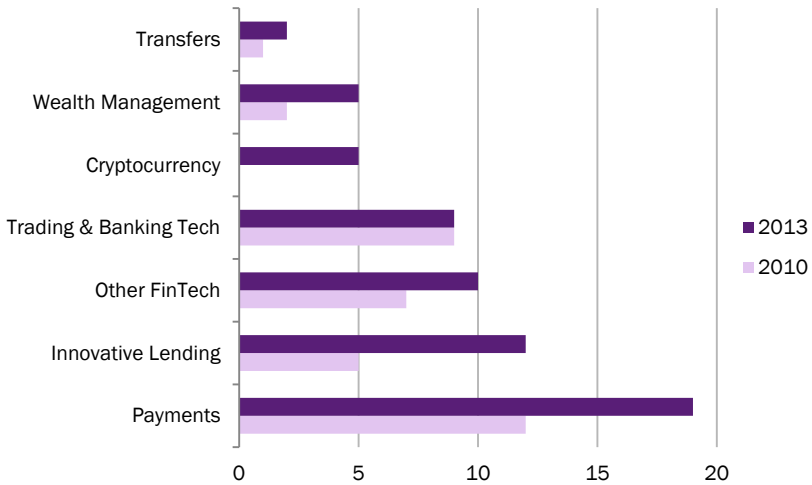


Figure 10. 2010/2013 FinTech Companies in Stockholm by Segment

during 2010-2013. These sectors in particular have the potential to push the growth of FinTech in Stockholm during both the short and long term timeframes.

Employment

Sweden, and Stockholm in particular, is a European leader when it comes to employment in high-tech areas and STEM occupations, i.e., occupations in science, technology, engineering, and math in non-high tech industries.²⁶ Firms and organizations in Sweden employ 592,000 individuals in high tech areas, a 9.5 percent increase from 2000 to 2011 comprising 12.7 percent of total employment in Sweden and 2.7 percent of the European total of high-tech employment.²⁷

²⁶ Defined as “the production of high-tech goods and services, or otherwise engaged in highly technical activities in other industries. This includes all workers in the high-tech industries regardless of occupation as well as those employed in the STEM occupations of science, technology, engineering, and math in non-high-tech industries”

²⁷ <http://feb.kuleuven.be/VIVES/Onderzoek/discussionpapers/DP/dp2013/final-20131223-3rd.pdf>

The Stockholm region alone employs 197,000 individuals in high-tech, or 18 percent of the total employment in the region – and the highest per capita concentration in a large business center²⁸ in the EU²⁹.

This positive trend is also reflected in the growing FinTech sector, with FinTech employment in Stockholm rapidly increasing by a solid 44 percent from 2010 to 2013. The total FinTech Employment in Stockholm reached an estimated 4600 full time employees in 2014. The increases have not been isolated to high growth revenue segments but have occurred in every segment (figure 11). The employment estimates are conservative as they are based on annually self-reported employment numbers for tax purposes and the widespread use of consultants likely puts the actual number 10 to 20 percent higher.

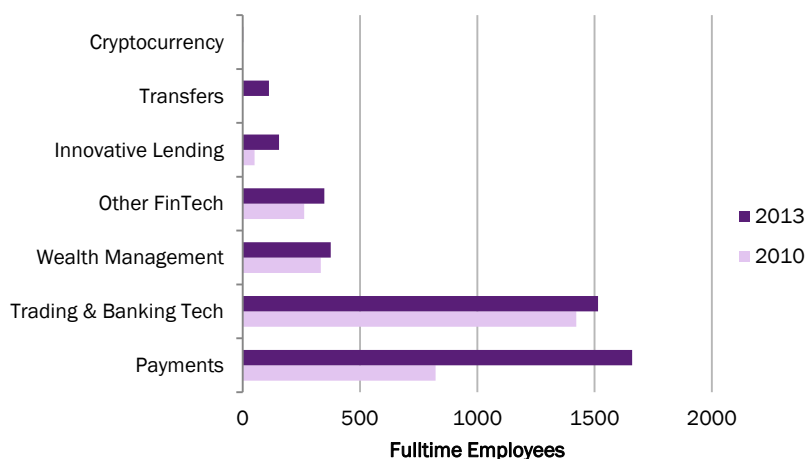


Figure 11. 2010/2013 FinTech Employment in Stockholm by Segment

Exits

Along with strong investment activity, exit activity has been robust over the 2010 to 2014 period, with disclosed exit values totalling USD 381 million (table 2).³⁰ PE buyout firms have also been active in Stockholm; a highlight of this activity was when Nordic Capital delisted ORC in 2012

²⁸ Those in which over 1 million people are employed.

²⁹ <http://feb.kuleuven.be/VIVES/Onderzoek/discussionpapers/DP/dp2013/final-20131223-3rd.pdf>

³⁰ SSE research, data from Zephyr, CrunchBase and Internet searches

for a USD 290 million valuation as noted above.³¹ As discussed before, prior to 2010 there have been numerous other high profile exits of FinTech companies. These include OMX (3.7 billion USD) for its exchanges and technology divisions and the Avanza IPO (1.5 billion USD).

Name	Year	Total Value of Company at Time of Exit (USD million)	Comments
Lendo	2010	29	51% to 97% by Schibsted Growth
Neonet	2010	158	Acquired by ORC
TriOptima	2012	159	ICAP Group Holdings 38% to 100%
Shareville	2013	undisclosed	Majority Stake Sold to Nordnet
TrustBuddy	2013	15	Acquired by 360 Holdings AB
MPS	2014	undisclosed	Acquired by Cidron SuperPay AB
Payson	2014	undisclosed	Acquired by SveaEkonomi
TradeTech	2014	20	Acquired by Virtusa
DIBS Payment Services	2014	107	Delisted/Acquired by Nets

Table 2. 2010-2014 Notable Exits of FinTech companies in Stockholm³²

³¹ <http://www.thedeal.com/content/private-equity/nordic-capital-agrees-to-buy-software-company-orc.php>

³² SSE research

Benefits of the Stockholm Region

Having looked at the numbers behind the impressive growth of Stockholm FinTech, one can ask what is it that is so special about the Stockholm region that has enabled a relatively small capital city to gain a much larger share of European FinTech activity? As mentioned above, we conducted a number of interviews with leading FinTech actors in the Stockholm region, and one area of inquiry in these interviews was to explore this question. We also conducted desk research to deepen our understanding. Below we summarize our findings.

Good ideas aren't enough for success. I think what makes Stockholm unique is that we have a high level of execution intelligence here. For example, not only do programmers have a deep level of technical skills, such as how to build high volume transaction systems that scale, but they also understand how to turn technology into a product that creates value in a global market. This combined with our bottom-up Scandinavian management style enables firms to successfully navigate the many uncertainties in today's financial services.

Daniel Blomquist, Partner, Creandum

The Stockholm region boasts numerous benefits for FinTech companies: an advantageous FinTech ecosystem, part of the greater Stockholm High-technology Hub, a Swedish leadership style, and supportive government policies.

Advantageous FinTech Ecosystem

- The Financial hub of the Nordics is the result of more than 30 years' experience integrating IT with marketing and new product development operations.
- The size of Stockholm is large enough to find the right multi-disciplinary skillset yet small enough to accommodate very high trust levels among individuals.
- Decision makers are not only knowledgeable but also approachable due to low power distance in the region.
- There are a number of successful firms that act as role models by setting high standards inspiring current and future entrepreneurs while serial entrepreneurs share their expertise and reinvest in new firms.
- Contrary to widespread belief, salaries in Stockholm are relatively lower than other leading FinTech hubs.

The Greater Stockholm High-technology Hub

- The Stockholm region is seen as number one on many Nordic indices and in the top ten on numerous global indices: entrepreneurship, innovation, ICT, technology readiness, sustainability, and livability.
- Sweden enjoys some of the highest Internet and mobile phone penetration rates in the EU and globally.
- Stockholm is number one in Europe and number three in the world after Silicon Valley and Beijing as the birthplace of the world's most successful billion dollar companies since 2003.³³ The five from Stockholm are Mojang (now owned by Microsoft), Klarna, King Digital Entertainment, Spotify, and Skype.
- There are considerable spillover effects from leading high-tech industries, e.g., gaming (King, Mojang), music (Spotify), telecom (Ericsson), ICT (Skype).
- A high level of technical and managerial competence stems from leading universities while there is a talented pool of both Swedish and international individuals with extensive experience within financial and telecom multinationals and startups.

³³ <http://www.zdnet.com/article/stockholm-is-the-most-prolific-billion-dollar-startup-hub-behind-silicon-valley/>

- The workforce is highly international with English as company language in many organizations.
- Consumers in Stockholm are high-tech early adopters, and multinationals often choose Stockholm as a testing market for the development of new products.
- A well-developed crowdfunding industry across all four forms of crowdfunding (donation, reward, equity, and lending) enables access to alternative forms of financing.

Swedish Leadership Style

- A bottom-up and flat, non-bureaucratic management style empowers creativity and innovation and enables high quality product development that is difficult to duplicate.
- A highly open culture and trusting relationships allow for deep levels of collaboration, even among competitors.
- A holistic, value-based approach encourages a multiple stakeholder focus, e.g., public/private/volunteer sectors, activist movements, trade unions, employee representatives.
- Sweden's smaller market size encourages almost every startup to think and act as a global player from the start.

Supportive Government Policies

- Sweden has a stable government and a strong regulatory framework, which provides a solid base for companies looking to expand abroad.
- Substantial social benefits reduce the risks faced by entrepreneurs and costs for companies, thus encouraging startup and innovation. Education for children is free, including university, and daycare is heavily subsidized. For example, parents in 2014 only paid SEK 1260 per child per month for daycare. Moreover, parents are entitled to 480 days of parental leave to be taken at any time until the child is eight years old with the days divided between both parents such that neither parent has less than 60 days leave.
- Generous startup loans, funded by state agencies (e.g., ALMI, Vinnova) as well as not-for-profit, non-state agencies (e.g., .SE) combined with pro-crowdfunding views support new venture creation.

- A high quality and expansive public infrastructure enables the establishment and growth of local businesses.
- Immigration laws, which were relaxed in 2008, facilitate the immigration of skilled professionals, notably computer professionals. Under these laws, the employer receives a 25 percent reduction in social security contributions for experts and researchers who are difficult to find in Sweden, and the employee receives a 25 percent reduction on his/her income tax as well as deductions for relocation and the education of his/her children for the first three years of the residence in Sweden.

Challenges Facing Stockholm FinTech

While the Stockholm region does boast a considerable number of benefits, our interviewees also identified three major challenge areas that the region faces: access to talent, housing availability, and corporate taxation. Despite the fact that Stockholm currently “punches far above its weight” in both the Finance and IT industries, these challenges, in the opinions of those interviewed, need to be addressed in order for the region to solidify a sustainable position as a leader in global FinTech activity.

Access to Talent

While interviewees said that they have not had difficulty finding and hiring talent, many did mention that they had to compete for skilled software developers and engineers. A 2012 report by McKinsey noted that although there are many skilled workers in Sweden today, the country’s education system is in decline.³⁴

This problem is by no means unique to Stockholm; other regional IT hubs cite similar problems.³⁵ However, despite the fact that it should be easy for Stockholm-based businesses to draw from pools of skilled individuals in other European countries, firms are struggling to do this. One problem is the housing situation described below; another is the difficulty of accessing and identifying such talent, and still another is the fact that hiring additional employees is expensive for firms, making them wary of taking on untried additional employees.

³⁴ Gupta, A & Govindarajan, V. 2002. Cultivating a Global Mindset, *Academy of Management Executive* 16(1), 116-136

³⁵ <http://news.dice.com/2014/04/16/silicon-valley-sees-skills-shortages-java-net-php-linux/>

Some attempts have already been made to facilitate the flow of highly skilled individuals into Sweden, epitomized by the relaxing of immigration rules to enter Sweden in 2008. The Stockholm Chamber of Commerce points out that 62 percent of work permits (required only for workers originating outside the EEA) approved between 2009 and 2013 in Stockholm County (excluding seasonal workers) came from skilled professionals. Of the approximately 13,000 permits approved in this period, over 11,000 were for computer professionals.³⁶

Housing Availability

The availability of housing was by far the single largest barrier for those interviewed. While not a problem for those already based in Stockholm, the long waiting period for people from outside the region means that companies struggle to persuade people to move to Stockholm. This problem is widely recognized; a recent OECD report on Stockholm's competitiveness noted that both Stockholm county and adjacent areas faced housing shortages, despite the fact that Sweden has one of the highest expenditures in new housing construction as a percentage of income among OECD countries.³⁷

Many large firms circumvent this problem by owning apartments themselves or by paying housing placement agencies. However, firms that are small and growing fast, i.e., startups, are hit the hardest by the housing shortage due to their financial situation. Thus, they struggle to attract potential employees interested in moving to Stockholm.

Corporate Taxation

Taxes in Sweden are known to be high by international standards – both when it comes to the income taxes that individual employees pay and when it comes to the firms' cost of hiring. Additionally, interviewees noted that while current income tax levels are acceptable – given the services that people received for them, they were concerned that income taxes were likely to go up in the near future.

Corporate earnings in Sweden are subject to taxation on two levels: a corporate income tax, and an investor-level tax when corporate earnings

³⁶ Migrationsverket statistics, 2009-2013

³⁷ <http://www.oecd.org/eco/surveys/Sweden%202012%20Overview.pdf>

are paid out as dividends or realized as capital gains. In 2009 taxes on the corporate level were reduced from 28 percent to 26.3 percent and again in 2013 to 22 percent - making the Swedish corporate tax rate less than the European Union average of 23 percent.³⁸

I think what is more important is that some of the issues around taxation, corporate structures, and the incentives of entrepreneurship... it's still extremely complex. It has become a lot better now compared to 10 years ago, but it's still extremely complex.

Dan Ouchterlony, Investment Manager, Schibsted Growth

³⁸ <http://www.pwc.com/gx/en/paying-taxes/assets/pwc-paying-taxes-2014.pdf>

Looking Forward: Policy Recommendations

Based on the above figures and discussion, we have identified a number of areas that are ripe for improvement. These policy recommendations are related primarily to the development of FinTech in the broader Stockholm region, yet they are similar to recommendations made in relation to the development of IT entrepreneurship in general in the region.

Develop a Community around FinTech

Although the majority of those with whom we spoke knew what FinTech was, they struggled to define it and place limitations on what FinTech is and what it is not, given the broadness of the definition. Moreover, many did not see Stockholm as having a clear identity as a FinTech hub, something that makes sense given that many of the businesses that we have defined as FinTech could equally be classified as either in the Finance industry or IT industry. The starting point for the creation of a collective identity around Stockholm as a FinTech hub is certainly to agree upon a single definition for FinTech businesses. The one that we have used is one possibility, but it is by no means the only one. Doing this will provide a foundation for the creation of indices and metrics that track the development of the industry as well as give advisors, regional authorities, and innovation hubs something around which to rally and communicate both within and outside of Sweden.

Additionally, there are currently no FinTech-specific co-working spaces or innovation hubs in the Stockholm region. This is beginning to change; Stockholm Innovation and Growth (STING) announced a partnership with NFT Ventures to facilitate the growth of FinTech in Stock-

holm.³⁹ While this is an excellent development, there is still additional scope for specialized innovation hubs, with experts in various aspects of FinTech advising nascent companies on their development. Such innovation hubs would benefit from being in Stockholm; however, there are also considerable benefits in developing an alternate hub for innovation.

Indices and Metrics

Developing the appropriate indices and metrics are key to the ongoing development of FinTech in Stockholm. Such indices and metrics would allow local businesses and the region to show the competitiveness of the region and, in so doing, attract skilled individuals, not just to a single firm but also to a vibrant hub full of opportunities. Such indices would also highlight the region's competitiveness as well as form the foundation for further investment into such businesses. The creation of a standard definition of FinTech, and indices linked to it, would facilitate not only investment by large private equity firms but also investment in public companies labeled "FinTech".

Avoid Specialization

What our analysis of the FinTech firms in Stockholm highlighted is not only that the sector is incredibly competitive, albeit with some challenges, but also that the industry is concentrated in software development. While this is unsurprising, given Stockholm's software development strength, diversification into additional areas could help the FinTech sector grow. In particular, other FinTech hubs (notably on the West coast of the United States) have begun to focus on FinTech hardware in addition to both software and services. Hyper-specialization within FinTech, which is something that Stockholm risks doing, has been shown to have adverse effects. In a report by the European Commission, it was emphasized that cluster policy should not entail one-sided regional specialization as this makes regions more vulnerable to demand shocks, such as what happened during the dotcom crash of the early 2000s.⁴⁰

³⁹ <http://www.stockholminnovation.com/en/2014/11/27/sting-nft-ventures-creates-fintech-hub-stockholm-mondido-first-investment/>

⁴⁰ http://www.central2013.eu/fileadmin/user_upload/Downloads/Tools_Resources/Cluster.pdf

Geographic Diversification

The presence of a strong cluster is a source of regional competitiveness, particularly for capital investment and demand, which encourages entrepreneurs and other actors to improve their offerings in order to remain competitive not just in price but within regional supply networks.⁴¹ The development of a nearby FinTech hub, such as the development of Kista for use by Ericsson and other large IT companies, would facilitate regional competition in FinTech. While there are certainly benefits to being in the strict center of Stockholm, the extensive public transport network means that the development of additional activity centers should make communication and cooperation between regions more than viable.

Highlight Tax and Social Welfare Benefits of Living in Sweden

Despite the widespread acknowledgement by Stockholm locals that the tax regimen provides them with considerable benefits, more could be done to highlight this. In particular, if a more specific assessment ascertains that IT skills are indeed in short supply, existing tax rules may be particularly useful. One example is that Sweden already has preferential tax rules for highly skilled individuals, whose skills could not be sourced within the country. While it is outside the scope of this report to analyze whether there really is a skills shortage, this preferential tax rate could be used to reduce the tax burden of highly skilled individuals, thus attracting them to Sweden – and Stockholm.

Additionally, marketing campaigns to highlight FinTech growth in Stockholm could also contribute to an improved understanding among foreign workers (many of whom are internationally competitive workers) of the details of what they receive for their tax money.

⁴¹ Delgado, M., Porter, M.E., & Stern, S. 2010. Clusters and entrepreneurship. *Journal of Economic Geography*, 10(4), pp495-518.

Stockholm's Under-representation in Global FinTech Reports

In a review of global databases and reports originating outside of Sweden, the data seem to suggest that until very recently there was an under-representation of FinTech investments in the Nordics. Investigating this, we found that while certain companies and investment deals were present in some databases, they were missing in others. The primary reasons that were discerned for this was the definition of investment used and a lack of appropriate monitoring of Nordic deals. The definition issue is based around whether an investment deal is classified as a venture capital deal or a growth equity deal, which falls under the greater umbrella of private equity. The difference between growth equity and venture capital deals is the risk profile of the investment target, which is generally based on the company's stage of development. In 2014 most deals with Stockholm FinTech companies were listed as VC deals, series A, series B, etc. However, in the case of Klarna, since this company is considered fairly mature, it was classified as a growth equity deal and therefore did not appear in some databases with "pure" venture capital deals.

As noted above, our definition of total investment numbers includes all private equity and venture capital investments in privately held companies while buyout transactions are excluded from these numbers. This definition is generally the same definition used in the Accenture and CB Insight reports.

Below is an overview of the most widely used investment databases within FinTech and how they have treated Stockholm investments.

StrategyEye - Top 50 Company List

StrategyEye only considers venture capital investments and as such is missing certain investments in Stockholm FinTech companies. The large Klarna investment in 2014 was growth equity and therefore not considered for StrategyEye's top 50 FinTech investments in 2014. In addition, the list is also missing the Bima Mobile's VC investment of USD 22 million and Trustly's VC investment of USD 28.8 million.

CB Insights

The CB Insights database is missing a few Stockholm FinTech companies, but it is still relatively accurate. In 2014 CB Insights missed one undisclosed and one disclosed deal of USD 2.4 million, which was a very minor miss. However, unlike StrategyEye, Klarna's USD 150 million growth equity investment in 2014 is included and classified under VC investments.

Consulting Reports

The reports by firms such as Accenture and EY generally push London and the UK as the European FinTech hub. While they sometimes refer to the Nordic region, they do not often mention Stockholm. If the reports were to focus more on cities and less on regions, then it is likely that Stockholm would be more significantly highlighted. The recent 2014 FinTech report by Accenture has numbers on investment volume and deal flow that correlate very closely to our own research.

There is no easy solution to determining the exact numbers and how to promote Stockholm as a FinTech hub. However, creating a list of FinTech deals in Stockholm that is easily found on the Internet would definitely be a step in the right direction. Just as the London numbers can be easily referenced on the website of London & Partners, the promotional London advertising agency, the relevant information about Stockholm FinTech companies should also be made easily available.

Conclusion

FinTech is rapidly growing in Stockholm in terms of every measurable statistic. This growth will likely continue and even intensify in the years to come, enabling Stockholm to further consolidate its position as one of the major EU FinTech hubs. Past successes and new opportunities will continue to drive a new wave of entrepreneurs on the cutting edge of finance and technology. The benefits of working in Stockholm vastly outweigh the challenges and the future is very bright. It is exciting to see where FinTech in Stockholm is headed and how many new opportunities will emerge in the future.

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Appendix One: Search Terms

Words included in Media Search:

Fintech
financial innovation*
Finans
Finans innovation
Biomechanics
Biotechnology
Crowdfund*
Bitcoin
Peer-to-peer/P2P
Peer-to-business
Financial Software
computer technolog*
dator innovation
cryptocurrenc*
crowdlend*
gräsrotsfinansier*

* indicates wildcard search

Appendix Two: FinTech Segments Defined

Cryptocurrency

This segment includes any companies primarily involved with generating profits around cryptocurrencies.

- Bitjoin
- ChromaWay
- Cryex
- KnCMiner
- Safello

Innovative Lending

Both innovative lending and crowdfunding companies are included in this category. Traditional banks are not included in this segment.

- Consector
- Crowdculture
- Emric AB
- FundedByMe
- Kortio
- Lånbyte.se
- Lendify
- Lendo AB
- Myloan (owned by Insplanet)
- Qvido.se
- Toborrow

Trustbuddy

Other FinTech Companies

Companies that do not fit in the other categories are included in this segment. A wide range of FinTech businesses fit in here from stock market analysis software to specialized financial security software.

Algorithmica
BehavioSec
Bimamobile (Milvik AB)
Bolånegruppen (Our Interest AB)
Mopper
ORC Group/Orc Software
Pantor
Tbricks
TriOptima
Zenconomy
Trema

Payments

Companies that provide payment and payment processing services. These range from traditional POS providers to new online transaction processing systems.

Accumulate
Allopass
Babs Paylink
Betalo
Billhop
iZettle
Klarna
Mondido
MPS (Mobile Payment Solutions)
PayAir
PayEx
Payground
Payson
Prelo

Qliro AB
Seamless Payments
Trustly
Vaulted Payments
WyWallet (4T Sverige)

Trading & Banking Technologies

Companies conducting the core banking functions for example online stockbrokers, exchange back ends, banking back ends, etc.

Aphelion
Camerontec
Cinnober
CMA Small Systems
Neonet
Nordnet
OMX Technology
Shareville (part of Nordnet)
SunGard Front Arena

Transfers

Companies that are involved with balance transfers between B2C, B2B and C2C are included.

Seamless Distribution
Swish (GetSwish AB)

Wealth Management

Consumer wealth management companies are included in this segment, companies that help users maximize wealth through service comparison (ex. Insurance) are also included in this segment.

Avanza
InsPlanet
Qapital
Tink

Appendix Three: Interviews

Actor	Number of Interviews
Startup Employees / Founders	9
Members of the Startup Investment Community	6
Academics	1