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Analysing the changing geographies of financial centres: the cultivation of an urban FinTech ecosystem in Amsterdam

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Abstract (Deutsch)

FinTech (ein Portmanteau aus Finanztechnologie) wird von Regierungen und privaten Akteuren als Chance zur Stärkung der Wettbewerbsfähigkeit ihres nationalen Finanzsektors betrachtet. Finanzzentren der zweiten und dritten Reihe sehen darin eine Chance, Marktanteile von etablierten globalen Zentren wie London oder New York zu gewinnen. Dies wird durch die Tatsache veranschaulicht, dass Städte in ganz Europa FinTech-Zentren einrichten. In dieser Masterarbeit wird eine Fallstudie über das entstehende FinTech-Ökosystem in Amsterdam vorgestellt. Die Hauptstadt der Niederlande stellt einen interessanten Fall dar, da sie sich von einer Konzentration innovativer Finanzdienstleistungen in den 1970er Jahren zu einem sekundären Finanzzentrum innerhalb einer Hierarchie globaler Zentren entwickelt hat. In dieser Arbeit werden die aktuellen Bemühungen von Finanz-, Technologie- und staatlichen Akteuren untersucht, um die Entstehung eines FinTech-Ökosystems in Amsterdam zu fördern. Der theoretische Rahmen basiert auf einem Austausch von Theorien aus der Finanz- und Wirtschaftsgeographie, mit einer Methodik, die auf halbstrukturierten Interviews, Dokumentenrecherche und nichtteilnehmender Beobachtung beruht. Durch diese Konzeptualisierung werden die Spannungen, Synergien und Engpässe der Fin-Tech-State Partnerschaft hervorgehoben.

Drei Hauptergebnisse untermauern diese Forschung. Erstens deutet der niederländische Fall darauf hin, dass der Staat aufgrund politischer Empfindlichkeiten auch eine eher passive Rolle im Ökosystem spielen kann. Daher unterstreichen die Ergebnisse dieser Untersuchung die Bedeutung des politischen Bewusstseins bei der Erforschung von Finanzgeografien. Zweitens bietet FinTech neue Möglichkeiten für einen etablierten Finanzplatz wie Amsterdam. Es wird jedoch vermutet, dass die FinTech-Verbindungen von Amsterdam die etablierte Finanzplatzhierarchie bestätigen. Drittens weisen die Ergebnisse auf die Tatsache hin, dass FinTech nicht zwangsläufig zu einer Disintermediation im Finanzbereich führt, sondern eher zu einer Reintermediation, da sich Finanzen und Technologie gemeinsam weiterentwickeln. Die Beziehung zwischen Banken und FinTech-Unternehmen ist nicht nur eine zwischen ‚etablierten Unternehmen' und ‚Disruptoren', denn das würde die Situation vereinfachen.

Abstract (English)

FinTech (a portmanteau of financial technology) is considered by governments and private actors as an opportunity to the strengthen the competitiveness of their national financial sector. Second- and third-tier financial centres see it as a moment to gain market share from established global centres such as London or New York. This is illustrated by the fact that cities, all over Europe, are setting up FinTech hubs. This master thesis presents a case-study of the emerging FinTech ecosystem in Amsterdam. The capital of the Netherlands provides an interesting case, as it turned from a concentration of innovative financial services in the 1970s to a secondary financial centre fixed within a hierarchy of global centres. This thesis explores the current efforts of financial, technology and state actors in trying to foster the emergence of a FinTech ecosystem in Amsterdam. The theoretical framework is based on an interchange between theories from financial and economic geography, with a methodology supported by semi-structured interviews, document research and non-participant observation. Through this conceptualization, the tensions, synergies and bottlenecks of the Fin-Tech-State partnership are highlighted.

Three main findings underpin this research. Firstly, the Dutch case suggests that the state can also have a more passive role in the ecosystem, due to political sensitivities. Therefore, the findings of this research emphasize the importance of political awareness when researching financial geographies. Secondly, FinTech does offer new opportunities for an established financial centre like Amsterdam. However, it is suggested that Amsterdam's FinTech connections reaffirm the established financial centre hierarchy. Thirdly, the findings point to the fact that FinTech does not necessarily lead to financial disintermediation, but rather reintermediation, as finance and technology continue to evolve together. The relationship between banks and FinTech firms is not merely one of 'incumbents' and 'disrupters', as that would simplify the situation.

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List of abbreviations and acronyms

ABN AMRO	-	Algemene Bank Nederland / Amsterdam-Rotterdam Bank
ABP	-	Algemeen Burgerlijk Pensionfonds [Dutch pension fund]
AEX	-	Amsterdam Exchange Index
AFC	-	Amsterdam Financial Centre
AFM	-	Autoriteit Financiële Markten [Netherlands Authority for the Financial Markets]
AMS-IX	-	Amsterdam Internet Exchange
APG	-	Algemene Pensioengroep
APS	-	Advanced producer services
ASE	-	Amsterdam Stock Exchange
BNR	-	Business Nieuws Radio
DNB	-	Dutch National Bank
ECB	-	European Central Bank
ERBD	-	European Bank for Reconstruction and Development
GaWC	-	Globalisation and World Cities Network
GDP	-	Gross domestic product
GFN	-	Global financial network
GPN	-	Global production network
HFC	-	Holland Financial Centre
ICT	-	Information Communication technologies
IFC	-	International financial centre
ING	-	Internationale Nederlanden Groep
KYC	-	Know your customer
NFIA	-	Netherlands Foreign Investment Agency
OFC	-	Offshore financial centre
PSP	-	Payment service provider
SME	-	Small and medium-sized enterprises
SWIFT	-	Society for Worldwide Interbank Financial Telecommunication
WLO	-	Window of locational opportunity

1. Introduction

1.1. Background and context

In April 2020 the Dutch online payment company ‘Adyen’ decided to open their head office in the centre of Amsterdam at Rokin 21-49 (Parool, 2020). The history of this specific place on the Rokin offers a fascinating insight into the changing geographies of finance. In 1913 the Rotterdamsche Bank, one of the larger Dutch banks of the time, built its new office on Rokin 21. In 1964 the Rotterdamsche Bank merged with the Amsterdamsche Bank into the Amsterdam-Rotterdam Bank (now known as ABN AMRO). Regional banks were gradually disappearing, and the geography of finance became increasingly concentrated in larger centres (Fernandez, 2011). In 1987 the building was demolished and replaced by the new office of Fortis, a Dutch-Belgium bank and insurer. In the next years Fortis took over multiple Dutch and foreign financial institutions reflecting the continued centralisation of finance and the emergence of global finance. European banking regulation during the 1980s and 1990s stimulated consolidation, which led to a growing concentration of means in a limited number of very large banks (Leyshon and Thrift, 1992). Fortis left its office on the Rokin in the aftermath of the 2008 financial crisis and the failed takeover of ABN AMRO together with Royal Bank of Scotland and Banco Santander (Bassens and Van Meeteren, 2018). Since then, no financial institution returned, as most of the large banks moved towards the periphery of Amsterdam (Fernandez, 2011). The notorious pink building of Fortis got demolished in 2011, and was subsequently replaced by a department store of the Canadian retailer Hudson Bay. The warehouse was situated at the Rokin for three years, until the Dutch division of the retailer went bankrupt. The move of Adyen to the Rokin reflects the impressive growth of the FinTech industry and the changing geographies of finance with the further integration of technology and finance. In January 2021 Adyen, which became listed on the AEX, had an astonishing market capitalisation of € 57,7 billion, as much as the four listed Dutch financial institutions (ING, ASR, Aegon and ABN AMRO) combined (Het Financieele Dagblad, 2021).

‘FinTech’ (a portmanteau of financial technology) is expected to change the financial sector profoundly. It poses a disruptive threat to traditional finance and banking, providing consumers and firms with alternative sources of finance and capital allocation (Wójcik and Cojoianu, 2018; Hendrikse et al., 2020). FinTech can be defined as: *“a set of innovations and an economic sector that focus on the application of recently developed digital technologies to financial services”* (Wójcik, 2020a, p. 2). It is one of the most talked about topics in finance at the moment (Economist, 2021). Furthermore, it is at the forefront of many industry conferences and features high on to the international financial regulatory agenda (Lai and Samers, 2020; PWC, 2020). Examples of FinTech firms are the Dutch neobank ‘bunq’, offering banking through an app, or the Chinese firm ‘Alipay’, a digital wallet and online payment platform. While certain firms identify as FinTechs, technological innovations in finance can also be implemented by financial incumbents or state actors (e.g. central bank digital currencies) (Arner et al., 2016).

1.2. Problem setting and research questions

FinTech discussions are not only about technology and disruption, but also about the impact on financial centres. The current merge between 'Fin' and 'Tech' could fundamentally reshape urban financial centres and the geography of finance (Wójcik and Cojoianu, 2018). The move of Adyen to the historical centre and the presence of that firm in Amsterdam raises questions about the regional endowments the financial centre of Amsterdam offers for FinTech development.

Furthermore, for aspiring financial centres, FinTech could open up a 'window of locational opportunity'. New innovations in the financial sector are often seen by second- and third-tier financial centres as opportunities to gain market share from established global centres such as London or New York (Lai and Samers, 2020). This is illustrated by the fact that financial centres, such as Copenhagen, Lisbon and Milan, are all setting up FinTech hubs. (European Fintech Navigator, 2021; Hendrikse et al., 2020). Therefore, it is important to look at the way these cities are utilising this new wave of FinTech in order to understand broader changes in the urban geography of finance. This research will take the financial centre of Amsterdam as a case study. The capital of the Netherlands provides an exemplary case study as it was thought to be a serious contender in the international competition between financial centres in the 1970s, at a time that the mobility of capital started to increase. Amsterdam was well equipped, as a historical trading venue and an established 'capital of capital' (Cassis, 2006). Nevertheless, its financial centre turned from an important innovative place to a secondary financial city, fixed within a network of global cities (Engelen, 2007; Fernandez, 2011). Since then, Amsterdam has been looking for opportunities to strengthen the fleeting competitiveness of its financial sector.

The main research question of this master thesis is:

How are finance, technology and state actors trying to foster the emergence of a FinTech ecosystem in the Amsterdam financial centre?

This thesis aims to give insight into how FinTech opens up a window of locational opportunity for second-tier financial centres. Also, the current emphasis of the financial sector on FinTech will be put in a historical perspective, reflecting on the changing geographies of finance and past initiatives to stimulate the financial centre of Amsterdam. The theoretical framework is based on an interchange of theories between financial geography and economic geography, which offer effective heuristics to analyse the emergence of a FinTech ecosystem. Holland Fintech, a branch organisation for Dutch FinTech firms, functions as an entry point to the wider developments in the Amsterdam financial centre. This research aspires to extend existing urban studies research by developing a framework for critically understanding FinTech from an economic and financial geography perspective. Four sub-questions are developed to narrow down the topic and provide a skeleton for the research:

1) How are the interests of finance, technology and state actors strategically coupled to seize the window of location opportunity provided by FinTech in Amsterdam?

2) How does FinTech affect Amsterdam's position in the hierarchy of international financial centres?
3) How does the current emphasis of the Amsterdam financial centre on FinTech relate to previous initiatives on strengthening the competitiveness of the financial sector?
4) Does the emergence of FinTech have an impact on the geography of financial firms in Amsterdam?

These four questions are all relevant. The first question looks into the interactions and partnerships between finance, technology and state actors in the Amsterdam financial centre. Does FinTech actually lead to disruption? Other papers have pointed to the reintermediation of technology into finance (Lai, 2020; Langley and Leyshon, 2021). The second question pays attention to the hope of secondary financial centres to regain some of its lost competitiveness. Is the role of the Netherlands as an offshore financial centre an asset for FinTech? However, the hierarchy of financial centres has been stable in the last decades (Cassis and Wójcik, 2018). The third question reflects on the rich history of public-private partnerships that tried to improve the financial sector in the Netherlands (Fernandez, 2011). Therefore, a new growth coalition on the possibilities of FinTech, as seen in other countries, would be expected in Amsterdam. The move of Adyen into their new office on the Rokin illustrates the importance of the fourth question. Previous developments in finance also led to new concentrations of financial firms, such as on the Zuidas.

1.3. Structure of the thesis

The second chapter of this thesis presents the theoretical framework, laying the foundation for the problematisation and the theoretical and empirical framing. The third chapter introduces the case of Amsterdam and aims to explain its historical financial geography from the 1970s onwards. To understand the current situation and geographical impact of FinTech, it is essential to look at the historical development of the Amsterdam financial centre. The fourth chapter will explain the methodology and research design. The fifth chapter displays the main results that emerged from the analysis of the interviews, documents and non-participant observation. The sixth chapter, the discussion section, will connect the results to theoretical framework and literature. Finally, the seventh chapter provides the conclusions, offers some reflections on the research process and gives directions for future research.

2. Literature Review and Theoretical Framework

The theoretical framework consists of four parts. The first part introduces international financial centre research, and eventually presenting the heuristics of the global financial network approach. In the second part of this review the novel research area in financial geography of FinTech will be introduced. This chapter gives a critical overview of the current developments in literature of this new close relationship between 'Fin' and 'Tech'. In the third part the theoretical framework is presented. Three concepts borrowed from economic geography relevant to the study of FinTech ecosystems will be introduced.

2.1. Financial geography and international financial centres

Financial services have experienced extraordinary growth over the last thirty years. The financial industry tends to be larger than other business services such as law, accountancy, marketing and human resources (Wójcik et al, 2018). This rise has unleashed a competition between cities for the status of international financial centre (IFC). IFCs can be defined as "*nodes within a tight web of large scale flows of capital information, which control and smooth the processes of global finance transactions and the trade of a dizzying array of financial capital*" (Dörry, 2015, p. 797). Notwithstanding the increasing integration of national markets in a transnational financial system, financial activities and capital tend to be extremely concentrated and unequally distributed. Sassen (1991) observed the massive infrastructure and necessary resources to coordinate the financial and capital flows are only provided by a few places. The advanced producer services that support the global financial system are subject to agglomeration economies, stimulating further concentration. Sassen (2005, p. 29) states:

"*The complexity of the services they need to produce, the uncertainty of the markets they are involved with either directly or through the headquarters for which they are producing the services, and the growing importance of speed in all these transactions, is a mix of conditions that constitutes a new agglomeration dynamic. They needs to be in cities as it is highly networked knowledge*"

Also, regulatory changes and improving technology allowed firms to operate out of ever fewer headquarter location, increasing the spatial concentration of the financial sector (Wójcik et al, 2018).

Not only does there exist a variety of financial centres that specialise in certain services resulting in complementarity and cooperation, but there is also a hierarchy and competition amongst them. Only a handful of financial centres perform a global role operating as the nerve centres of international financial activities (Dörry, 2015). The concentration of financial services can be explained by external economies, namely cost reductions that businesses can achieve as a result of competition, proximity, size of the sector or the location from which they operate (Cassis, 2018). The hierarchy of IFCs has been fairly stable over the last decades. Such rankings of IFCs have become prominent since the beginning of the twenty-first century. The Global Financial Centres index of the Z/Yen Group has established itself as a reference for these rankings (Z/Yen, 2020). In 2007 the world's eight leading financial centres were New York, London, Tokyo, Frankfurt, Paris, Hong Kong, Singapore and Zurich. Ten years later, the top group was consisted of the same cities, though in a slightly different order. Thus, even one of the most severe financial crises did not seem to have made an impact on the geography of IFCs (Wójcik and Cojoianu, 2018).

Financial geography, a subbranch of economic geography, has been particularly involved with IFC-research. Knox-Hayes and Wójcik (2020, p. 1) describe the field of financial geography as: "*the study of money and finance in space and time and their impacts on economy, society and nature*". Applying a geographical perspective on finance is crucial, as the sector is one of the most globalised and networked economic sectors. Studies with a geographical approach on the financial sector began to emerge when finance became seen as the growth machine of the 1980s. Subsequently, financial geography developed into a rich field of study within geography, applying theories from finance, economics, anthropology history, business studies, politics and environmental studies. It could even be argued that over the years financial geography has become more than a particular subfield, offering an interdisciplinary research perspective (Grandi et al., 2019). Financial geography gained popularity during the global financial crisis, inspiring research into finance from a social sciences perspective, different from the mainstream approaches in economics. While economists were focused on understanding the causes of the financial crisis, research by geographers paid attention to the spatial unevenness build into the global financial system (Fernandez, 2011).

Early research in financial geography examined how IFCs developed as a specific agglomeration of financial activities. Kindleberger (1974) was one of the first to discuss this in his analysis of why money and capital markets were concentrated in London, Paris and Frankfurt. From the early 1990s onwards the perspective in geography on financial development was situated in the understanding of global financial centres as relational sites (Derudder et al., 2012). In this strand of so-called 'relational urban studies', the functional connections and linkages between cities and their urban economies are of research interest. These studies often use quantitative methods and order IFCs by their rank size (Poon et al., 2004) or by the presence of company headquarters (Choi et al., 2003). Another example is the Globalisation and World Cities (GaWC) research network who attempts to conceptualise and empirically 'map' financial centre relations (Taylor, 2004). The heterogeneity of IFCs has long been a challenge in these attempts to classify the geographies of IFCs. Furthermore, these rankings convey the idea of growth, competition and change between IFCs, but do not explain why certain IFCs decline, grow or are stable. Also, there have been concerns in academia that these studies co-produce a social construct that helps to normalise neoliberal urban policies (Van Meeteren et al., 2016). These relational urban studies are powerful visualisations and comparison tools, but do not reveal or explain the causes of the growth of financial centres (Dörry, 2015).

2.1.1. Importance of 'being there'

In a second strand of financial geography literature scholars have attempted to better comprehend the reasons of clustering in financial centres. Such studies illuminate defining features of particular IFCs (Engelen and Grote, 2009). Faulconbridge et al. (2007) elaborate on this discussion by indicating three strands, emphasizing different variables of the importance of 'being there'.

1) *Urbanization logic*. The large global financial institutions are crucial for the current international financial system. These institutions and firms are in close contact with a variety of other advanced producer services, such as accountants, lawyers and consultants. Locating in proximity to each other helps to offer services on time, transfer tacit advice easily and build relationships with other firms. Therefore, cities, such as London and New York, where financial conglomerates have had their head offices, attract these advanced business services as well. This then contributes to further concentration of the financial sector (Sassen, 2006). Nevertheless, the advantages of concentration seem to have shifted in today's screen-based environment. While urban concentration used to be crucial for financial prosperity, now the local availability of actors who are able develop and trade complex and sophisticated financial services seems most important.

2) *Localisation knowledge.* The clustering of financial institutions within IFCs results in so-called 'information spillovers' and 'buzz' (Storper and Venables, 2004). Faulconbridge et al. (2007, p. 283) describe information spillovers as "*the process of knowledge creation and dispersion that is facilitated by the relatively tight spatial matrix within which financial institutions locate themselves in leading IFCs (…) and the dense social interactions between traders*". The decisions that are made in the financial markets are related to the local interactions within firms and the wider financial community. The ability to tap into the local buzz and knowledge spillovers appears to be essential for being successful in the financial markets.

3) *Institutional and regulatory advantage*. Thirdly, Faulconbridge et al. argue that regulatory frameworks continue to provide an opportunity for some financial centres to be more attractive than others. The example of the successes of the financial centres of Dublin and Luxembourg illustrate such an argument. By introducing favourable business conditions and competitive fiscal systems these two cities managed to attract hedge funds and other money managers (Dörry, 2015).

2.1.2. Financial products

However, Engelen & Grote (2009) state that these bodies of literature failed to present a consistent analytical framework. Building on Clark and O'Connor (1997), Faulconbridge et al. (2007) then introduce a conceptualization of finance that is not bound to one of the explanatory variables mentioned above, but encompasses all three of them. The framework of Clark and O'Connor is centred around financial products and the related market conditions and knowledge communities that give way to the product's development and trading.

Faulconbridge et al. (2007, p. 284) state that: "*Since financial products are about prices, risks, and (future) streams of income as well as the external conditions impinging on these variables, they are preeminently about information. As such, a focus on products and the information they contain clearly covers the epistemic community dimension of the explanatory template*". The focus on the informational content of financial products makes it possible to investigate the importance of physical proximity for financial actors. Clark and O'Connor (1997) distinguish three types of financial products: transparent, translucent and opaque. The less transparent the product, the stronger it is rooted in a certain location where the information can be disclosed.

The spatial distribution of *transparent* financial products can be explained by economies of scale. The knowledge for trading and developing transparent financial products is widely available and does not require interpretations by experts. Therefore, these products are less rooted in a specific location. Firms involved in these activities tend to concentrate in centres such as London or New York. Trade in commodities, foreign exchange and stocks of large renowned firms are examples of transparent products.

Translucent products are the intermediate category. Faulconbridge et al. (2007, p. 286) describe them as: "*Variations on well-known global products that use local mutations to create a geographically and temporarily unique product. As a result, the knowledge needed to trade in such products and the risk associated with them is unclear to those outside the market, yet is not exclusively local in a strict sense"*. Financial centres could try to gain a competitive advantage for translucent products by implementing attractive legislation or other localization advantages.

The last category, called *opaque* financial products, takes place near to the financial actors that have the complete understanding of the product. In economic geography this specific 'understanding' is referred to as tacit knowledge. Tacit knowledge is knowledge that you do not get from books, but from personal experience, when working in a particular organization, implying organizational, relational and physical proximity. The antonym of tacit knowledge is codified knowledge, which is widely available. Interest in the concept of tacit knowledge has grown steadily in economic geography in the last decades (Gertler, 2003). With opaque financial products there is an information asymmetry, as traders are not able to completely understand all the variables that influence the market. Also, the knowledge cannot be easily accessed by international analysts. Regulation must be suited to accommodate trade in such innovative products. Financial products can also change category. The example of the option trade in Amsterdam illustrates this argument. In the 1980s the opaqueness of the option trade in Amsterdam forced firms to locate near to the option exchange in the Dutch capital. When option trade started to lose their opaqueness, it resulted in derivative exchanges around the world, while Amsterdam lost part of the option business (Engelen, 2007).

On the other hand, 'the death of distance' and the 'end of geography' literature argued for the increasing impact of Information Communication Technologies (ICT) on international finance (Friedman, 2005). New technologies would reduce the importance of location and geography, resulting in a more spatially even distribution of the financial sector. These prophesies received criticism from the field of geography, as it was often viewed as technological determinism (Wei, 2006). Faulconbridge et al. (2007) note that the traditional advantages of co-location still outweigh the technological possibilities of virtualization. IFCs have continued to act as neo-Marshallian nodes within a global network, resulting in a form of stickiness. Clark (2005) describes this situation by stating that 'money flows like mercury', rather than water, producing an uneven spatial distribution of financial activities. This is characterized by a system where money and financial products flow more easily over the borders of nation states. However, even in a digitalized world, "*markets are being produced* *and reproduced through the performative effects of practices, ideas and techniques of traders embedded in social networks*" (Faulconbridge et al., 2007, p. 281).

2.1.3. Global financial network

The above described research on financial centres greatly contributed to the knowledge of economic and financial geography. Nevertheless, it generated a fragmented understanding of financial centres through individual case studies or isolated studies of inter-city relations (Dörry, 2015). Coe et al. (2014) proposed a more unified and holistic framework for analysing IFCs, using the literature on the global production network (GPN) as a starting point (Dicken et al., 2001). Pan et al. (2020) noted that, as money and financial products flow more freely across capitalist networks, the concept of GFN helps to understand the geographical structure of the financial sector and map out the local and global actors in the financial markets. Wójcik (2018, p. 22) stated that "*the ambition of the GFN framework is to offer a big-picture map of global finance and fit this map into the map of the world economy. It is a geographically focused lens to view the past, present, and future of finance*"

Coe et al. (2014) argued that finance is not just another type of a GPN. Financial activities form a distinctive global economic network in terms of its operation, system, actors and territories, which tends to be often overlooked in GPN research. Financial geographers have written much on global financial systems, flows and networks, but failed to treat them as an integrative framework. The GFN hinges on a network of advanced producer services, world cities and offshore jurisdictions. These are important in shaping economic practices and regional development. World cities are the key nodes in the GFN framework. These cities are home to the main financial institutions and offer the infrastructure needed to accommodate the global flows of capital. (Pan et al., 2020). The GFN is characterized by the articulation of advanced producer services (APS), such as law, accountancy, consultancy, advertising and finance, across world cities and offshore jurisdictions. As stated before, these APS firms are predominantly concentrated in a few cities, because of economies of scale and other benefits (Coe et al, 2014). Also offshore financial centres (OFC) are a critical part in the GFN framework. Corporations, states and individuals generally use these specific financial centres for avoiding or evading certain tax, legal or regulatory matters. Global financial capital flowing in and out of OFC has increased massively since the 1990s (Fernandez and Hendrikse, 2020).

While the geography of IFCs has been fairly stable over the last decades, innovations in financial products may translate into a changing landscape of financial centres. The rise of new technologies, such as FinTech, raises questions about the location of firms carrying out these activities (Lai and Samers, 2020). FinTech appears to be a financial innovation that IFCs think could open up a new windows of locational opportunity. This is illustrated by the fact that financial centres, all over Europe, are setting up Fintech hubs (European FinTech Navigator, 2021; Hendrikse et al., 2020). Second- and third-tier financial cities could try to reclaim a more prominent position. New innovations in the financial sector are often seen by secondary financial centres as opportunities to gain market share from established global centres such as London or New York. How are local political and economic elites exploiting these locational windows of opportunity for the Amsterdam financial centre? National governments also pay increasing attention to the well-being of their IFCs, as they provide international connections, tax revenues and well-paid jobs (Dörry, 2015).

FinTech activities could be characterized as opaque, following the classification of Clark and O'Connor (1997). Although FinTech is not a financial product, like a type of equity or insurance, its novelty does create opacity in financial markets. There is an information symmetry, as regulators, incumbents and tech firms have no way of fully understanding the development of the different FinTech markets, such as payment technology, lending and trading. Proximity and access to FinTech communities becomes crucial. FinTechs on the other hand need to develop close relationships with local gatekeepers to enter the financial market. It is therefore important to look at how these cities are utilising this new wave of FinTech in order to understand broader changes in the geography of financial centres. The next chapter will introduce the literature on FinTech and give an overview of recent research.

2.2. FinTech

The limited critical attention for the concept of 'FinTech' (a portmanteau of financial technology) is undoubtedly related to the newness of the term. Scholarship on FinTech is relatively young. The subject is predominantly discussed in the fields of business, economics, management, computer science and law (Wójcik, 2020a). Furthermore, the limited social scientific scrutiny may be explained by the complicated and confusing nature of FinTech. Lai and Samers (2020) state that FinTech has become a chaotic concept, as FinTech operates at the intersections of the finance and technology sector. The origins of the word FinTech can be traced back to a report of a Citigroup department in the 1980s, although the term did not gain much attention until the second half of the 2010s (Arner et al., 2016). FinTech could be defined as the use of technology to deliver financial solutions. However, understanding the distinctiveness of the 'Fin' and 'Tech' connection since 2008 leads to a narrower definition of the term. This latest evolution is led by players who are increasingly not part of the traditional finance and banking sector and pose challenges for financial centres and incumbent finance and banking institutions, according to Wójcik and Cojoianu (2018). Schueffel (2016, p. 32) states that FinTech is "*a new financial industry that applies technology to improve financial institutions*". It is important to note that both 'deliver' and 'improve' can have different connotations, whether one interprets 'improve' as normative or the search of firms to increase earnings, productivity or initiate new markets. Wójcik (2020a, p. 2) proposes to define FinTech as "*a set of innovations and an economic sector that focus on the application of recently developed digital technologies to financial services*". This definition seems best fitted as it emphasizes that FinTech is 'a set of innovations and an economic sector', not necessarily a specific firm, as FinTech products can be created by or in collaboration with financial services or central banks as well. In this paper, besides quotes from other papers, the form 'FinTech' is used, as it highlights the combination of 'Fin' and 'Tech' better than 'Fintech' or 'fintech'.

FinTech tends to be viewed as a novel alliance of financial services and technology. However, Arner et al. (2016) note that FinTech rather is a new term for an old relationship. Three eras of FinTech development can be distinguished, starting with the introduction of the first transatlantic cable in 1866. The second era started in the 1960s with the introduction of advanced technologies for communications and the processing of transactions, such as the ATM, finance became more digitalized. Arne et al. identify the current coalescence of ‘Fin’ and ‘Tech’ since 2008 as ‘FinTech 3.0’. This period of financial innovation is distinctive, as the financial services and products are increasingly offered by firms that do not identify as traditional banking and financial institutions. Start-up firms and established firms in the technology sector (Big Tech) started to provide services themselves, where previously financial institution tried to develop these products and services in-house. The emergence of the new wave of FinTech has been explained by the damaged reputation after the 2008 financial crisis of the state-supported ‘too-big-to-fail’ banks, changing the public perception of banking and finance. Also new opportunities for financial innovation opened, with the introduction of smartphones and application programming interfaces. Furthermore, the low interest rates of the last decade contributed to the FinTech investment boom (Wójcik, 2020a).

Lai and Samers (2020) give four reasons for the significance of the current wave FinTech for the field of financial geography. Firstly, global venture capital investment in FinTech increased rapidly between 2010 and 2018, from US$1.8 billion to US$56 billion (Accenture, 2019). Secondly, both governments and private actors intensively promote FinTech in IFCs as a chance to develop its capabilities and improve its IFC-status. Thirdly, Lai and Samers state that Fintech appears to disrupt or at least reconfigure the financial sector through lower costs, higher efficiency and greater convenience. Fourth, FinTech is often mentioned to offer opportunities to create and redevelop financial networks in less financially developed countries. The first three points are of great importance to this master thesis.

FinTech businesses are concentrated within and across countries, leading to the inescapable practice of ranking financial centres according to a certain niche. Findexable (2020), a company following FinTech development, made an attempt to rank financial centres by their FinTech ecosystem. Findexable stated that half of the FinTech hubs were in cities, that are not seen as established financial centres. However, the company obviously has a commercial interest in making the geography of FinTech appear as distinct as possible to promote their research.

In the media FinTech tends to be associated with financial disintermediation, as it appears that outsiders have entered and disrupted the conservative financial sector. Techno-libertarian prophets like to forecast blockchain or neo-banks causing a radical process of disruption, resulting in a more decentralised and democratic form of finance (Economist, 2021). However, Lai (2020) notes that reintermediation might be more fitting, as the relationship between technology and finance is constantly evolving. Disintermediation, taken to an extreme, would mean that financial centres, understood as concentrations of intermediaries, become history. Reintermediation would keep financial centres relevant, providing intermediaries incentives to continue concentrating in space. Early findings suggest that FinTech is strengthening the established financial centres (Lai, 2020 and Hendrikse et al., 2020). Nevertheless, there seems to be evidence that in certain technology centres, which have no prominent finance sector, FinTech centres are arising (Findexable, 2020). Therefore, Haberly et al. (2019) emphasize the importance of more technical and virtual geographies of the financial sector, paying attention to technology firms and data centres. Also, corporate tax havens, driven by legal geographies of finance could flourish under FinTech, as its digital character suits regulatory arbitrage (Wójcik, 2020b).

Wójcik (2020b) stated that FinTech scholarship has paid little attention to the location decisions of actors in the FinTech ecosystem. FinTech might have an impact on the spatial organization of the city, as firms make different location decisions to better adapt to FinTech. For example, incumbent financial firms are creating urban ecosystems from where they try to 'control' this new wave of technology, while on the other hand new clusters of FinTech firms are emerging in cities (Hendrikse et al. 2020; Wójcik 2020b).

The third chapter of the literature review will pay attention to strategic coupling and ecosystem literature, two theories from economic geography which provide a framework for analysing how IFCs try to seize this window of locational opportunity created by FinTech.

2.3. Theoretical Framework

The GFN approach, described in the first part of the literature review, provides useful heuristics to analyse IFCs (Dörry, 2015). As has been widely acknowledged, the GFN framework is something of an initial sketch to study the geographies of finance and needs further elaboration to be operationalised (Töpfer, 2018; Haberly et al., 2019). Therefore, theories from the field of economic geography will be introduced to complement the researcher's theoretical framework.

Taking cue from Hendrikse et al. (2020), three economic geography connections underpin our research on the FinTech ecosystem of Amsterdam. First, financial centres are examining their competitive assets, due to the emergence of a new finance and technology paradigm. Second- and third-tier financial centres might be able to increase their competitiveness, boosting their IFC-status. This is reflected in the emergence of FinTech hubs throughout Europe (European FinTech Navigator, 2021). Second, the current linkup between finance and technology suggests an increased related variety between industrial fields. Evolutionary economic geography, a sub discipline of economic geography, theorizes how related variety can lead to regional development and innovation (Frenken and Boschma, 2007). This leads to a so-called 'window of locational opportunity' for potential regional development (Scott and Storper, 1987). Seizing such a window of locational opportunity happens to efforts of strategic coupling. Strategic coupling provides a framework on how regional economies are plugged into the global financial networks. Third, financial centres are developing entrepreneurial ecosystems to actively create linkages between fin and tech to overcome geographical and institutional differences (Alaassar, 2021). Hendrikse et al. (2020) argue that it is critical to for financial geography to collaborate with theories of its parent discipline economic geography to understand the emergence of FinTech.

2.3.1. Evolutionary economic Geography

The current link up between 'Fin' and 'Tech' suggests an increased related variety between these industrial fields. Evolutionary economic geography (EEG), which has emerged as one of the more prominent theoretical frameworks in the field of economic geography, could provide some interesting insights into how connections are made between 'Fin' and 'Tech' (Chen and Hassink, 2021). It theorizes how a related variety (e.g. finance and technology) of firms in geographical location enables innovation, while spatialising the framework in terms of locational opportunity (Hendrikse et al., 2020). According to EEG, new industries tend to grow out of related pre-existing industries. However, even if the resources are there, the region could lack organizational capacities or apply misguided policies, failing to successfully utilize this window of opportunity. A region could experience a lock-in, getting stuck in its old habits blocking them from innovation (Martin and Sunley, 2006).

In evolutionary economic geography it is assumed that every novel transformation or combination provides an opportunity for regions to be economically successful or reinvent themselves (Lai and Samers, 2020). The is reflected in the theoretical concept of the window of locational opportunity, which builds on the work of Scott and Storper (1987). The emergence of a new sector or industry could present an economic opportunity for both leading and lagging regions. Boschma (1997, p.12) further explains the concept by stating:

"*The spatial formation of new industries during their initial stage of growth takes place rather independently of spatial structures and conditions laid down in the past. The impact of space is believed to be unpredictable and rather weak for several reasons: there is likely to be a poor match with the new requirements of new industries, their creative ability may safeguard their development in unfavourable places, while local conditions favourable to their development are likely to be of a generic nature*."

Therefore, Boschma emphasizes the importance of creativity and luck at the initial stage of development. New innovations, such as FinTech, provide opportunities for every region, because it represents a significant break from previous rounds of economic development. Though, such an opportunity can only be seized if there is a local match with the new sector, reflecting path dependency (Grabher, 1993). Furthermore, regions have to be on time to seize this opportunity, as the window of locational opportunity will be closed at a certain moment. Boschma (2007, p.4) stated that:

"*As a result, the windows of opportunity are believed to be open during the early development of the new industry. Potentially, these decisive moments in economic history may break the centre-periphery nature of the urban and regional system, possibly leading to leapfrogging. At a later stage of the life cycle of the industry, the WLO become more closed, due to self-reinforcing mechanisms like the build-up of agglomeration economies, as embodied in localized knowledge spillovers*".

2.3.2. Strategic coupling

Yeung (2009, p. 213) defined strategic coupling as: *"in the context of urban and regional development, strategic coupling refers to the dynamic processes through which actors in cities and/or regions coordinate, mediate, and arbitrage strategic interests between local actors and their counterparts in the global economy"*. With strategic coupling local assets are matched with the global production network. Therefore, it brings together stakeholders that are active on different geographical scales. The process is viewed as 'strategic', because it is intentional and requires active cooperation by its participants (Mackinnon, 2012). To seize a window locational opportunity, actors from different professional backgrounds have to work together. Its continuation cannot be taken for granted as it is a time and space contingent phenomenon (Bathelt and Glückler, 2014).

Hendrikse et al. (2020) note that applying the theory of strategic coupling to the political economy of Europe asks for a reconsideration of the concept. A large share of the research using the concept of strategic coupling is focused on East Asia. State intervention has more negative associations in European countries, due to misguided policies in the 1970s and 1980s (Mommen, 1994).

2.3.3. Ecosystems and Fin-Tech-State triangle

Stam and Spigel (2018) argue that regions have to develop economic ecosystems to cultivate those linkages, as part of these strategic coupling strategies. The ecosystem concept helps to understand which localised knowledge, inter firm networks and shared labour markets, sustain and augment regional competitiveness. Understanding ecosystem dynamics in the FinTech cluster allows an analysis of how Amsterdam is trying to seize this window of opportunity created by the rise of FinTech (Sohns and Wójcik, 2020). Audretsch and Belitski (2007, p. 1031) define ecosystems as: "*Institutional and organizational as well as other systemic factors that interact and influence identification and commercialisation of entrepreneurial opportunities*". Not only scholars in economic geography are familiar with the ecosystem concept, consultants and FinTech professionals fancy to refer to those terms themselves as well. Ecosystem language has become more fashionable than terms like 'industry' or 'cluster', as it provokes a natural way of collaborating. Lai (2020) identified the key actors of the evolving FinTech ecosystem and grouped them into the following 5 main types:

1) *Banks* that have loans and deposit facilities, as well as a range of other financial services, like credit, foreign exchange and money markets. These are predominantly large entities with a global customer base or more regional oriented. Banks are seen as incumbents, as they had for a long time an established hold on the different segments of finance and banking.

2) *Non-banking institutions* are for example insurance firms, venture capital firms and hedge funds, who offer financial services without a banking license. This sector tends to be less threatened by FinTech than banks.

3) *Technology companies* are starting to be active in financial services, but it is not their reason of existence (e.g. Alibaba, Alphabet and Facebook). They are viewed as disruptors entering the financial service sector, while not being a financial company.

4) *State entities* act as regulators of the financial and technology market to ensure its efficiency. Furthermore, the (local) government seem to take on the role as 'regional animateur' to promote FinTech development and investments in their domestic financial centres (Morgan, 1997; Hendrikse et al., 2020). National governments show great care for their IFC's well-being, as they provide international connections, tax revenues and well-paid jobs. These slightly conflicting roles can either benefit disruptors (e.g. by loosening access to banking regulations) or incumbents (e.g. increasing the cost of compliance).

5) *Start-ups* tend to be small companies focused on a specific technology that could impact existing financial services. These are fast moving enterprises that tend be seen as disrupters of the financial sectors.

Hendrikse et al. (2020) visualised the tensions and common interests of the above described actors in the Fin-Tech-State triangle, shown in figure 1. The figure explains how strategic coupling could unfold between the different actors. Incumbents aim to create digital platforms so that they can continue to be the obligatory passage points for financial centres. Financial institutions reacted to the rise of FinTech by seeking partnerships with FinTech firms to gain access to these new technologies. Also banks created innovation hubs to support the advancement of in-house FinTech solutions. Therefore, part of the FinTech industry has developed in close collaboration with financial incumbents, because of the need of FinTechs to have access to payment infrastructure, banking licenses and certain know-how. Established financial firms are trying to internalize the customs, knowledge and organization practices of the tech firms. The technology sector is characterized by a relative openness towards innovation, which incumbents need to adapt to, as they are more used to develop in-house. The state’s aim is to bring the related sectors together and trey to act as a ‘regional animateur’ to cultivate an FinTech entrepreneurial ecosystem. The application of the Fin-Tech-State triangle on the Brussels case pays limited attention to how the connections between the three parties are spatialising and thereby possibly changing the economic fabric and spatial organization of the city. The Fin-Tech-State triangle will be used as an analytical framework. The operationalization of the concept on the case study is further explained in the methodology chapter.

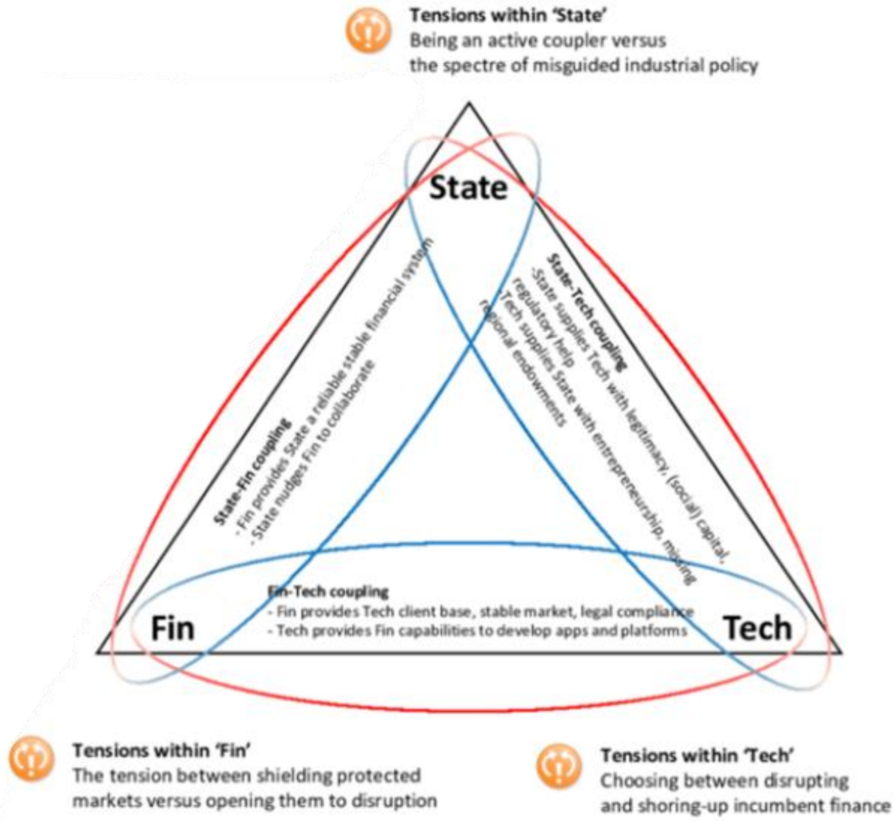

Figure 1: Fin-Tech-State triangle (source: Hendrikse et al., 2020).

3. Amsterdam Financial Centre

This part introduces the case study of this research, i.e. the financial centre of Amsterdam. To understand the current situation and geographical impact of FinTech, it is essential to explain the historical development of the Amsterdam financial centre from 1970s to 2008.

3.1. Making the case for Amsterdam

The capital of the Netherlands provides an exemplary case study for this research as it was thought to be a serious contender in the international competition between financial centres in the 1970s, at the time that the mobility of capital started to increase. Amsterdam was well equipped, as a historical trading venue and an established 'capital of capital' (Cassis, 2006). News articles and research papers on the Dutch financial sector rarely fail to mention Amsterdam's lang heritage of finance. The Dutch capital had the first central bank and first company that offered equity shares of its company to the public. Nevertheless, its financial centre turned from an important innovative place to a secondary financial centre, fixed within a network of global cities (Engelen, 2007 and Fernandez, 2011). Since then, Amsterdam has been looking for opportunities to strengthen the fleeting competitiveness of its financial sector. The chapter below provides an in-depth literature analysis of the financial geography of Amsterdam from the 1970s onwards. Highlighting two public-private organizations that were launched, namely the 'Amsterdam Financial Centre' (1988-1994) and the 'Holland Financial Centre' (2007-2014) to improve the competitiveness of the Dutch financial sector.

3.2. Emergence of global finance

From the end of World War II until the beginning of the 1970s, most financial centres predominantly operated in a nationally enclosed economic setting and functioned as intermediaries serving the national capital allocation. International flows of capital allocation were limited, costly and highly regulated. Therefore, 'varieties of capitalism' determined the type of development national financial centres went through. This changed in the 1970s with the breakdown of the international monetary system, the global wave of deregulation and the excess of liquid capital. Since then Amsterdam has lost part of its financial activity to foreign financial centres, especially New York and London (Fernandez, 2011).

This transformation also had a distinct urban spatial articulation, in terms of the location of financial services. From the 1980s onwards firms that operated in financial centres were increasingly becoming detached from their locally bound institutional framework and reconnected in a space of flows. From a collection of medium sized firms along the main canals of Amsterdam, since the 16th century the prime location for financial firms in the Netherlands, it changed into multiple concentrations of high-rise office buildings along the periphery, as shown in figure 2. The historic centre was simply not able to absorb these new larger financial institutions (Fernandez, 2011).

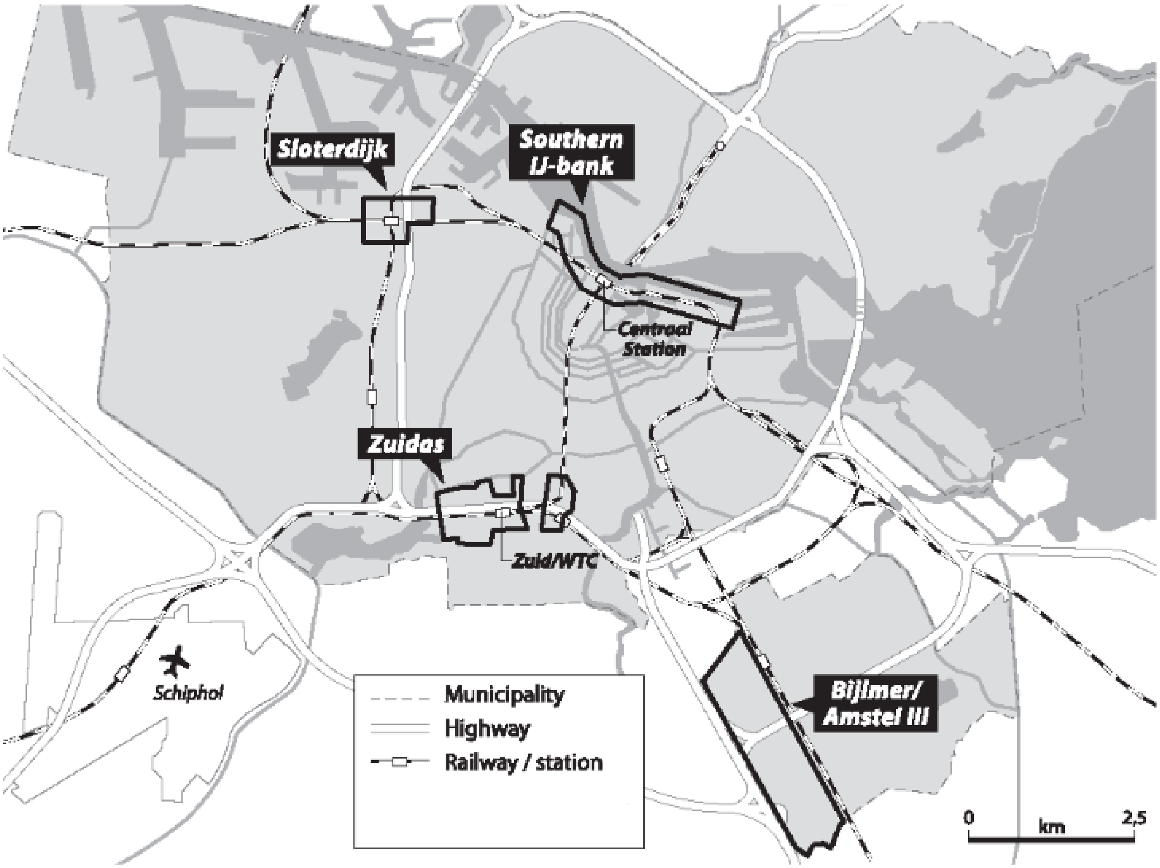

Figure 2: Business districts in Amsterdam (source: Majoor, 2009).

The enthusiasm with which the Amsterdam financial centre greeted the first sings of globalization, changed into fears of losing out to the London financial centre. The Dutch National Bank (DNB) created a special London-ratio index, to track and show the London Stock Exchange's market share of Dutch government bonds. Therefore, the Amsterdam Financial Centre (AFC) was set up in 1988, a public-private organization to promote and strengthen the Amsterdam financial centre. The AFC project has been regarded as a successful initiative. The AFC took a clear stance and highlighted the interests of the Dutch financial industry in discussions on urban planning and development. The action plan was executed in relatively short time-span and was supported by the local and national governments. Then finance minister Wim Kok, from the Dutch Labour Party, was quickly to process the wish list of the AFC through the parliamentary process in 1990. Similar to what already had happened in other European countries, the Netherlands abolished the uncompetitive fiscal treatment of transactions in shares and equity. These changes further stimulated the role of Amsterdam as an OFC (Fernandez, 2011). Also, the AFC founded a new educational facility, namely the Amsterdam Institute of Finance, to improve the skills of the local labour force to meet the standards of the Anglo-American investment banks was successful.

The AFC was also involved together with the Ministry of Finance and the Prime Minister of the Netherlands in the lobbying for the European Central Bank (ECB). While this was not the core of AFC's strategy to increase its competitiveness, it became dominant, especially in the media. Although the chances of winning from competitors, like Frankfurt, were low from the beginning, the Dutch lobby made some strategic mistakes. Fernandez (2011) stated that the most important one was betting on two horses. Amsterdam competed both for the ECB and the European Bank for Reconstruction and Development (ERBD). As both bids were lost, the ECB went to Frankfurt and the EBRD to London, the AFC received negative publicity. The long list of achievements that the AFC accomplished in combination with the growing negative media attention led to the conclusion to dissolve the organisation in 1994.

3.3. The downfall

The capacity of the Amsterdam financial centre to adapt and compete with other IFCs deteriorated in the 2000s, as it became intertwined in a hierarchical circuit of IFCs and lost its monopoly over national markets. Higher value-added activities concentrated in London and New York, leading to a steady decline of secondary financial centres, such as Amsterdam. The production factors of finance were all attracted to the gravitational forces of London and New York. Furthermore, the institutional investor's demand for 'alternative' investment products increased heavily and gave power to investment banks, hedge funds and other financial boutiques, operated almost exclusively from London and New York (Faulconbridge et al, 2007). Next to that, the stock markets also became more concentrated, through mergers and the growth of alternative trading platforms. The merging of the Amsterdam Stock Exchange (ASE) with the stock exchanges of Paris and Brussels into the Euronext and the rise of alternative trading platforms accelerated concentration tendencies and loss of market share (Engelen and Grote, 2009). The global financial crisis temporarily interrupted the downfall of secondary financial centres. Banks and other financial institutions were more reserved in playing the cosmopolitan card and sought shelter in their national states (Fernandez, 2011).

To strengthen the fleeting competitiveness of the financial sector of Amsterdam the public-private organisation 'Holland Financial Centre' was launched. While the Amsterdam Financial Centre initiative of the 1980s was about sustaining Amsterdam as a prominent financial centre compatible with London, the aim for HFC was different. The HFC focused on finding a niche market in financial services where Amsterdam could have a competitive advantage in. This different of approach of the HFC highlighted the general decline of the Amsterdam financial centre. The strategy turned from offence to defence (Fernandez, 2011).

One of the main goals of HFC was putting Amsterdam on the map as a financial centre of continental Europe. The Dutch organisation consisted of a wide variety of players in the financial market, ranging from regulators, banks, pension funds, investors and the government. HFC especially focused on retirement management, financial logistics, securities trading and 'finance and sustainability' as possible niches for the Amsterdam financial centre. The now created Zuidas, where real estate prices skyrocketed, was seen as the ideal business location. ABN Amro and ING were the main driving forces behind the urban project that should become Amsterdams 'financial mile' (Engelen and Musterd, 2010). However, when then Dutch Finance minister Wouter Bos, from the Labour Party, festively opened the HFC-building in 2007, signs were starting to come through of a housing crisis in the USA. The upcoming financial crisis changed the future of the Zuidas and HFC dramatically (Kosters, 2014).

The Dutch government gave priority to restructure the financial sector, instead of aiming for growth. Furthermore, the close relationship between regulators, banks and players became subject to large criticism. This situation peaked when the director of HFC had to step down, due to assumed conflicts of interest around the nationalisation of the Dutch bank and insurer SNS Reaal, where he acted as a board member. The reform measures of the Dutch government, introduced during the financial crisis, were focused on creating distance between regulators and banks, an organisation as the HFC, featuring players from the public and private sector, was not seen suitable in those times. After the withdrawal of the Dutch government the organisation lost most of its legitimacy and was closed in 2014 (Business Insider, 2014; Kosters, 2014).

Faulconbridge et al. (2007, p. 295) conclude their analysis on the Amsterdam financial centre by stating that: "*Amsterdam's decline would thus seem to be the result of a loss in competitive advantage and failure to replace it with anything new in the form of innovative opaque and translucent products that rely on locally specific and embedded knowledge communities, as London and other centres have done"*. There is a large concentration of trusts in Amsterdam that play an important role in global finance. However, it is a low value-added financial activity that is located in the Netherlands for tax avoidance reasons (Faulconbridge et al., 2007).

Fernandez (2011) and Faulconbridge et al. (2007) wonder if the future viability of second- and third-tier financial centres dependents on the presence of actors that are able to establish connections between outsiders and opaque financial products, such as private-equity or hedge funds. Or that the presence of actors who can upgrade transparent financial practices to the, higher rewarding, translucent ones. With the appearance to the stage of Asian financial centres, Europe's role seems to be slowly diminishing. While secondary centres, like Amsterdam, are relegated to the background and could share the same fate as Europe's former provincial and regional banking centres. Or will the Amsterdam financial centre be able to capture sufficient global flows to reproduce itself as an IFC? FinTech could help the Amsterdam financial centre to take back some of its lost financial competitiveness.

4. Methodology

4.1. Introduction

This chapter presents the research design and the methodology. It elaborates on the development of the research question in chapter one. The research question responds to gaps in the academic literature of financial and economic geography by focusing on how second-tier financial centres are responding to the current coalescence between finance and tech. The research design is an encompassing framework to get from the initial research question to accurate conclusions through the collection, analysis and interpretation of data. The methodology refers to particular methods, procedures and tools for this endeavour.

This research investigates the emerging geographies of FinTech. A topic that due to its novelty has not received much coverage in the field of financial geography (Lai and Samers, 2020). In situations where existing research is scarce and new theory needs to be developed inductively, qualitative research is fitting (Edmondson and McManus, 2007). Research on FinTech from a financial geography perspective is novel and emerging, making the choice for qualitative research suitable. Cluster or ecosystem processes are highly complex and could not be fully explained solely using a solely quantitative approach. According to Newmann et al. (1998, p. 3) qualitative research is: “observing, and interpreting reality with the aim of developing a theory that will explain what was experienced”. Qualitative research is centred around the assumption that reality is socially constructed, and the research aim is to discover the underlying dynamics of this constructed reality. This paper also has deductive elements, as the theoretical and analytical frameworks were informed by previous research on financial centres. The research is fitted in a constructivist and interpretative research agenda.

Baxter and Jack (2008) argue that case studies are a useful tool for analysing complex social phenomena. This type of specialised examination allows researchers to understand underlying dynamics of real events and processes. When the focus is on contemporary social phenomena case studies have the potential to generate in-depth and holistic knowledge on the bounded system in question. According to Creswell (2002, p. 485), bounded means: “*that the case is separated out for research terms of time, place or some physical boundaries*”. The bounded system in this thesis is the FinTech ecosystem, as defined by Lai (2020), of Amsterdam. Case studies are appropriate for developing new theories, as they stimulate a rich dialogue between ideas and evidence. The need of case studies is evident in areas that need to be observed from multiple dimensions and require understanding of complex social problems and processes. Nevertheless, it is difficult to argue for generalisability of case studies in a statistical sense.

The FinTech ecosystem in Amsterdam is the case of interest of this study. More specifically ‘Holland Fintech’, a branch organisation of FinTech in the Netherlands and located in Amsterdam. Holland Fintech plays a central role in the Dutch FinTech ecosystem by acting as a marketplace for various stakeholders in finance and technology. Holland Fintech organizes events for their members, such as the ‘Amsterdam FinTech Week’ and ‘FinTech meets the Regulators'. While the focus is on Holland Fintech, the research also pays attention to the wider developments of the Dutch FinTech ecosystem.

4.2. Research methods and data collection

Case studies are often concerned with several data sources and collection methods to gain a broad understanding of the happenings that are taking place (Jack and Baxter, 2008). Semi-structured interviews form the backbone of the methodology, complimented by non-participatory observations and document research (reports and newspapers). Quantitative data is used to give an introduction of the Amsterdam ecosystem in chapter five.

4.2.1. Interviews

Semi-structured interviews are an excellent method for investigating complex behaviours, opinions and emotions (Creswell, 2009). A semi-structured interview develops during the conversation, giving room to the participants to explore the issues that are meaningful to them. Interviewees were selected based on snowballing, starting with people affiliated with Holland Fintech. The aim was to conduct interviews with different stakeholders and reflect the diversity of the FinTech ecosystem, as described by Lai (2020). The interviewees were approached based on their assumed knowledge and experience given their role within the institution and the map of stakeholders. Therefore, an expertise-driven snowball sampling technique was used in this research (Boeije, 2010). 8 interviews were conducted with key-actors in the Amsterdam FinTech ecosystem in July and August 2021. The interviews had an average length of around 40 minutes. The sample of interviewees, shown in table 1, represents the variety of stakeholders in the FinTech ecosystem. Interviews were conducted in Dutch and English. Approximately one in three people approached for the interviews responded positively on taking part. A semi-structured interview guide was set up based on preliminary findings of the document research and the literature review. Also, questions were changed per interview to fit the professional background of the interviewee.

Interview	Referred to in text as	Sector	Holland Fintech member
1	Investor	Asset management	No
2	FinTech entrepreneur #1	FinTech in payment infrastructure	Yes
3	Representative of Holland Fintech	FinTech Branch organisation	Yes
4	Policy advisor DNB	Regulator	No
5	Representative of the NFIA	National foreign investment agency	No
6	FinTech entrepreneur #2	FinTech consultancy	Yes
7	Representative of Amsterdam inbusiness	Municipal foreign investment agency	No
8	Banker ING	Bank	Yes

Table 1: overview of interviewees

4.2.2. Non-participant observation

With non-participant observation events or situations are observed, without the researcher actively participating. This ethnography tool helps to understand a phenomenon by observing a community or social system, while holding a neutral position to the activities seen and having little to no interaction with the participants (Liu and Maitlis, 2010). From August 2020 to August 2021 the monthly online meet-up of Holland Fintech was attended. The researcher was also present online at different events during the Amsterdam FinTech Week 2020 in September and Amsterdam FinTech 2021 in June both organized by Holland Fintech. The non-participant observation offered a more nuanced and dynamic understanding of the interactions in the Dutch FinTech ecosystem. Furthermore, attending the meetings helped to gain familiarity with the FinTech sector, their language and narratives. Some of the interviewees were approached after their appearance at one of the events. Because the researcher was not living in the Netherlands, the fact that the meet-up was hosted online, due to the COVID-19 pandemic, offered an opportunity to observe the community. However, several interviewees stated they were participating less in the events of Holland FinTech, since they went online. Furthermore, the method loses some of its strength online because the researcher was not present in the natural habitat of Holland Fintech or one of its members (Robinson and Schulz, 2011).

4.2.3. Document analysis

Document analysis is an important research method, which contributed to further understand the different perspectives in the Dutch FinTech ecosystem. Document analysis is often used in combination with other methods and is an important component for most schemes of triangulation. Triangulation is the combination of methodologies in the study of the same phenomenon. In a case study, qualitative researchers usually use different data sources and methods in order to seek for conflicts and similarities. The potential bias of the results can be reduced by examining information collected through different methods (Bowen, 2009). The methodological search for relevant documents proved fruitful. Multiple documents were reviewed and coded for analysis. These included project documents and reports from Holland Fintech, the Dutch Ministry of Finance, de Nederlandsche Bank (DNB, Dutch banking authority) and PWC. Besides secondary academic literature cited throughout, this paper contains extensive documentation of the Dutch and English language financial press (e.g. Het Financieele Dagblad and the Economist) on the Amsterdam financial centre and FinTech. Online news articles and reports were collected that covered the FinTech ecosystem in Amsterdam. These articles provided a rich source of data on the external narratives of different stakeholders in the FinTech ecosystem. The search terms were based around 'FinTech' and 'Amsterdam' and covered the period of 2014-2021.

4.3. Data analysis

The interviews were recorded on the researcher's smartphone with permission obtained from the participants on the premise that quotations would be anonymised. Notes were taken during the interview and these were subsequently typed down alongside a transcript of the interview. Transcription and coding were conducted on a laptop. The Fin-Tech-State triangle served as the framework in the analytical process. It is a conceptualization of the different tensions, synergies, bottlenecks and paradoxes between stakeholders from finance, technology and the state during the cultivation of a FinTech ecosystem. The analysis, therefore, both consists of inductive and deductive coding. Codes were deductively derived from the Fin-Tech-State triangle, while new codes came up during the data analysis process. As the paper is an exploratory research into the emerging geographies of FinTech, it is important to come up with new theories, ideas or concepts. The transcripts were analysed in two cycles. The first cycle, initial coding, allowed to identify information relevant to the emerging Dutch FinTech ecosystem. Subsequently, the initial codes were grouped into larger themes, partly deducted from the Fin-Tech-State triangle, in the second cycle. By carrying out this process of analysis and looking at the overall findings, the 'bigger picture' could be established. The coding process was cyclical, when going over the transcripts, repeatedly new codes emerged and others were dropped.

After the two stages of coding, the data was condensed and reformulated into meaningful findings. The coding and analysis of the documents pointed towards sources of similarities, conflicts and tensions between financial, technology and state actors. The literature on financial centre formation, strategic coupling and evolutionary economic geography were consulted again to help generate theoretical ties. The small sample size of the thesis helped the researcher to examine each conversion in significant depth. Key ideas were written down along with the supporting quotes, snippets from the documents and non-participatory research, and theoretical ties. With the extensive use of secondary data and the interviews a set of key moments were identified in the emerging of the Dutch FinTech ecosystem. This method, known as ´process tracing´ helped to identify the causal mechanisms that led to the current ecosystem. The method has been proved fruitful in other studies investigating the financial centres (Xu, 2014; Trampusch, 2018).

5. Results

This study sets out to explore the following research question: how are finance, technology and state actors trying to foster the emergence of a FinTech ecosystem in the Amsterdam financial centre? To answer this question data has been collected from a variety of sources, as described in the methodology section. The analysis aims to illustrate the various synergies, conflicts and tensions that make up the Dutch FinTech ecosystem in order to establish a profound understanding of them. The first part of the analysis consists of an initial sketch of the Dutch FinTech ecosystem and a comparison with other countries to situate the case. The second part tells the story of the branch organization Holland Fintech, from its emergence until now, highlighting key moments of state-firm and interfirm coupling in the Dutch FinTech ecosystem. The third, fourth and fifth part present the different tensions and synergies observed between the different stakeholders of the Dutch Fin-Tech-State triangle. The sixth part presents an evaluation of the Dutch FinTech ecosystem by the different stakeholders. In the seventh part, the analytical framework of the Fin-Tech-State triangle is spatialised to reflect on where these activities are taking place in the urban environment.

5.1. FinTech in the Netherlands

Since 2014 the Dutch FinTech sector grew rapidly, from 200 firms in 2016 to 635 in 2019 (EY, 2019). However, estimates tend to differ per publications, due to the definitions used for FinTech and the type of survey used by a report. Also some firms only recently started to see themselves as a FinTech company, although they were already active for decades. Payments and e-commerce, investing asset management and accounting are the most prominent FinTech subindustries in the Netherlands. The Dutch FinTech ecosystem is characterized by a few number of large companies and a greater number of small companies (1-10 employees). The average age of firms is seven years. Research by EY (2019) found that 32% of the FinTech firms in the Netherlands are located in Amsterdam. 20% of the FinTechs are located in the Hague and Utrecht. Therefore, over half of the FinTech firms are located in the Randstad. This is no surprise, as the financial and governmental institutions are, also, in this conurbation. Outside the Randstad the FinTech firms are spread out, with small concentrations around cities with universities. Amsterdam also headquarters three unicorns in FinTech: Bitfury, Mollie and bunq. Unicorns are privately held start-up with a valuation of over US$ 1 billion in FinTech. Adyen, now publicly listed company on the AEX, used to be a unicorn. Currently, in Europe only the UK (16) and Germany (8) have more fintech unicorns (Crunchbase, 2021).

A Deloitte report (2017) on FinTech hubs with a worldwide scope, characterized Amsterdam as an ‘old hub’, referring to its long financial history. The Dutch FinTech ecosystem is ranked 6th of Europe. The index is based on the ‘World Bank Doing Business Index’, the ‘Global Innovation Index’ and ‘the Global Financial Centres’. Deloitte (2017, p. 74) describes Amsterdam as having “*one of the strongest entrepreneurial environments in Europe, a strong talent pool, and several technology hubs in close proximity to each other. The FinTech hub is growing, and regulators are up to speed and are accessible. The financial ecosystem is* *mature and payment transaction costs are low. These factors make Holland a hospitable testing ground for start-ups*". Findexable (2020) even ranks Amsterdam 4th in Europe, only surpassed by London, Berlin and Paris. In the general rankings for financial centres, not specific for FinTech, Amsterdam is often ranked lower, below the financial centres of amongst others Frankfurt, Milan and Zurich (Z/Yen, 2021).

A representative of the NFIA reflects on the possible attraction of the Netherlands on FinTech:

"*Those are things like digital infrastructure, knowledge, but also technical and financial knowledge, liveability for expats, central location in Europe, datacentre capacity. These are a few strengths the Netherland has. Innovation capacity is also a strength, we are scoring high on all kinds of innovation lists*" (interview NFIA representative, translated by the author).

A representative of Amsterdam inbusiness, the foreign investment agency of the municipality of Amsterdam, adds to that:

"*Firms like to go to cities where people like to live. Expats like to live in Amsterdam. On the other hand you are also seeing that talent is getting more expensive in Amsterdam. . . . There are multiple factors* [for choosing Amsterdam]. *Also the business climate and who will become your main client. For example if that will become Adyen, then you want to be there. Multiple factors are decisive*" (interview Amsterdam inbusiness representative, translated by the author).

Many international tech firms have offices around Amsterdam, including IBM, SAP, Microsoft and Google, which amongst others is explained by the lucrative tax arrangements they are able to make (Shaxson, 2020). Also, Amsterdam has one of the most advanced digital infrastructures in Europe. The Amsterdam Internet Exchange (AMS-IX) is the largest data transport hub in the world, which lead to a steep increase in the number of data centres built in the surroundings of Amsterdam over the last decades. Currently, one third of all the European data centres are located around Amsterdam (Gemeente Amsterdam, 2020). The Netherlands is the country in Europe with the highest rate of digital adoption by consumers (EY, 2019). E-commerce has become popular in the Netherlands since the end of the 1990s, which led to the need for online payment service providers (PSPs). Also relatively early in 2005 the three major Dutch banks together created 'iDeal', an inter-bank system and a popular payment method in the Netherlands (BNR, 2020). Furthermore, the Netherlands are attractive for international firms because of the high language proficiency of English, ensuring international teams and scalability. Also, the good physical infrastructure guarantees accessibility. However, the Dutch market is relatively small compared to the German and French market. FinTechs focused on retail banking are more likely to emerge in Germany, France or the United Kingdom, due to their bigger internal market (EY, 2019).

Table 2 shows that the United Kingdom is far ahead in their FinTech development in comparison to other European countries. The Netherlands has a large number of FinTech firms, however the influx of venture capital is fairly low.

Country	Venture capital investments in FinTech in € (2020, millions)[a]	Number of FinTech companies (2019)[b]	FinTech adoption consumers (2019, percentage)[b]	FinTech unicorns (2021)[a]	GDP in US$ (2020, billions)[c]
Netherlands	186	635	73	3	912
France	572	775	35	3	2603
Germany	483	700	64	8	3806
Sweden	1173	387	64	1	538
UK	6417	1600	71	16	2708

Table 2: overview of FinTech developments in a selection of European countries (sources: a: EY, 2019, b: Crunchbase, 2021, c: World bank, 2021).

The Dutch financial services sector has a strong reputation as having one of the most mature pension fund industries (Fernandez, 2011). The total pension capital in the Netherlands is the second largest of Europe. The financial sector is also characterized by a strong and efficient payments sector (financial logistics) and securities trading. The Netherlands has a concentrated banking market, dominated by ING, ABN AMRO and the Rabobank. The share of the financial sector in the total economy of the Netherlands is also relatively large, which is seen as evidence for a strong financial sector. The size of the financial sector is also viewed as one of the reasons for why the Netherlands was hit relatively hard by the financial crisis of 2008 (Idenburg, 2019). The government made major efforts to keep the financial sector afloat. ABN AMRO was nationalised in 2008 and SNS REAAL in 2013 (Kosters, 2014). The Netherlands also functions as an offshore financial centre by international enterprises to reduce their taxes. International trust offices and tax planning websites advertise the Netherlands as an important offshore tax centre. Usually, such arrangements involve mailbox companies, which are used to relocate revenues to other offshore financial centres (Van Dijk et al., 2006).

5.2. Holland Fintech

Although the focus is on the wider FinTech ecosystem in the Netherlands, the analysis of this thesis is centred around the Dutch FinTech branch organization Holland Fintech. Since 2021 Holland Fintech is registered as an association, while being a private limited company before. They announced that the transition to an association (a legal person with a General meeting as the highest organ) as it was, according to Holland Fintech, essential for improving the Dutch FinTech ecosystem (Banken.nl, 2021). Holland Fintech currently has around 300 members, ranging from start-ups and scale-ups in the FinTech sector (e.g. bunq, Flowtraders and Mambu), financial institutions (e.g. ING, ABN AMRO and APG) and APS firms (e.g. Clifford and Chance, McKinsey and IBM). Don Ginsel, previously a banker at ABN AMRO and Deutsche Bank, launched the company in 2014, together with the founding members; Innopay (consultancy in digital transactions), KMPG (audit, tax and advisory firm), Van Doorne (law firm) and IBM (technological corporation) (KPMG, 2016). Holland Fintech is aimed at “*building the inclusive FinTech ecosystem*” in the Netherlands. Firms who are member of the network will, according to Holland Fintech profit from finding talent, finding start-ups or solutions and finding investors (Holland Fintech, 2021a).

In 2014 when the buzz around FinTech was picking up in the Netherlands, Holland Fintech dealt with several competitors. Different parties ranching from incubators to banks wanted to start a similar ecosystem themselves, leading to a race for the main Dutch FinTech platform. However, Ginsel was able to get the backing of the three major Dutch banks; ABN AMRO, ING and Rabobank, which was according to him decisive (Banken.nl, 2020). On the other hand, there was an initial adversity of financial institutions around cooperation, due to their long history of in-house development, which lead to a lack of interest to actually participate in Holland Fintech (interview representative Holland Fintech, 2021). The enterprise grew steadily from 35 members (predominantly start-ups) in 2015 to 135 in 2017 and now 335 in 2021 (Holland Fintech, 2021b). Later on, the banks and other financial incumbents, such as APG and Blackrock, did join. Holland Fintech decided to use a revenue model based on the size of the firm to fund their company. The larger the firm the more they pay. Start-ups are able to join for a small fee or sometimes even for free (interview FinTech entrepreneur #2). Therefore, the larger corporations, predominantly financial incumbents, finance the organization. Holland Fintech, while appearing as a branch organization themselves, is an association, now employing over twenty people (Holland Fintech, 2021b). Surprisingly, three of the four Dutch FinTech 'unicorns', namely Adyen, Bitfury and Mollie, are still not a member of Holland Fintech. A Holland Fintech representative states that these firms are inward looking, focused on their own growth and do not want to cooperate with financial incumbents. Holland Fintech assumes that at a certain moment they will see it as 'noblesse oblige' to join (Interview Holland Fintech representative, 2021).

Holland Fintech hosts public events that try to "*bring members of the evolving ecosystem together to exchange ideas and innovation*" (Holland Fintech, 2021a). They organize a monthly meet-up where entrepreneurs, investors, people from financial institutions and other stakeholders are welcomed to gain and share knowledge. It normally starts with a discussion of the FinTech news, and is followed by three pitches of Holland Fintech members to promote their company. The pitchers come from a wide variety of professional backgrounds, but tend to be start-ups, with also banks, law firms and consultancies participating. The meet-up went online in March 2020, during the start of the pandemic. When meetups were still taking place on location, they attracted larger audiences and were organized at the office of one of the members, such as ING or the law firm Clifford and Chance (Holland Fintech, 2020). Holland Fintech also organizes a weekly 'Flash Friday: Staying ahead of the FinTech news', where the news and different subject in FinTech are discussed by Don Ginsel and a guest (Holland Fintech, 2021c). Furthermore, there are the weekly newsletters on investment and FinTech news. Also, workshops, roundtables and investor events are organized for members to gain knowledge and make connections to find business partners. During the Amsterdam FinTech Week, organized yearly, Holland Fintech tries to bring the FinTech industry together to discuss recent developments in the sector (XFW, 2021). Don Ginsel is widely perceived as the knowledge broker of the Dutch FinTech ecosystem (Zook, 2004). Ginsel is known by most actors in the FinTech sector and when media outlets are looking for an expert on FinTech, he is often asked by Dutch newspapers and television to share his thoughts on current affairs (NOS, 2016, Het Financieele Dagblad, 2018 and BNR, 2021).

Holland Fintech was present at the roundtable talks of the Parliament and Dutch Ministry of Finance in 2017, emphasizing the importance of innovation in the financial sector (Tweede Kamer, 2017). Also, Holland Fintech contributed to the FinTech Action Plan of the Ministry of Finance in 2020, and assisted with FinTech survey carried out by the Ministry of Finance and the consultancy firm EY (Hoekstra and Keijzer, 2020). However, there is no formal or structural partnership between the FinTech organization and the Dutch government, as seen in other countries. For example, in Belgium and the UK the national government is an active stakeholder in FinTech accelerators (Hendrikse et al., 2020 and UK Government, 2021).

Nevertheless, Holland Fintech considered several times to become an investor itself and to collaborate more intensively with the Dutch government (Interview Holland Fintech representative, 2021). In 2016 Holland Fintech presented, together with the consultancy Roland Berger, the FinTech Manifest to the Dutch government advocating for the creation of a clear FinTech plan, continuous roundtable talks with finance and technology actors, and regulators, and the creation of public-private partnership to stimulate the FinTech sector (Holland Fintech, 2016). In 2016 they also aimed at starting a physical FinTech hub themselves in Amsterdam with financial and technology firms and regulators all located in one office building. However, this did not materialize (NOS, 2016 and interview Holland Fintech representative).

Holland Fintech took part in several trading missions together with the Ministry of Economic Affairs and Climate Policy to promote the Dutch FinTech ecosystem abroad (Holland Fintech, 2021d). Members of Holland Fintech can participate in such events and get exposure to foreign companies. Holland Fintech has also established relationships with other FinTech hubs. For example, they signed a memorandum of understanding with the Fintech Association of Japan and are part of FinTech Aera, a thinktank focused on the advancement of the European FinTech ecosystem (FinTech Aera, 2021). Also, there are collaborations from Holland Fintech with the Netherlands Foreign Investment Organization (NFIA). The NFIA assists businesses that are looking to invest in Holland and is since 2019 also focused on FinTech (NFIA, 2021).

5.3. Fin-Tech tensions

The previous chapter highlighted the emergence of Holland Fintech and the different moments of interactions between finance, technology and state actors during this period. In the next five sections of the analysis the results of the 2-cycle coding process, analysing the transcripts of the interviews and documents based on the analytical framework of Fin-Tech-State triangle will be presented. The themes and dimensions that emerged during the coding process are backed up by a selection of quotes. In addition, the interview and document analysis are backed up by observations done at events of Holland Fintech. In chapter 6, the discussion, these themes will be further explained and interpreted by relating it back to the theoretical framework.

5.3.1. Reasons to join

From the tech perspective it is interesting to take part in Holland Fintech as it offers access to connections with financial institutions and other tech firms. One FinTech entrepreneur states on his membership of Holland Fintech:

"*We are always happy to collaborate. As we are a company so engaged with FinTech, it is great to see all the initiatives in Holland Fintech. And especially as a consultancy in the ecosystem it gives you a view on what is going on and who the different players are. And that is really great to see"* (interview FinTech entrepreneur #2).

Another FinTech firm states that it is important that you have access to several financial institutions for getting in possible partnerships:

"*Startupbootcamp co-sponsored the project* [Holland Fintech] *and for us it was an option to take part. We decided to do it. We would have exposure to a wider audience. Meet the right people and take it from there. We take part as often as possible. With each event we have the opportunity to strengthen relations and meet new partners. You have exposure to larger institutions such as ABN AMRO, ING and Rabobank"* (interview FinTech entrepreneur #1).

From the finance perspective Holland Fintech offers an opportunity to be aware of new market developments, investment opportunities and possible takeovers. One banker of big Dutch bank says about joining Holland FinTech:

"*Firstly, it is also a kind of diplomatic move. It would be weird if we would not be part of Holland FinTech, as an Amsterdam based FinTech team…It is a good way to see what is happening in the ecosystem. . . . If we are asked for a panel or as a speaker we like to take part. But as a global FinTech team we are also in contact with Copenhagen FinTech or different French hubs*" (interview ING banker, translated by the author).

While the Dutch banks were supportive of the necessity of a FinTech organization like Holland Fintech, they struggled with handing over their trust to an independent platform. The strong history of in-house development of financial institutions made it difficult for them to understand the goal of the platform. A Holland Fintech representative reflects on this situation by saying:

"*Banks struggled with the development of a shared platform, they saw it more as a competition. There had to be a lot of talks before launching the platform. Everybody wanted to profit from the FinTech hype, as they saw that there were parties interested to fund these initiatives. Consultants, incubators everybody tried to take up this role*" (interview Holland Fintech representative, translated by the author).

5.3.2. Tensions and synergies

After this initial reaction the Dutch banks started to be driven by a fear of missing out, resulting in hasty acquirements of FinTech firms. An investor states: "*Banks are buying FinTechs, but often for really high prices. Just to be part of the hype"* (interview investor, translated by the author). Exemplary of this tendency of banks is the takeover by ING of its fellow Holland Fintech member Payvision for € 350 million in 2018, the largest takeover of

ING since the financial crisis. ING hoped that by acquiring this online payment platform it could just buy its own FinTech success, instead having to build it themselves. Nevertheless, the integration of the ING and Payvision failed, as it became a technical difficult and financial expensive project (Het Financieele Dagblad, 2020a). One ING banker reflects on the takeover of Payvision:

"*Payment services are essential parts of the growth of e-commerce. They make sure that online payments can happen in a safe and customer friendly way. Those payments services are something that is very close to the earnings model of a bank. It could have been a product that we had developed. Early on it was already decided that we were going to develop that ourselves and not acquire a company that did. Then we followed Adyen for a few years. Adyen has grown immensely. There always has been a realisation at ING that online payments could have been our business. But…there were other businesses that did it better. At certain moment there was a realisation on why we are trying to develop it ourselves and not choosing to acquire a company that already has the technology. So we did research for a couple of years. Which payment services are out there and are for sale. Then we ended up with Payvision. That is innovation through acquisition. You buy a team and knowledge and then you try to make your own product of it"* (interview ING banker, translated by the author*).*

The banker further reflects on if financial incumbents capable are capable of doing these large acquisitions of FinTechs*: "I do not think so. What we saw with Payvison is that, even though you are doing sophisticated due diligence, there are always things you cannot foresee. Certain risk management processes are not up to par. You have to rebuild the company to something that works for you. You need time, knowledge and resources for that…You cannot be like let's put some tech guys in a room and develop innovative product for us. You need to introduce the team smoothly into your organization. You need to have the knowledge and make sure that the processes are nicely integrated*" (interview ING banker, translated by the author).

Financial institutions in general struggle with combining the innovative and entrepreneurial culture of the start-up with the risk aversive culture of banks. Therefore, different banks, besides acquiring, also try to develop their own ecosystems or investment funds in FinTech, such as ING Labs and ABN AMRO Ventures (ABN AMRO, 2018). One investor observes that:

"*In the Netherlands, the banks establish relationships with new companies in the market and try to advise them or provide funds. All the banks have their own breeding ground, where they facilitate their own activities. And in some cases, they acquire those start-ups as well*" (interview investor, translated by the author).

There tends to be a high influx and outflux of firms in these ecosystems created by banks. The FinTech endeavours of the Dutch banks tend to have a good connection to Holland Fintech and other accelerator programmers, such as Startupbootcamp. A FinTech firm reflects on its experiences being in such an environment and the conservative nature of banks:

"*Through Startupbootcamp we spoke to ING, Rabobank and so on. Conversations went very far with Rabobank, we dealt with their innovation labs and so on. What happened after the innovation lab, we went to the business teams and risk and compliance teams. While the innovation team was very eager and said this is the way we should go. The business and risk teams were looking at it like this could be a threat to SWIFT. And as a smaller player... Rabobank or ING is not in a position to be that competitor. So, it went sinking with Rabobank and ING. The Dutch culture in the banking space is exceptionally conservative; we will do innovation for the sake doing it, we are not going to put ourselves first to do it. And that is part of the reason that it didn't work"* (interview FinTech entrepreneur #1).

The eagerness of innovation offices of financial incumbents to invest in new technologies, is often met with less enthusiasm by other departments of the firm. The representative of Holland Fintech reflects:

"*We are aware that most of the banks have innovation offices, but it often goes wrong when it goes to the procurement department. They are used to big contracts with big firms, not with small FinTechs"* (interview Holland Fintech representative, translated by the author)*".*

A Fintech entrepreneur has a similar opinion:

"There will always be friction. That is the reason why innovation labs are in separate buildings or in the basement. There is friction internally within these institutions where the banking side of the things and the innovation side of things are very different in thinking. But this is a good thing. . . . The bankers have to think in a very different way than the engineers. It is not that one is better than the other, or one has to become the other. Engineers cannot think like bankers and bankers cannot think like engineers. There always will be some middle ground. But there needs to be the banker and the tech guy" (interview FinTech entrepreneur #2, translated by the author).

Nevertheless, Dutch banks are actively trying to be seen as innovative. ING (2017) stated that they want to transition from a traditional bank to a tech company with a banking license. The former chief innovation of ING, Benoit Legrand, described it as a future where ING becomes a platform where different financial institutions or tech firms can offer their products. ING also introduced a horizontal working approach, in contrast to the often hierarchical structure of banks. Inspired by tech heavyweights, such as Spotify and Google, ING started a new organizational structure of 'tribes' and 'squads' in certain departments. In this working from people from different professional backgrounds work together on the development of a single new service (ING, 2019).

Also financial incumbents state that start-ups need to change, as they sometime come unprepared. A banker of ING reflects on their partnerships with FinTechs:

"*FinTechs want to act quickly, sign the contract and sell their product. But with a bank it takes at least a year. The start-up has to go to thorough investigation before it is accepted. Let's say we want to buy a product to offer to our customers. Then we have to make sure that everything IT is okay. But also security wise. All the algorithms of the product have to be checked by our analysts. Financial risks have to be checked, as well as non-financial risks.*

Also what happens if your start-up fails? What happens then to us as a bank? We have huge surveys for start-ups. Over the years we saw a realisation with FinTechs that they were dealing with big clients and also need to adhere to a certain standard…We concluded that it is too difficult to collaborate with early stage start-ups, they are not ready to work with banks. We had a few projects were we tried to integrate early stage start-ups in our organisation, but again and again we face new problems. With financial security and non-financial risk we set high standards. There certain facets that start-ups have never considered, until we ask them" (interview ING banker, translated by the author).

On the other hand FinTechs are trying not to be associated with financial incumbents. One FinTech consultant reflects:

"*Every FinTech or digital bank say they are not a bank, that is always what they say. While they obviously are a bank. They want to have a different image and they want to do things differently. If they do the same things as incumbents, then there is now way to compete. So they try to do things differently*" (interview FinTech entrepreneur #2)

Also, a banker also observes that FinTechs are not always that radically different from banks in the Netherlands: "*You see that with the Dutch challenger banks as Knap and Bunq. If you look at the apps of these banks and compare them to the ones of ABN and the Rabobank, then the features are basically the same*" (interview ING banker, translated by the author).

5.4. FinTech-State tensions

In Belgium and the UK, state actors are actively investing or collaborating with FinTech hubs or accelerators in public-private partnerships (Hendrikse et al., 2020 and UK Government, 2021). Holland Fintech has not (yet) developed such partnerships with Dutch state actors. Nevertheless, several moments of strategic coupling took place between state and fin and tech actors, that sometimes involved Holland Fintech, as described in the chapter on the development of Holland Fintech. The Ministry of Finance launched the FinTech Action Plan during the summer of 2020 with the goal to: "*stimulate innovation in the Dutch financial sector and give FinTechs the space to develop in the Netherlands and abroad*" (Hoekstra and Keijzer, p. 1). Holland Fintech was consulted during the development of the plan. The plan consists of 3 pillars: "1) *Put the Dutch Fintech climate and sector on the map, nationally and internationally, 2) Ensure FinTechs have good access to knowledge and talent, 3) Ensure that legislation is future-proof and allows room for innovation"* (Hoekstra & Keijzer, p. 1).

The FinTech Action Plan reflects the willingness of the Dutch government to stimulate the financial sector and act on the possible opportunity FinTech could bring. It is the first large policy plan coming from the Ministry of Finance since the Holland Financial Centre in 2007. However, actors point to the lateness of such a plan, while other countries moved earlier and more directly towards FinTech. Several interviewees point to the political sensitivities that are involved with promoting the financial sector since the financial crisis. A Holland Fintech representative reflects:

"*We had a lot of talks with the government, but the political will is not there. The government is just not responsive. Talking about stimulating the financial sector is political* *suicide. To them the financial sector is rather a curse than a blessing. The financial sector is poison. What is an Action Plan, if there is no action? Look at London, they are really focused on FinTech. You have to hang out the flag and say: FinTech is welcome here. You cannot see FinTech separate from the financial sector. But there is now no incentive to stimulate the financial sector"* (interview Holland FinTech representative, translated by the author).

Also the municipality of Amsterdam started with the acquisition of FinTech firms. In 2016, after investigating which firms might be interested in moving to the Netherlands after Brexit, FinTech was picked as a sector to focus on. However, the decision was made to only focus on FinTech and not on the wider financial services. A representative of Amsterdam inbusiness confirms this and says: "*That is why we focus on FinTech and not so much on attracting traditional financial services. That has to do with the sentiment around financial services*" (interview Amsterdam inbusiness representative, translated by the author).

Whereas the Dutch government has active industrial policies in other sectors (e.g. high-tech and water technology) with the 'Top Consortium for Knowledge and innovation', this does not apply to the financial sector (Topsectoren, 2021). Also, there are actively polices in the broader start-up world with Techleap, a non-profit publicly funded organization, that "*helps to build a thriving start-up ecosystem in the Netherlands*" (Techleap, 2021)

Multiple interviewees look back with discomfort to the period of the HFC, when private and public actors were cooperating to promote the financial sector. A policy advisor of the DNB states:

"*All well and good with the Holland Financial Centre, but if such an organization is acceptable*?*(…) Since the Holland Financial Centre there has happened a change in the way we think about such organizations. We are not here to promote the Netherlands. We are here to make sure that the supervision is alright*" (interview policy advisor DNB, translated by the author).

With the introduction of the FinTech Action Plan in 2020 there seems to emerge more political acceptance for policies stimulating the Dutch financial sector. For example, in the FinTech Action Plan it is noted that there needs to be a revision of the bonus plan to stimulate the development of FinTech start-ups who often reward their staff with equity in the firm. Furthermore in 2019, the NFIA started with actively attracting financial firms, with an emphasis on FinTechs. The potential of FinTech and the opportunities arising for attracting financial firms with the departure of the UK from the European Union led to creation of a new action plan by the NFIA. A representative of the NFIA reflects on the current political will for promoting the Dutch financial sector:

"*It is increasing. We are seeing that the Ministry of Finance is clearly interested in promoting the FinTech sector. There is a FinTech Action Plan and we gave advice for that. This is a sign that the taboo on the financial sector (…) is slowly decreasing, definitely at the ministry. . . . It is surely important that there is support for active promotion of the Netherlands, as a FinTech country*" (interview NFIA representative, translated by the author).

In the FinTech Action Plan it is stated that the regulator has to create legislation that is future-proof and provides room for innovation. In 2016 The AFM and DNB have set up the 'InnovationHub' and 'Maatwerk voor Innovatie', after pressure from the financial and technology sector to innovate. The 'InnovationHub' is a question service on the application of regulations for firms, who develop innovative financial products and services. 'Maatwerk voor Innovatie' is a regulatory sandbox that assists firms in developing and launching innovative financial products or services (Het Financieele Dagblad, 2020b).

From the finance and tech sector the regulator is often criticized for its strict regulation on the financial sector and not being flexible. The Dutch regulator received criticism for acting too slow and not being flexible. The number of firms that are admitted to the regulatory sandboxes are low. The trajectories are expensive and time intensive (Het Financieele Dagblad, 2020b). While the 'InnovationHub' and 'Maatwerk voor Innovatie' had the purpose of bringing the regulator and FinTechs more closely together, this failed to happen. Don Ginsel (Het Financieele Dagblad, 2020b) says that "*certain departments of the regulator are oriented towards innovation, however people who are making the decisions on market access and licenses are not*" (translated by the author).

Holland Fintech organizes the yearly event of 'FinTech meets the regulators'. To have the different actors sit together. However, they are quickly to reflect on the impact of the event:

"*FinTech meets the regulator is very superficial. The regulators are just incredibly slow and are not adapting. They have difficulty understanding the different risk-profile of FinTechs. The market is now too restricted. In a healthy ecosystem there needs to be a certain dynamic of firms entering the market and leaving. The regulators are now blocking innovation*" (interview Holland FinTech representative, translated by the author).

A banker observes how the Netherlands has a different attitude towards FinTech:

"*If you look at London or Singapore, those are cities that have been active for FinTech and pro-active to facilitate FinTechs. What you then see is that the regulator takes a pro-active role. . . . When you look at the DNB…those guys are still stuck in roundtable discussions on FinTechs. We observe that the Netherlands and the DNB as a regulator are setting very high standards with what you can do with data. But also the interpretation of different rules. They want to check word for word what we put in our apps. . . . They do not think of how create a successful ecosystem can be created where innovation can happen. It is more like you are responsible for innovation and we check and decide what is not allowed"* (interview ING banker, translated by the author).

However, the DNB has been trying to develop their knowledge on FinTech by attracting more teach savvy personal. A policy adviser at the DNB says: "*We have a whole team that is leading the digitalisation within DNB. There you increasingly see people with a technical background. Also in the payments department of the DNB. There are more and more techies*" (interview policy advisor DNB, translated by the author).

Also, the NFIA notes, although they are in good contact with the DNB, that the procedures foreign FinTechs have to go through, to enter the Dutch market can be lengthy and costly:

We, as the NFIA, are in good contact with the regulators…The regulators are constructive. Sometimes there are capacity problems. Especially around the time that the EU and UK were reaching an agreement last year. There were a few last-minute applications (interview NFIA representative, translated by the author). Furthermore, the NFIA states that in certain occasions foreign firms stop the procedure with the NFIA to open up an office in the Netherlands because of the regulations for the financial sector:

"*Sometimes this has to do with the bonus cap. For big parties this can be a problem. However, this does not happen so much. For Anglo-Saxon firms, where bonuses are more important, it does play role. For Asian and European parties this it is less of a problem. When financial firms decide to locate in a different country, when talking with us, the bonus rule tends to be most frequently mentioned. Sometimes also the license application of the Dutch regulator. We have had some struggle with dealing with applications in the Netherlands. For some parties this led to the choice to continue with a different regulator"* (interview NFIA representative, translated by the author).

The Dutch regulators are, from an international perspective, stricter in a couple of areas. A notable example is the bonus cap, that the NFIA referred to, which may not exceed 20% of the fixed remuneration. This practice is also referred to as gold-plating (PWC, 2017). However, the regulator tends to be recognized as a strict, but fair authority. This image is then often used when promoting the Netherlands as an attractive location for financial services. A representative of the NFIA reflects:

"*In some areas we are stricter than other European countries. This is a downside for the Netherlands. But on the short term. We emphasize that you have to look at the longer trend. The trend of these financial regulation is more in the direction of the Netherlands. By settling in the Netherlands firms can already adopt to these circumstances. . . . It fits the role the Netherlands want play, namely a responsible financial centre, where firms have certain standards. So we present the strict Dutch regulators, as a strength, not a weakness. This is also recognized in the market. As a FinTech it means more to have a license in the Netherlands, France or Germany, than one on Malta or Cyprus*" (interview NFIA representative, translated by the author).

Also the foreign investment organisation of Amsterdam realized that the Dutch bonus cap has an impact on the interest of foreign firms. Subsequently, this led them to focus on attracting FinTechs. A representative of Amsterdam inbusiness reflects:

"*After Brexit we were also looking at banks and insurers. But we quickly found out that the Dutch bonus cap does not make it interesting for bigger parties to come to Amsterdam. Also, in 2016 we realised that we were less attractive for financial services in comparison to Frankfurt and Paris. We started that acquisition period realistically and were aware that the odds were against them coming to Amsterdam(…)And that is one of the reasons that we decided to focus on FinTechs*" (interview Amsterdam inbusiness representative, translated by the author).

5.5. Competition from Big Tech

The attitude of banks towards FinTechs has changed. While FinTechs were first seen as a threat to the banking sector, now a cooperative nature is emphasized. One banker reflects on the expected disruption by FinTechs:

"*FinTechs managed to disrupt the banking business only partially. For example, Robinhood* [American online stockbroker] *and DeGiro* [Dutch online stockbroker] *do have a strong business with a lot of clients. What they did not do is mess up the whole banking sector, you still need a banking account to invest. They were not able to replace banks. That is a prophecy that did not happen. I do think FinTechs stole some revenues of the banks. Already early on at the banks emerged the idea that we can do two things: we can build our business stronger and we can create partnerships. . . . With the partnerships we sort of encapsulated some developments of FinTechs*" (interview ING banker, translated by the author).

Several other Dutch banks also emphasize the change of FinTech going from a threat to an ally. Hugo Bongers, head of the Digital Impact fund of ABN AMRO, states:

"*A few years ago, many bankers feared that young innovative FinTechs could usurp their role as intermediaries between capital supply and demand. Those fears now appear to be unjustified, at least for ABN AMRO. ABN AMRO and a number of FinTechs have in fact become strategic partners, working together to develop new, relevant services for our clients*" (ABN AMRO, 2021).

However, simultaneously the fear for interference of Big Tech in finance is becoming more frightening for both regulators and financial incumbents (DNB, 2021). One banker reflects on the emerging competition of established technology firms:

"*Hard to say. Google is currently developing Plex. . . . We definitely see that as a potential competitor(…)But the whole business model of Google is based on sharing data. And if there is one thing that is out of question in the European banking sector it is sharing data. Google is at odds with that. If people want to take financial services from Google with the understanding that their privacy is violated, then we are also a bit sitting on the sideline like: we did all this stuff to meet privacy regulations. . . . If they are going to do finance in Europe they have to meet the standards of the European regulator. And there are really strong restrictions considering data sharing. So the question is how scalable their business model is. I do not know how they will be doing it. But we are certainly watching them"* (interview ING banker, translated by the author).

Also the regulator is concerned with the steps technology firms are taking in finance. A policy advisor of the DNB reflects:

"*You do not see them* [Big Tech in the Netherlands] *yet. But the developments are going fast. We get the impression that it might be possible that banks could be pushed towards a back-office role, where the purpose of banks is to provide their customers and make sure they adhere to the strict banking regulations and the affiliated Big Tech firms rake in the juicy fees. We are concerned about that…If you are a specialised retail bank and you decide to partner with Big Tech, it could be a threat to your business model. And also a threat for the consumer. With entanglement of finance and FinTech services, the question arises who is* *responsible for what. Quasi financial conglomerates are emerging. Those parties are collaborating on a contractual basis, but they are doing the same as financial conglomerates in the past. And for them you had a central framework of regulations. But you are missing those regulations for these contractual collaborations*" (interview policy advisor DNB, translated by the author).

On how banks will be dealing with possible competition of Big Tech, one banker uses a metaphor of a train and its rails:

"*We are trying to find a role. Two years ago we developed a platform strategy of what we want to become as a bank. Are we going to focus on being the platform? So for all your business you are going to the ING platform. Then we are the train, as well as the rails. Or are we also letting other parties drive on our rails? So we offer products of other parties. Or will we let our train drive on different rails? Are we willing to offer our products on somebody else's platform? . . . And then there is the option to be in the background. So imagine if Google Plex becomes really big, we could do the money laundering policies, the onboarding and the KYC [know your customer]. These are all questions that we do not know the answers to*." (interview ING banker, translated by the author).

Nevertheless, there is already an example where ING is letting it 'trains' drive on somebody else's 'rails'. The ING banker explains:

"*A while ago we bought Lendico, a digital lending provider for SMEs. That one was successfully integrated into to ING. ING Germany is now able to offer lending products on the platform of Amazon. So if you are a seller on Amazon and your data shows that your company functions well, you can apply for a loan completely online. In this example we went for the partnership again*" (interview ING banker, translated by the author).

5.6. Evaluating the Dutch FinTech sector

Most of the interviewees evaluated the development of the Amsterdam FinTech ecosystem as fairly positive. Interviewees stated that the decent financial sector, good technology facilities and innovative mindset created an attractive FinTech ecosystem. Don Ginsel (BNR, 2020) reflects:

"*Nearly five years ago it was thought be impossible to become a unicorn in the Netherlands. Most start-ups were sold for 50 million euros to a bigger company, that was the path most start-ups took. But since Adyen became a unicorn, doors opened and the Dutch start-up scene received a lot recognition internationally*" (translated by the author).

Especially the Dutch (online) payment services with successes as Mollie and Adyen are often mentioned. Ginsel (BNR, 2020) states on the success of the payment industry:

"*It is a logical consequence of the development of the payment industry in the Netherlands. With the emergence of the internet and e-commerce a lively online payment sector developed in the Netherlands. The regulators gave a lot of space and guidance in the first* *phase, so that an innovative industry could emerge. There is a lot of knowledge and tech savvy people"* (translated by the author).

Remarkable is that the role of the regulator in the payments sector is praised, while financial and technology actors often complain about the role of the DNB and AFM in stimulating innovation.

Nevertheless, the narrow focus on FinTech of the Dutch financial sector is alarming for certain actors. Both the NFIA and Ministry of Finance predominantly base their current policies on the financial sector around FinTech. One investor reflects one how that might lead to a neglect of the whole financial sector: "*What I find surprisingly is that there is only a focus on FinTech. If you would have positioned yourself better, like Frankfurt and Paris, you could have attracted way more financial services*" (interview investor, translated by the author). As mentioned before, other countries have made extensive efforts to label themselves as FinTech hubs.

Also some stakeholders in the ecosystem observed that outside the payments sector not so many FinTechs managed to breakthrough. A banker states:

My theory is that we [The Netherlands] *have a well-developed banking sector. You can transfer money with your banking app and a lot is digital. And that makes it difficult for competitors to do it a lot better. In the United States only until recently you had to use cheques for transferring money abroad, but also domestically. Then there is a business opportunity that you can do it ten times better. . . There are a few successful Dutch PSPs though. But that is not traditionally a banking product. But it would have been good if we started with that"* (interview ING banker, translated by the author).

5.7. Spatialising the Fin-Tech-State triangle

Two spatial processes related to the emergence of FinTech are indicated for the Amsterdam case. Firstly, the financial incumbents, still located in the periphery of Amsterdam, are opening new offices that tend to replicate their new management strategies. While the FinTech entrepreneur before stated that innovation centres tend to be located in the basement, financial institutions have been making efforts to integrate their innovation departments better in their organization. One investor states: "*Banks are busy rejuvenating their offices and making it look nicer, definitely since COVID-19*" (translated by the author). ING just opened their new headquarters at the Bijlmerdreef in the south-east of Amsterdam. As mentioned before, ING introduced a 'new' way of working with 'agile' methods and a horizontal organizational structure, organized by 'tribes'. INGs new office is only five stories high and less colossal a there previous headquarters on the Zuidas, as shown in figure 3. The board of ING (2017) describes it as a future where ING becomes a platform where different financial institutions or tech firms can offer their products. However, implementing this innovative and entrepreneurial culture has been difficult for banks. Fashionable statements on innovation and FinTech tend to be thrown around, while the evidence of these new techniques and business models is hardy given (Het Financieele Dagblad, 2020c). ING stated that the new architecture of its headquarters has to optimally support the new way of working when going from a traditional bank to a tech company with a banking license (Architectenweb, 2020). The office space is organized with different platforms, which are representing the digital platforms that are part of the future of ING. ING Labs, the innovation hub of ING occupies a separate wing of the building. A banker reflects on why it does not work to put the IT-team in separate room or building:

"*Ten years ago it was a trend that IT had to have their own place. But as the business department you cannot just say to IT this is what we want. Build it! It does not work like that. And with agile working we brought IT and business together to have a close collaboration. We see that such a setup works. If business has a certain idea or want to create a product they can immediately check what the possibilities are…With the new office you see that teams that were separated in different offices get brought back together again*" (interview ING banker, translated by the author).

Figure 3: On the left the former headquarters of ING on the Zuidas, nicknamed 'the shoe', and its new headquarters in Amsterdam south-east on the right (Sources: Beeldbank Amsterdam, 2002; Wikipedia, 2020).

The new headquarters also are a break with the large skyscrapers that have been built by ABN AMRO, ING and Rabobank during the last decades. A representative of Amsterdam inbusiness states that banks have changed their location preferences:

"*Banks and insurers, the larger financial parties, were more centred on the Zuidas. But you see that, for example ABN AMRO which was always on the Zuidas, now wants to play a less prominent role and will move to the south-east. . . . They are being less present on the Zuidas and focusing more on their core activities. That is an interesting process*." (interview Amsterdam inbusiness representative, translated by the author)

The exit of ABN AMRO is especially interesting as the bank was one of the main forces behind the development of the Zuidas (Engelen & Musterd, 2010)

Secondly, successful FinTech firms tend to be located in the historical centre. The payment firms Adyen, Mollie and Klarna are all located in chic canal houses. Other successful Dutch FinTech scaleups, such as Flowtraders, BUX, Bunq and Bitfury, are also located in the historical centre. Figure 4 (a map of the FinTechs that have their headquarters in Amsterdam and that have more than 20 employees) shows that there is a concentration around canal district. Also, there are small concentrations around the business districts, namely the Zuidas, Slotermeer and Amstel III. A representative of Amsterdam inbusiness states:

"Adyen choose a prominent location on the Rokin. You see Booking.com, next to the central station. What you are seeing is that the inner city is an interesting business location for young FinTechs and tech parties" (interview Amsterdam inbusiness representative, translated by the author).

An investor tries to explain the concentration of FinTech firms:

"*It is still important to locate near each other. With deals you want to see the other. Who is behind my expensive dollars? Also talent can easily move from one organisation to the other. Campus feeling…with creative process you want to be near each other, definitely important for the innovative sector of FinTech"* (interview investor, translated by the other).

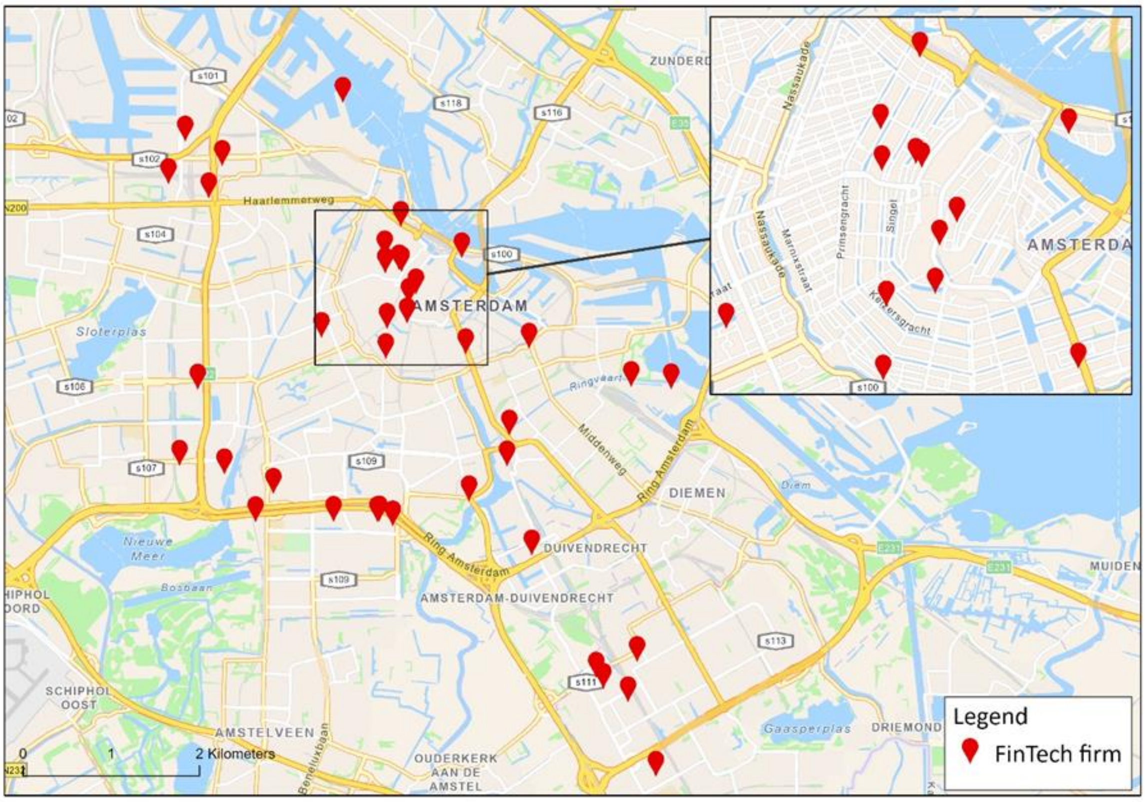

Figure 4: map of FinTech firms with headquarters in Amsterdam, created by the author in ArcGIS Pro (data source: Craft, 2021).

6. Discussion

6.1. Discussion of findings

After presenting the results of the interviews with actors from the Dutch FinTech ecosystem and after the analysis of the relevant documents and reports, this section will be dedicated to the discussion of the results as well as linking them back to the initial research question, theoretical framework and literature.

The thesis set out to explore how finance, technology and state actors attempt to foster the emergence of a FinTech ecosystem in the Amsterdam financial centre. With the continued integration of finance into technology, secondary financial centres are seeing FinTech as a way to stay relevant and perhaps take a piece of the lucrative financial services from London or New York. To comprehend the emerging geographies my research combined the GFN framework with theories from economic geography. With the Amsterdam case an interesting example was chosen, as it was believed to be an innovative agglomeration of financial services in 1970s, but turned into a secondary financial centre fixed in a larger network of IFCs.

6.1.1. Amsterdam and the window of locational opportunity

Faulconbridge et al. (2007) conclude their research on the changing financial geographies of the Amsterdam financial centre by stating that Amsterdam's decline implicated that it failed to replace a loss of competitive advantage with anything new in the form of opaque products or services. They then question if secondary financial centres will capture sufficient global flows and manage to stay relevant or will they suffer the same fate as the regional financial centres had in the 1970s. As argued in the literature section FinTech currently possesses these opaque qualifications. FinTech's novelty leads to a lack of transparency in financial markets, as regulators, incumbents and tech firms have no way of fully understanding the development of the sector. The proximity and access to FinTech communities becomes crucial, also for the regulators.

This thesis suggests that Amsterdam indeed seems to be a fertile ground for FinTech. The evolutionary economic geography approach showed a variety of regional endowments for the development of the FinTech sector in the Netherlands: the quality of the financial and technology sector, English proficiency, a well-educated workforce, high adoption of digital technologies and lucrative tax legislations for tech firms. Nevertheless, the Netherlands lacks an ecosystem of venture capitalists. While it is too early to call, FinTech seems to have developed into a booming sector in the Netherlands, with some start-ups becoming new global players.

Nevertheless, while in the last decade Amsterdam did not suffer the same fate as the regional financial centres in the 1970s, it is still seems to be embedded in same global financial geographies as before. London is the major European FinTech centre by a large margin. The Amsterdam financial centre may have seized a window of locational opportunity to stay relevant as a financial centre, but is still lower in importance than the financial centres of London, Paris and Frankfurt. Dutch stakeholders involved in attracting firms from abroad observe that the playing field has only slightly changed with the emergence of FinTech. Amsterdam usually competes for attracting financial services with Paris and Frankfurt, but now for FinTech, also more niche financial centre like Berlin and Stockholm have become rivals. However, the continuity of Amsterdam's role and place in the global financial hierarchy does not imply that FinTechs lacks the potential to change the geography of financial centres. Continued convergence between financial and technology centres is likely to happen, reflecting a path dependent development. Technology centres are expected to become more important in global financial networks, while financial centres without a FinTech sector might lose competition. This might even increase the concentration of financial services even further (Wójcik and Cojoianu, 2018)

6.1.2. Absence of a growth coalition

The political and private efforts attempting to promote Amsterdam as a FinTech hub, show differences with their predecessors. Historically, the Netherlands have ample experience with growth coalitions and public-private partnerships that try to boost the financial sector. The Amsterdam Financial Centre, which operated in the 1980s and 1990s, was concerned with the competition with its counterpart in London. In 2007, just before the crisis, the Holland Financial Centre (HFC), consisting of influential actors from the financial and public sector, promoted the financial centre of Amsterdam as the 'the best alternative' to locate. The 2008 financial crisis resulted in the collapse of HFC, as the close relationship between regulators and private actors was not sustainable. This thesis shows how the legacy of the HFC and the 2008 financial crisis created an aversion for collaborating with the financial sector among the Dutch politicians and regulators. Therefore, no intense and structural public-private partnership, has emerged (yet) in the Netherlands, contrary to countries as the UK and Belgium. No large efforts of strategic coupling happened around FinTech and the Amsterdam financial centre. Therefore, the Dutch case shows how important it is to be politically sensitive when applying the Fin-Tech-State triangle. In the analytical framework the state is pictured as the 'regional animateur' in the ecosystem, either acting as a successful coupler or being the blame of misguided policies. However, the Dutch case suggests that the state can also play a more passive role in the ecosystem, due to political sensitivities. Therefore, the findings of this research emphasize the importance of political awareness when operating the Fin-Tech-State triangle.

The Dutch political efforts consist of a FinTech Action plan and the promotion of the Netherlands as an attractive location for FinTech by foreign investments organisations. However, financial and tech actors state that the FinTech Action Plan of 2020 is a little too late and not enough in comparison to what other countries are doing to promote their FinTech sector. While the political and administrative inertia seems to be caused by certain uncomfortableness to be related to the financial sector, it might also reflect the sentiment that it is impossible for the financial sector in Amsterdam to compete with the likes of Frankfurt, Paris and London.

6.1.3. Reintermediation

By employing the analytical framework of the Fin-Tech-State triangle this research looked in more detail to the local dynamics of the Dutch FinTech ecosystem. Special emphasis was put on the branch organization of Holland Fintech, as an entry to the wider FinTech ecosystem. Holland FinTech has proved to be a successful organisation for the Dutch FinTech community. The firm rapidly grew over the last years and tries to overcome tensions between, fin, tech and sate actors by offering advice, roundtables and investment opportunities. Nevertheless, because of the earnings model of Holland Fintech, there is a bias towards the financial incumbents.

Furthermore, similar to the research of Hendrikse et al. (2020) research of the Brussels' financial centre, there is a clear dominance towards the financial incumbents in the FinTech ecosystem in the Netherlands. Banks are encapsulating FinTech firms by starting partnerships, buying shares or through takeovers. Holland Fintech is an example of how these parties come together. This is accompanied by with tensions, synergies, bottlenecks and paradoxes. The more traditional financial services struggle with implementing innovation and FinTechs. Dutch Banks try to bridge the cultural gap by introducing new organizational structures and innovation hubs. On the other hand start-ups fail to adhere to the standards of banks. These start-ups often only start thinking about the strict financial regulations when they come into contact with banks. The Dutch regulator is criticised by the tech and finance sector for its lack of inventive policies. However, sometimes the intentions of the stakeholders do align, resulting in successful FinTech development. The Dutch banks have developed decent banking apps and new financial products.

Moreover, there have emerged several successful FinTech companies in the Netherlands, such as Adyen, Mollie, who are ironically not member of Holland FinTech. They managed to become significant in the financial services without being overtaken by (foreign) financial or technology firms. These successful FinTech companies in the payments services are related to the activities that banks were doing or could have been doing, but failed to do. Therefore, these FinTechs managed to skim profits from financial incumbents. However, they did not manage to completely replace the financial services, as some tech prophets were predicting. Apart from the mentioned endowments of the Amsterdam financial centre, explanations can be found in the early adoption of e-commerce and online payments in the Netherlands, resulting in the flourishing business of online payment providers. Also the Dutch banks were early to collaborate in online payments by developing together the payment provider iDEAL in 2005.

These findings in the Amsterdam Fintech ecosystem complement the observations of Lai (2020) that FinTech does not necessarily lead to financial disintermediation, but reintermediation, as financial and technologies continued to evolve together. Claiming that FinTech firms and banks are direct competitors, as disruptors versus incumbents, overly simplifies their roles and positions in the financial services industry. The Amsterdam case shows the enrolment of FinTech products and services into banks, or as complementary products, rather than completely replacing the financial services.

The Dutch case also shows that in recent years banks are actively trying to portray the image that they are partnering with FinTechs, instead of being disrupted by FinTech. Nevertheless, the role of Big Tech in finance is viewed as alarming by regulators and incumbents alike. Dutch banks, while not sure about their strategy with technology corporations, seem to be looking for partnerships again, in similar fashion as they did with FinTech. Financial incumbents consider offering their products and services on tech platforms and vice versa. However, the Dutch regulator warns for the possible back-office role that banks might be pushed in, if they get into partnerships with for example Apple, Facebook or Amazon. This results in a highly complex legal framework, that no current regulatory framework of the DNB encompasses. While established technology firms are predominantly experimenting with financial services and products in non-western countries, this thesis shows that these developments will likely reach Western countries sooner or later. Therefore, this paper advocates further emphasis on the technology sector within the APS-framework.

6.1.4. Changing urban geographies

This thesis tried to broaden the use of the Fin-Tech-State triangle by look into 'where' the FinTech ecosystem was evolving in the urban landscape. In Amsterdam two spatial developments are distinguished in the ecosystem. Firstly, Fernandez (2011) observed that the larger financial institutions where predominantly moving towards the periphery from the 1990s onwards. Currently, they are indeed still spread out over different business parks of Amsterdam, however, their presence there seems to becoming less strong. In coherence with the Dutch banks focusing on their core banking activities, they too became less present in huge offices and have scaled down. In the last years both ABN AMRO and ING have moved away from the Zuidas into 'smaller' offices in the periphery of Amsterdam. In these new offices there is stronger focus on innovation and collaboration, which is reflected in the architecture as well as the organization structure. These new office buildings offer an interesting reflection on how incumbent finance is trying to dictate the FinTech ecosystem.

Secondly, the more autonomous and successful FinTechs are located in notable buildings along the canal district of Amsterdam and thereby represent a return of financial activities to the city centre. Fernandez (2011) observed the exodus of certain financial firms from the centre, now FinTech is bringing new financial activities back. The opaqueness of FinTech seems to be an incentive for these firms to locate themselves in close proximity to each other. Also the image that tech firms want to portray of having a 'hip' office in the 'bustling' centre seems to be enforcing this process. With spatialising the Fin-Tech-State triangle this paper hopes to contribute to a wider application of this framework in other FinTech ecosystems. These findings are of course dependent on the case of Amsterdam. Nevertheless, other researchers too suggest that FinTech affects the very structure of financial centres. Also, in other financial districts new FinTech locations have emerged, such as 'Silicon Roundabout' in London and 'Crypto Valley' in Zug, near Zurich. Also in the 1980s and 1990s new financial districts were emerging as the financial sector was expanding into new locations within financial centres, such as Canary Wharf and the Zuidas (Wójcik and Cojoianu, 2018).

7. Conclusion

7.1. Concluding comments

This research analysed how financial, technology and state actors are trying to foster the emergence of a FinTech ecosystem in Amsterdam. Theories from financial and economic geography were connected to create a framework capable of analysing the emerging geographies of FinTech. Through a selections of methods (semi-structured interviews, document research and non-participant observation) data was collected to conceptualise the tensions, synergies, paradoxes and bottlenecks of partnerships between financial, technology and state actors. While strategic coupling was a central concept in the theoretical framework, it was not truly observed in the Dutch FinTech ecosystem.

The analysis showed that the state can also have a more passive role in the ecosystem, due to political sensitivities. However, FinTech does offer new opportunities to Amsterdam. The Dutch financial centre has proven to be a fertile ground for FinTech. The regional endowments for the development of the sector in the Netherlands are the quality of the financial and technology sector, English proficiency, a well-educated workforce, high adoption of digital technologies and lucrative tax legislations for tech firms. Nevertheless, it is suggested that Amsterdam's FinTech connections reaffirm the established financial centre hierarchy. Also, the findings illustrate that FinTech does not necessarily lead to financial disintermediation, but rather reintermediation, as finance and technology continue to evolve together. The relationship between banks and FinTech firms is not merely one of 'incumbents' and 'disrupters', as that would simplify the situation. FinTech also has produced a distinct urban geography in Amsterdam with the concentration of firms in the canal district. The opaqueness of FinTech offers an incentive to firms to locate themselves in close proximity to each other.

7.2. Limitations

However, how in-depth and comprehensive case-studies may be, they are also prone to issues of generalizability and transferability (Saldaña, 2011). This research is focused on the FinTech ecosystem in Amsterdam and may therefore miss out on developments in other financial centres. The degree of the disruption caused by FinTechs is likely to be higher in non-Western countries, where there is less presence of traditional finance.

Doing data collection in a pandemic required methods compatible with the impossibility of being close to people. This research successfully overcame this complication by doing non-participant observation online. However, future research on FinTech ecosystems will definitely benefit from observing financial and technology actors in their natural habitat to better uncover their attitudes and behaviours.

The sampling process had various limitations that impacted the research findings. Due to the limited response rate, the number of interviewees was relatively small. The research could have profited from a larger sample size, increasing the validity of the results on finance, technology and state actors. Also the sample of interviewees lacks some of the stakeholders from APS firms, such as lawyers and accountants, that play an important role in the financial sector. In addition, more interviews have been held with FinTech firms than with the banking sector, which could have resulted in a bias towards the FinTech sector.

7.3. Recommendations for further study

This thesis tried to contribute to the emerging financial geographies of FinTech and therefore covered a lot of ground. Different topics that came up deserve further investigation. With this research I hope to stimulate further investigation into FinTech ecosystems in other financial centres, but also Amsterdam specifically. Engelen and Fernandez created a large set of literature on the changing geographies of the Amsterdam financial centre in the 2000s and early 2010s that deserves a follow up with attention to the current developments.

The suggested organizational changes in financial incumbents could lead to an in-depth study of current working spaces of banks, possibly in comparison to a FinTech. Furthermore, the spatialization of the Fin-Tech-State triangle could be developed into a more extensive and sophisticated GIS-study of the changing locations of financial services. Moreover, multiple political and financial actors pointed to positive impact of Brexit on the financial centre of Amsterdam and the FinTech sector. There have been studies on the impact of Brexit on other financial centres, but not on Amsterdam (Cassis and Wójcik, 2018).

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