

Louvain School of Management

What could Belgium learn from the FinTech ecosystems of the United Kingdom and Singapore?

A cross-country comparison of national FinTech infrastructures and regulatory frameworks

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Glossary

AFI	Alliance for Financial Inclusion
AI	Artificial intelligence
API	Application programming interface
ASEAN	Association of Southeast Asian Nations
B2B	Business to business
B2C	Business to consumer
BCBS	Basel Committee for Banking Supervision
BIS	Bank for International Settlements
BoE	Bank of England
DFB license	Digital Full Bank license
DLT	Distributed ledger technologies
DWB license	Digital Wholesale Bank license
ESMA	European Securities and Markets Authority
EU	European Union
EUR	Euro
FCA	Financial Conduct Authority
FPS Economy	Federal Public Service for Economy, SMEs, Middle Classes, and Energy
FSB	Financial Stability Board
FSMA	Financial Services and Markets Authority
FSTI Scheme	Financial Sector Technology and Innovation Scheme
FTIG	FinTech and Innovation Group
GBP	Pound sterling
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GFCI	Global Financial Centers Index
GFIN	Global Financial Innovation Network
HKMA	Hong Kong Monetary Authority
HMT	Her Majesty's Treasury
HR	Human resources
ICO	Initial coin offering
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IPO	Initial public offering
IT	Information technology
MAS	Monetary Authority of Singapore
MENA	Middle East and North Africa
MiFID	Markets in Financial Instruments Directive
ML	Machine learning
NATO	North Atlantic Treaty Organization
NBB	National Bank of Belgium

P2P	Peer-to-peer
PoC	Proof of Concept
PPP	Purchasing power parity
PSD2	Revised Payment Services Directive
PSR	Payment Systems Regulator
PRA	Prudential Regulation Authority
SGD	Singapore dollar
SMEs	Small and medium-sized enterprises
UK	United Kingdom
US	United States of America
USD	United States dollar
VC	Venture capital

Introduction

Context – Historical Perspective

Financial innovation is not a recent phenomenon. Since decades, financial market participants have been using technological developments to improve the quality of their products and services. It is believed that a first era of FinTech took place as of the middle of the 19th century when the technological innovations of the time allowed the globalization of the financial markets for the first time. The arrival of digital technologies, which appeared at the end of the 80s of the last century, then brought FinTech into a second age, which ended in 2008 when FinTech, once again, entered a new era (Arner, Barberis, & Buckley, 2015). As a matter of fact, the global financial crisis of 2007-2008 has had major consequences on the financial sectors. While it developed a general distrust from the general public towards the traditional players, shifting consumers' preferences, it also brought changes in supervisory and regulatory requirements (Financial Stability Board, 2017), and put a number of financial professionals back on the market after they had lost their jobs, or seen their compensations revised downwards (Arner et al., 2015).

In this post-crisis era, technological innovation is mainly driven by start-ups, young companies capable of reacting quickly to ever changing market needs. On their side, financial supervisory authorities have since found it very difficult to implement appropriate regulatory frameworks, since they are pursuing objectives that are not conflicting, but sometimes difficult to combine as FinTech development result in both new opportunities and risks. On the one hand, besides leading to a healthy increase in competition between new players and incumbents (International Monetary Fund, 2019), the development of FinTech also improves banking processes' efficiency (Basel Committee on Banking Supervision, 2018) and financial inclusion, by making it easier for the general public to access certain financial products and services (Alliance for Financial Inclusion, 2020). On the other hand, this development also leads to increased risks for financial stability (FSB, 2017), money laundering, terrorism financing (BCBS, 2018), and threats to consumer's financial integrity in some cases (KPMG, 2019b).

Moreover, FinTech today appears as a multitude of varied technologies, evolving very rapidly in a growing sector proposing a wide range of different products and services. Under these conditions, financial regulators are having a hard time implementing comprehensive and up-to-date legislation that insures financial stability and consumers' protection without stifling innovation (Ehrentraud, Garcia Ocampo, Garzoni, & Piccolo, 2020). For these reasons, it appears that some countries have acted more effectively and proactively than others to come up with the right infrastructure, incentives and regulations. As a result, these countries have more advanced and important FinTech ecosystems nowadays (Deloitte, 2017).

Belgium, without being among the major laggards, is considered to be below its potential today (Godart, 2018). Indeed, while the country enjoys a strong reputation in the payments field and is often considered an interesting location at European level, both geographically and strategically, its FinTech ecosystem is still relatively undeveloped compared to some comparable markets, despite an encouraging increase in investment in the sector in recent years (Samain, 2019). In contrast, other countries such as the United Kingdom or Singapore are among the examples for FinTech development, thanks to proactive and reactive decisions of their governments, which for years have put in place attractive and safe regulations for innovative financial products and services (Deloitte, 2017).

Research Question & Objectives

Considering the current situation presented by the above introduction, a few questions come to our mind. On the basis of which criteria can the success of FinTech ecosystems be assessed and how can countries boost the latter? Who are the world leading countries and where does Belgium stand in comparison with these? Which are the most effective measures to develop the FinTech industry in a country without increasing the risks associated to FinTech development? All these interrogations actually lead to one general research question: What can Belgium learn from the FinTech ecosystems, infrastructures and regulatory frameworks of leading FinTech countries?

The purpose of this thesis is therefore to assess Belgium's current FinTech ecosystem by comparing it to those of the United Kingdom and Singapore in the first

place, two countries considered today as leaders worldwide in FinTech matters. Then the objective is to identify and analyze concrete examples of measures taken in these two other countries, to estimate how they could be implemented in Belgium, taking into account the local constraints and quantitative analyses of several factors, in order to finally draw up a few scenarios that will depend on the future ambition of Belgian financial authorities.

Methodology

Information Gathering

The information gathered for the production of this thesis comes from both primary and secondary sources.

The primary sources information mainly come from interviews conducted with four stakeholders, all working in financial supervisory institutions of the countries studied: the Financial Services and Markets Authority and the National Bank in Belgium, and the Financial Conduct Authority and Bank of England in the United Kingdom. In addition to these, informal conversations were also held with FinTech start-ups experts from the private sector working in banks and financial advisory firms.

Secondary information gathered here comes from a variety of sources, ranging from peer-reviewed scientific papers and reports from major international financial institutions (e.g. the Bank for International Settlements, the International Monetary Fund or the Financial Stability Board), to articles from reliable financial newspapers (e.g. the Financial Times, the Wall Street Journal or L'Echo) and information from the financial supervisory institutions' web portals of the countries analyzed.

Explanation on the Choice of Countries

As later explained in section 1.3.2. *FinTech Clusters and Leaders Worldwide*, few countries can be considered as global FinTech leaders. For this thesis, not all criteria used to determine such a classification have been taken into account, in order to make the comparison with Belgium meaningful. For example, the market size and its growth – current or future – or the adoption rate among the potential users, which highly depends on the country's culture, have not been regarded as relevant for the research,

since it is difficult for the authorities to change these criteria, at least in the short and medium term.

In return, it has been decided to choose two countries among the ones considered as very highly developed according to the Human Development Index (HDI), letting away a comparison with China or Brazil for example (UNDP, 2019).

Then, the financial regulation system had not to differ too much from the Belgian one, in which only a very few supervisory institutions are responsible for all financial supervision. The US, which host some major FinTech clusters in New York City or the San Francisco Bay Area for example, were dropped at this point, because of their very complex finance regulatory framework that involves several institutions at both federal and state levels (Jickling & Murphy, 2010).

Eventually, as the idea was to compare regulatory frameworks within FinTech ecosystems, the selected countries had to have both some of the most advanced FinTech regulations and infrastructures today and also be considered pioneers in these matters. Highly developed financial centers like Germany, Hong Kong or Japan do not have top-notch FinTech legislation yet nor do the US, confirming the decision to not select those for the comparison with Belgium (EY, 2016). In the end, two countries really stood out of the crowd taking into account all these criteria: The United Kingdom and Singapore.

Thesis Structure

This thesis consists of two main parts, preceded by this introduction.

Part I gathers both primary and secondary information. After being introduced to FinTech through an analysis of several definitions suggested by the literature, the reader will find a FinTech topology, followed by an overview of the major current trends of this emerging industry. Thereafter follow explanations on financial innovation opportunities and risks, highlighting the reasons for framing the development of FinTech, followed by an overview of the FinTech regulatory framework, studied here within three components: the financial institutions organizational structure and functioning, the initiatives they put in place alongside their governments to develop financial innovation, and the FinTech regulation approaches and rules. The three components are presented and explained in detail, and then viewed on a case-by-case basis for the three countries studied: Belgium, the United Kingdom and Singapore.

Part II then provides an analysis of the information provided in Part I. It first includes a cross-country comparison, highlighting the similarities and differences between the three jurisdictions, before listing concrete applications that could be introduced in Belgium, on the basis of the situations prevailing in the two other countries, through three scenarios that depend on Belgian authorities' level of future ambition for its FinTech ecosystem: high, average or low. A quantitative analysis of several databases on financial development is then proposed, in order to highlight some factors explaining the differences in levels between the countries studied.

Finally, after going through the conclusions of this thesis, the reader will find a series of appendices consisting of comparative tables, graphs, timelines and transcripts of the interviews cited above.

Part I – Presentation of FinTech and some of its Regulatory Framework

1. Overview of FinTech

1.1. Definition of “FinTech”

The term *FinTech* – short for *Financial Technology* – is very broad. Though it has been used in literature for over 40 years (Schueffel, 2016), and more recently by the majority of the best known international financial institutions such as the International Monetary Fund (IMF) or the World Bank, there is no international official definition for the word.

Historically, FinTech was used almost exclusively to describe banks fundamental technology, but it rapidly evolved as other actors of the financial industry and related areas started to make use of similar technological advancements (Schueffel, 2016).

Today, FinTech could briefly be defined as the “technological innovations in financial services” (Ehrentraud et al., 2020) or as a “new financial industry that applies technology to improve financial activities” (Schueffel, 2016). The most complete recognized definition has been proposed by the Financial Stability Board (FSB), which defines FinTech as the “technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services” (FSB, 2017). The IMF and the Basel Committee on Banking Supervision (BCBS) have since used the same definition (International Monetary Fund, 2018; BCBS, 2018).

More recently, there has been a new use of the term to refer to start-ups and scale-ups – or former ones considering that some have already become global corporations – that offer new financial solutions thanks to development in specific technologies. In this case, “FinTech” therefore describes a company and not a type of technology or an industry. Though, in this thesis, such entities will be indicated as “FinTech firms” or “FinTech companies” for the sake of clarity. Also, although the term is now mostly associated with these emerging businesses which represent the majority of FinTech recent activity, the association between technology and finance has led to innovation in

the whole financial sector, which obviously includes these start-ups but also long-established companies and international corporations as well as government departments in some cases (Chishti & Barberis, 2016).

1.2. Non-Exclusive FinTech Topology

Just as it is the case to define FinTech, there is no clear consensus on how to classify FinTech products and services. Additionally, the term FinTech being quite broad, there are still uncertainties whether or not some technologies should be considered as part of FinTech. Nevertheless, some international financial institutions have offered some categorizations in recent years.

The IMF proposes a topology that clusters all FinTech activities into five categories according to the services they offer: *Pay, Save, Borrow, Manage Risk* and *Get advice* (IMF, 2019).

As far as BCBS is concerned, it suggests another classification that puts together all “sectorial innovations” on the one hand and “market support services” on the other hand. The sectorial innovations are therefore sorted into three groups: (i) credit, deposits and capital-raising services, (ii) investment management services, payments and clearing, and (iii) settlement services, the latter subdivided in two, retail and wholesale, depending on the target group. Market support services form the technologies that support the FinTech innovations, such as, among others: application programming interfaces (APIs), cloud computing, machine learning (ML), artificial intelligence (AI) or big data analysis (BCSC, 2018).

More recently, another paper from the Basel Committee proposed a different classification, regrouping FinTech activities into six clusters instead of three (Ehrentraud et al., 2020). This situation illustrates the current ambiguity that still exists around this subject.

1.2.1. Digital Banking and Payments

Digital Banking and payments are generally the best known FinTech activities for the general public as these services and products are proposed not only to businesses (B2B), but also to private individuals (B2C). This contrasts with other FinTech solutions

active in other industries like capital raising, lending and investment management services for instance.

1.2.1.1. Online Banking

Digital banking, Internet banking, web banking or online banking mainly refers to the possibility for banking institutions consumers to perform banking activities through the institutions websites or mobile applications. Activities include non-transactional tasks such as checking account balances or recent transactions, or requests for new credit or debit cards, as well as transactional activities like money transfers and online purchases for example. Most banks nowadays propose these types of services (BCBS, 2018).

In recent years, the banking sector has seen the emergence of new competitors providing “internet-only” services. The new players have since been called neo-banks, online banks or digital banks (BCBS, 2018). They include examples all over the world, like *Nubank* from Brazil – the most valuable FinTech firm in Latin America currently or the German *N26*, leader in Europe (Woodford, 2020).

1.2.1.2. Mobile Payments

Mobile payments can be considered as part of the online banking technology. Nevertheless, they have been one of the hottest areas for global FinTech investments lately, and this makes those a special case (KPMG, 2019a).

Technically, one could say that every company that provides the opportunity for its customers to perform payments online is using some kind of financial technology, sometimes known as *PayTech* (Schueffel, 2017). Examples include banks themselves, Payment Service Provider (PSP) companies, which represent the intermediaries between shops and financial institutions, or new players that recently entered the payment industry, similarly to neo-banks in the Online Banking sector. *Transferwise*, a FinTech start-up based in the UK, made itself a name by proposing its customers to avoid paying foreign exchange fees on international money transfers and is now worth USD 3.5 billion, less than 10 years after its creation (Woodford, 2020).

Other technologies or services such as mobile points of sale (mPOS) or electronic billing also belong to this category of FinTech (IMF, 2019).

1.2.1.3. Digital, Virtual, and Cryptocurrencies

Digital currency, also called electronic money or e-money, is a type of currency that is stored on electronic devices and is non-physical, by opposition to a physical currency that includes bank notes or coins (Ehrentraud et al., 2020). Although this technology has been around for a few decades, it has taken on a new dimension in recent years with the emergence of virtual currencies and cryptocurrencies, subgroups of digital currency (Schueffel, 2017). Crypto currencies or crypto-assets, defined as a “type of private asset that depends primarily on cryptography and distributed ledger or similar technology (DLT) as part of their perceived or inherent value” by the FSB, account for a new type of technology that is evolving rapidly (Ehrentraud et al., 2020); the *Bitcoin* being the best known example of it (FSB, 2017).

1.2.2. Capital Raising and Lending Services

1.2.2.1. Equity Crowdfunding Platforms

Equity crowdfunding, sometimes known as crowdequity is a specific form of crowdfunding where equity is raised for a business or a project from a number of people, most of the time via online platforms (Schueffel, 2017). It represents a good option for SMEs to raise funds when institutionalized capital raising is not a realistic option yet. Sometimes, it involves donations or rewards from and for the early investors (IMF, 2019). *Kickstarter* (US), *Indiegogo* (US) and *Crowdfunder* (UK) are some of the world's best known platforms.

1.2.2.2. Lending Services and Technologies

Loan crowdfunding, also known as P2P lending, forms another type of crowdfunding, mostly done via online platforms too (FSB, 2017).

Balance sheet or portfolio loans represent another lending opportunity for companies to FinTech. It refers to the credit activity performed by internet-based platforms that use their own balance sheets to intermediate between borrowers and lenders. The main difference with the P2P lending platforms is that these types of businesses rely on their own capital to propose the loans and not to the funding obtained from the “crowd”. *WeLend* (Hong Kong) and *Quicken Loans* (US) are examples of such initiatives (Ehrentraud et al., 2020).

On the technology side, credit risk modeling and credit scoring have become well known tools for loan providers in recent years. These technologies, based on AI, ML and big data analysis, allow banks to better evaluate the credit risk of potential borrowers when granting loans (Ehrentraud et al., 2020).

1.2.3. Investment Management Services

1.2.3.1. E-trading

E-trading, short for electronic trading or online trading, represents a large category of financial market trading methods, performed on dedicated electronic and virtual trading platforms and marketplaces. The wide range of technology and services include both algorithmic or high-frequency trading used amongst professional investors, and "social trading" or "copy trading" amongst private individuals (FSB, 2017).

1.2.3.2. Robo-advisory

Robo-advisors, a recent technology, are self-guided wealth management firms or platforms that provide automated investment advices based on complex algorithms, generally at low cost and with low account minimums (Schueffel, 2017). They may use technologies such as machine learning or artificial intelligence. *Wealthfront* (US), founded in 2008, is a notable example of robo-advisory investment company (BCBS, 2018).

1.2.4. FinTech-related technologies

1.2.4.1. InsurTech

InsurTech, in some cases considered a type of FinTech, in other cases an industry in itself, is the new insurance-related sector that uses similar technology to improve insurance services (Schueffel, 2017). Online insurances like *Lemonade* (US) or *ZhongAn* (China), collaborative insurances or online comparators are all considered part of the InsurTech industry (Ehrentraud et al., 2020).

1.2.4.2. RegTech and SupTech

Over the past few years, new regulations were implemented across the world to prevent money laundering and to counter financing of terrorism (AML/CFT), and to better manage the risk of new financial crises. Examples include the California Consumer Privacy Act (CCPA), the General Data Protection Regulation (GDPR) and the

second Payment Services Directive (PSD2) within the European Union (FSB, 2017). These new requirements from the authorities increased regulatory compliance sharply for firms from the finance industry. Big Data management and know your customers guidelines (KYC) quickly became major concerns for the whole sector, encouraging established companies and newcomers to come up with new solutions that would release the burden of the additional work brought by such regulations (KPMG, 2019a).

It is in this context that *RegTech* emerged. It can be described as a new range of technologies within the financial industry that provides solutions to improve and facilitate financial regulatory reporting and compliance (Schueffel, 2017). The term RegTech can also refer to firms that offer such applications. Examples of these include *FundApps* (UK) or *Fintellix* (India) (BCBS, 2018).

SupTech, short for supervisory technology, is used to designate FinTech-related technology – mainly RegTech – used by supervisory authorities for similar objectives (BCBS, 2018).

1.2.4.3. Other FinTech-related technologies

Although not only used in the financial sector, some recent technologies are sometimes associated with the FinTech industry.

Cyber-security defined by Schueffel (2017) as the “measures, technologies, processes, and practices taken to protect a computer or computer system against unauthorized access or attack or damage”, is a first example of FinTech-related technology.

Big Data management is another one. Big Data denotes the large and complex volume of data that can be generated, structured, analyzed by specific data processing software (BCBS, 2018).

1.3. Global FinTech Landscape Overview

1.3.1. Figures and Trends

Then considered a promising but still very immature industry a few years ago, FinTech has experienced impressive growth over the past five years. Indeed, while FinTech global investments accounted for USD 51.2 billion distributed into some 1,600+ deals in 2014, they have now reached the sum of USD 135.7 billion spread into approx.

2,700 deals in 2019, showing bigger and more frequent transactions over time (KPMG, 2019a). FinTech accounted for 19% of the whole financial industry with regard to IPO valuations in 2019, with a total valuation of approximately USD 17 billion. Also, FinTech patenting activity has been impressive as it now represents nearly 20% of patents filed by the whole financial industry in 2019, justifying the innovative perspective associated with the phenomenon (IMF 2019).

Though, the share of revenues generated by FinTech remains relatively small (9%) in comparison to the whole financial sector (IMF, 2019). In a publication from 2018, the BCBS pointed out that “despite the hype, the large size of investments and the significant number of financial products and services derived from FinTech innovations, volumes are currently still low relative to the size of the global financial services sector”, without neglecting the growing potential of these new technologies (BCBS, 2018). Interestingly, although investments have risen sharply in recent years, it seems like FinTech exits have been few and seem difficult for the time being (Chernova, 2019).

Among all FinTech topics, digital banks and payments are considered some of the hottest spaces for future investments globally. Cyber-security, although not only used in the financial sector, is also very promising and already quite attractive for investors (KPMG, 2019a). Crowdfunding solutions and wealth management represent two other major groups of the FinTech investments currently (IMF, 2018).

Some believe that the future of FinTech will not happen without the *BigTech* (Stulz, 2019), also called the “Tech Giants” – the global leading corporations in IT industry like *Apple, Microsoft, Amazon, Alphabet (Google)* or *Alibaba*. Others already call into question the viability of certain companies of the FinTech industry. Indeed, since some distrust of the traditional banking industry had appeared from the general public after the financial crisis of 2007-2008, FinTech seemed to be a symbol of renewal for the world of finance, but recent examples of negative publicity like the ones of the *WireCard* scandal – a global payment service provider from Germany that filed for insolvency soon after a fraud of nearly EUR 1.9 billion¹ was discovered late June 2020 (Uhlig, Lema & O’Donnell, 2020) – and negative headlines around *Revolut* – one of Europe’s most valuable and promising FinTech start-ups – could reverse this positive trend (Megaw, 2020).

¹ EUR 1.9 billion was equivalent to approximately USD 2.2 billion at the end of July 2020.

1.3.2. FinTech Clusters and Leaders Worldwide

Globally, only a few cities can be considered as serious contenders for the global number one spot in FinTech. In no particular order, one can consider: San Francisco, strong of its record 12 FinTech unicorns – privately held start-up companies valued at over USD 1 billion – and its proximity to the Silicon Valley (Findexable, 2020); London, world-renowned for implementing the first FinTech regulatory sandbox in the world (BCBS, 2018); New York City, known as the most important financial center in the world (Z/Yen, 2020); and Singapore, which has showed a very strong commitment from its government towards FinTech development since a few years (Deloitte, 2017). Depending on the criteria taken into account, other cities or countries like Hong Kong, Sydney, Frankfurt, Zurich (Deloitte, 2017), Lithuania or Sao Paulo (Findexable, 2020) could also be considered as major or emerging FinTech clusters.

In any case, tough FinTech development is now a global phenomenon, North America and the United States in particular stay ahead when it comes to the industry market size. Indeed, it appears that three quarters of the total global funds raised for FinTech IPOs and half of global venture capital FinTech fund-raising have been generated in the US historically (IMF 2019). Asia, pulled up by China, is ahead in lots of other aspects of FinTech like consumer adoption and crypto-assets development, including ICOs, while Europe, renowned for leading the way in FinTech regulation and regulatory innovations, is rapidly catching up, albeit unevenly distributed between the United Kingdom and the rest of the continent (IMF 2019). Next to these three giants accounting for the overwhelming majority of FinTech activity, Sub-Saharan Africa, leader in mobile money innovation, adoption, and usage, MENA, Latin America and the Caribbean are behind but represent promising markets with lots of potential (IMF, 2019).

2. Overview of FinTech infrastructure and Regulatory Framework

2.1. Purpose of FinTech Regulation

FinTech innovation, as it is also the case in any other type of innovation, comes with new opportunities and risks. Therefore the improvement of technology in the

financial sector has to be monitored by the competent authorities. On the one hand, one part of supervisory agencies objectives is to encourage and facilitate FinTech development in order to promote the associated positive impact. On the other hand, the regulators also aim at reducing the risks that come with FinTech expansion (IMF, 2019).

It seems like the main objectives pursued by national financial authorities so far are mainly consumer and investor protection, conduct and fairness within the market, financial inclusion and the promotion of innovation and competition. Next to these, financial stability – although less often cited as a key objective – is also part of the focus (FSB, 2017).

2.1.1. Promotion of Financial Innovation Opportunities

Positive impact brought by FinTech development and a consistent FinTech regulatory framework can benefit three types of stakeholders: financial services and products consumers, FinTech solutions providers (the FinTech firms) and the economy as a whole.

From a general perspective, consumers, or potential consumers, enjoy increases in competition for comparable products or services in a given market, this being made possible by clear regulation in this area. Such a boost generally goes hand in hand with a decrease in prices and/or an increase in the quality of these services or products thanks to some technological innovation that improves the efficiency (IMF, 2019). The advent of new technologies also brings new opportunities for potential users of a service or product and can make everyday life easier. Then, it appears that FinTech plays its role in the improvement of financial inclusion by increasing the access to financial products and services such as payments, credits, savings and insurance. This is particularly true with regard to developing countries where a bigger percentage of the population traditionally does not have easy access to finance (AFI, 2020).

Next to consumers, the FinTech firms themselves find interests in having some clarity in the law. New entrants, generally start-ups, need to have room for innovation and growth within a market, and the competent authorities can provide this. Next to that, new rules with regard to FinTech spotlight the existing solution providers and can therefore serve as “free advertising” towards people who did not know about them, to the point of perhaps changing the behavior of potential consumers. Lastly, it seems like

more clarity in the regulation can improve operational performance for FinTech companies (AFI, 2020).

As a whole, the national economy of a country also enjoys FinTech development. Competition increase and economic development are some of the key regulators objectives (Arner et al., 2015) since they bring some additional positive impacts. These include poverty reduction – also through financial inclusion and improved efficiency with regard to some financial solutions (Ehrentraud et al., 2020) – as well as more efficient banking processes and potential positive impact on financial stability (BCBS, 2018).

2.1.2. Limitation of Financial Innovation Associated Risks

There is now a consensus in the literature that the “complexity and lack of standardization [and] lack of transparency [...] were factors that contributed to the 2008 global financial crisis” (Duran & Griffin, 2019). Since then, financial regulation rose sharply, to the point where some now believe those have gone too far (Lederer, 2017).

Nevertheless, it has been proved that financial technologies and innovation come with new risks for consumers, investors, FinTech firms, banks and the banking system as a whole (BCBS, 2018). It is therefore the duty of the financial authorities to seek to minimize these risks (Ehrentraud et al., 2020) by continuously staying up to date with proper regulatory frameworks and supervisory practices (AFI, 2020).

The IMF notes in one of its latest paper (2019) that FinTech development comes with new risks for financial stability. Concretely, FinTech development brings additional risk of concentration on the market, cyber-risks linked with crypto-assets and it seems like a generalized use of similar machine learning and other strategies for trading and credit granting could lead many financial market participants to behave too similarly (KPMG, 2019b). The Basel Committee on Banking Supervision also mentions several risks emanating from financial technologies and innovation for banks in a recent publication (2018): systemic, idiosyncratic and increased liquidity risks.

Next to these financial stability risks, the IMF denotes potential threats to financial integrity in this same recent paper (2019). Data and consumer protection have to be at the top of the supervisor's agenda when it comes to regulating FinTech (AFI, 2020). Common dangers for consumers when dealing with FinTech solutions can be diverse:

lack of understanding, data piracy or lack of security and protection around those, and improper sale of products and services. Somehow, FinTech could also backfire and lead to financial exclusion for people that do not use digital solutions, like the elderly (KPMG, 2019b). On another note, new financial technologies could increase the risk of money laundering and potentially introduce some additional risk of terrorism financing (BCBS, 2018).

Eventually, FinTech firms themselves may encounter new threats because of financial innovation. Examples include technological risks, legal issues or high-dependency on third parties, which brings us back to the issue of financial stability (KPMG, 2019b).

2.2. Characteristics of FinTech Regulatory Frameworks

Traditionally, national financial authorities are responsible for all financial regulation and supervision, and this includes FinTech. Yet, in some cases, national authorities set common standards based on consensus obtained at international gatherings organized by international institutions such as the BCBS, the FSB, the International Organization of Securities Commissions (IOSCO), the International Association of Insurance Supervisors (IAIS) or the Joint Forum, (Prabhakar, 2013).

2.2.1. Financial Institutions Organizational Structure and Functioning

2.2.1.1. Organizational Structure within the Supervisory Authorities

In some countries, only one institution handles the financial regulation (e.g. Germany or South Korea) while in others, several authorities manage the regulatory framework (e.g. Japan or France). Typically, financial authorities tend to be shaped as one of three following common structures: an integrated supervisory authority that controls all financial regulation on its own (e.g. the Monetary Authority of Singapore), a “twin peaks model” with a prudential supervisor on the one hand, and a conduct one on the other hand (e.g. the Bank of England and the Financial Conduct Authority in the United Kingdom), or a sectorial approach with distinct authorities for each industry (Taylor, Wilson, Holttinen & Morozova, 2019) like it is the case in the United States with the Federal Reserve System (Fed) and the Office of the Comptroller of the Currency (OCC) being accountable for the banking supervision, the National Association of

Insurance Commissioners (NAIC) for insurance and the Securities and Exchange Commission (SEC) for securities and capital markets (Jickling & Murphy, 2010).

With regard to FinTech regulation, this generally translates into two approaches: (i) the creation of a dedicated FinTech core group, or (ii) the establishment of a strong cross-functional coordination around FinTech within the existing framework.

When setting up a new FinTech or Innovation team or department within the current structure, the authorities sometimes decide to hire external experts in FinTech business and service models to support the existing team and to help on particular concerns and issues (AFI, 2020). The World Bank actually encourages these kinds of initiatives and promotes the establishment of dedicated FinTech units and functions (IMF, 2019). Typically, a number of specific roles are assigned to these teams or departments. Among other things, they represent a point of contact between FinTech firms and the authorities, and they coordinate and monitor FinTech development and regulation. In some cases, they also provide internal training (Taylor et al., 2019).

If a country decides not to establish a dedicated team for FinTech, it then generally translates into the promotion of some additional coordination across existing organizational structures with regard to financial innovation (AFI, 2020). To that end, authorities might want to strengthen the internal systems and process (IMF, 2019) and develop and improve the communication tools and practices used by all parties involved within the current structure (FSB, 2017). This appears to be necessary in order to be well prepared in anticipation of further innovation in that regard.

2.2.1.2. Up-to-date FinTech Staff

Besides having an effective organizational structure to anticipate FinTech trends and development, supervisory authorities want to have skilled people working daily on this matter. This means having a skilled staff composed of experts on different topics.

The promotion of an innovative mindset within the organizational culture clearly helps regulators to be one step ahead and up-to-date when dealing with new FinTech technologies. Indeed, as FinTech evolves quickly, the authorities want to stay up-to-date and encourage their staff to keep up with the trends, and make sure the supervision they perform is in line with the activities they regulate (AFI, 2020).

Besides this, FinTech staff itself needs to be competent. This means include both newly hired experts as well as well-trained internal talents (Taylor et al., 2019). In order to upgrade their staff skills, the supervisory authorities have several options at their disposal such as online classes, webinars or expert master classes among others. Talent attraction is also part of these HR practices that can improve the quality of the FinTech staff, especially when considering the speed with which technologies are evolving today. For example, participation in job fairs or presentations at universities and colleges can generate vocations among students (AFI, 2020).

2.2.1.3. Domestic and International FinTech Coordination

Supervisory authorities can perform coordination around FinTech in various ways. Two types can be distinguished: domestic coordination, which includes cross-agencies co-operation and experts sharing sessions for example, and international coordination, which can either be bi- or multilateral.

Domestic coordination mainly takes place via the formation of task forces. These can be set up for FinTech concerns specifically or for broader considerations in which financial innovation is involved. Indeed, whenever such topics require further details from other national or regional agencies, the financial regulatory authorities can desire or even be asked to set up these working groups (Taylor et al., 2019). Additionally, the supervisors should be encouraged to engage as much as possible with other FinTech stakeholders to expand their knowledge and share their experiences. Stakeholders obviously include FinTech companies – from start-ups to international groups established on their soil – but also users, investors, consultancy and legal firms specialized in finance, FinTech associations or even universities for example (AFI, 2020).

Though some bilateral international coordination arrangements exist, such as FinTech bridges for instance, the majority of them are multilateral ones that happen at international gatherings. Besides the traditional international financial institutions meetings, some more FinTech-specific events are taking place nowadays (Taylor et al., 2019). For instance, the *Global Financial Innovation Network* (GFIN), an international organization regrouping over 50 financial regulators and related organizations, was set up very recently to promote “co-operation between financial services regulators on innovation related topics, sharing different experiences and approaches” (Global Financial Innovation Network, n.d.).

2.2.1.4. Additional Framework Characteristics

Further characteristics of the supervisory authorities operation tend to have an impact on the FinTech ecosystem of a country. The rapidity or ease to implement new regulations certainly plays a role in this matter. Indeed, some jurisdictions seem to be stressed to certain legal and institutional constraints such as the slow movement of the legislative process, the high level of fragmentation within the institutions concerned and the diversity of FinTech business models that make it difficult for the supervisors to be fully informed (FSB, 2017). Additionally, budget and technology at disposal of financial regulatory authorities also tend to vary a lot from one country to another (IMF, 2019).

2.2.2. Incentives for FinTech Development

2.2.2.1. FinTech Development Facilitators

FinTech development facilitators, or innovation facilitators, are national or regional initiatives proposed by some jurisdictions around the world to promote innovation – in FinTech case, financial innovation. Today, it is considered that there are three main FinTech development facilitators: regulatory sandboxes, innovation hubs, and accelerators (Ehrentraud et al., 2020). Additionally, some other efforts from the financial regulation agencies or governments, such as the provision of co-working spaces, can also be considered as innovation facilitators.

Regulatory sandboxes can be defined as controlled frameworks in which tests of new technologies are performed under closed supervision from supervisory agencies (FSB, 2017). Sometimes, these sandboxes feature regulatory forbearance from the controlling authorities or alleviations of the regulation in force (Ehrentraud et al., 2020). Traditionally, regulatory sandboxes run for a given period of time and their access is limited and granted through an application process. Supervisors, that will be actively involved and will cooperate all along the way, may consider various criteria to select the participating firms, such as the expected benefits for the general public, the maturity levels of the companies, the existence of an exit strategy or the ease of fit into the current regulatory framework (BCBS, 2018).

Although designed to promote innovation while limiting the risks for customers and the financial stability (BCBS, 2018), the objectives of regulatory sandboxes can be various. In the first place, these testing environments allow dialogue between

innovators and supervisors. Thanks to discussions and feedback, FinTech firms and financial authorities are able to better understand the other side's interests and intentions, and work hand in hand (FSB, 2017). For participants especially, this dialogue is a cost-effective way to promote changes in the regulation by reducing the burden of compliance costs for example (AFI, 2020). Some regulatory sandboxes also intend to stimulate competition, facilitate financial inclusion or encourage new products and services according to the needs put forward by the consumers (IMF, 2019).

The evaluation of regulatory sandboxes outcome is still insufficient to establish clear conclusions of their effectiveness as they are a recent phenomenon in the FinTech area – the first regulatory sandbox has been introduced in the United Kingdom in 2016 (BCBS, 2018). Nevertheless, the popularity of this new type of regulatory framework has increased sharply in recent years, to the point where the IMF is now proposing “support for and design of regulatory sandboxes and other approaches, and reforms of legal and regulatory framework for FinTech” (IMF, 2019).

Innovation hubs are a second type of innovation facilitators. They can be described as projects set up by the regulation authorities aiming at providing support, guidance and advices on regulatory requirements to companies – in this case, FinTech firms (FSB, 2017). Typically, unlike regulatory sandboxes, innovation hubs do not follow an application and selection process, but rather offer the opportunity for FinTech companies, both regulated and unregulated ones, to get in touch with the supervisory agencies at their request or by attending industry events (BCBS, 2018). Concretely, the supervisor will provide specific information on the regulatory framework and identify alongside the firm potential policy challenges and concerns that could appear throughout the development of new products or services (Ehrentraud et al., 2020). Generally, these information exchanges are quite open and informal (BCBS, 2018).

FinTech Accelerators, also known as *incubators* or *innovation labs*, form another group of FinTech development facilitators. They are fixed-term programs run by central banks, supervisory agencies or experienced private sector actors in which selected FinTech providers develop a solution or explore new technological opportunities under the supervision of the organizers (BCBS, 2018). These programs sometimes become partnerships between the participants and the organizers (Ehrentraud et al., 2020) and may include funding support (FSB, 2017). They can also involve training, mentoring,

marketing or networking guidance (AFI, 2020). In some instances, accelerators programs imply a public presentation on a “demo day” during which participants – mostly start-ups – present their solutions in front of an audience (BCBS, 2018).

Some consider **co-working spaces** as another FinTech development facilitator. Indeed, dedicated spaces for FinTech entrepreneurs can help start-ups to take off by offering them a place to work first, but also a place to meet and exchange with other FinTech stakeholders. Although these initiatives are generally initiated by the private sector, some of them have been launched with the support of regional or national governments (AFI, 2020).

2.2.2.2. Other Incentives

Other types of incentives for FinTech development can take various forms. Some of them are directed towards the FinTech companies themselves and can include financial support while others are pointed towards the general public, mainly to bring awareness on the opportunities – and the risks – of financial innovation and development.

National or local governments have several options when it comes to promoting financial innovation financially. Some have decided to provide subsidies thanks to financing schemes to promote their financial sectors. Others propose tax incentives via capital gains tax relief or tax breaks for start-ups and small business investments in order to boost tech start-ups and scale-ups (AFI, 2020). Another potential government incentive is the granting of some special visa programs to attract investors and entrepreneurs like it is the case in France, which propose a special *French Tech Visa* for example (La French Tech, n.d.).

The promotion of FinTech events also plays a role in FinTech development. A few countries or regions organize regular FinTech festivals with the intention to present the latest trends and financial innovations from their most promising firms. This kind of initiatives also allows a gathering of all stakeholders and triggers interesting discussions between regulators, investors and financial solution providers (AFI, 2020). What is more, if the admission to these kinds of events is large enough to engage the general public, it can produce some great publicity for the companies attending the meeting. Actually, some may consider that it is also the role of the authorities to promote FinTech products and services to the general public when one knows the positive impact they can bring to the economy as well as the associated dangers for the misinformed users.

This kind of promotion can bring additional trust to the world of finance as a whole and foster financial inclusion (AFI, 2020).

2.2.3. FinTech Regulation

2.2.3.1. Types of Regulatory Responses to FinTech Development

Arguably there are two opposite approaches followed by the supervisors when it comes to monitoring FinTech development. While most of the countries embrace the opportunities of financial innovation by promoting them the best they can, namely with the incentives presented above, and try to give more weight to financial inclusion, competition and development via the publication of new legislations, some jurisdictions have another focus and tend to prioritize a traditional prudential way to regulate FinTech (Taylor et al., 2019).

In any case, regulatory authorities have several possibilities when it comes to respond to FinTech development. Some FinTech activities can simply not be allowed by the jurisdiction (KPMG, 2019b). On the contrary, some regulators can decide that some activities do not require any attention and the regulatory status for these new solutions remain unchanged. In this case, the interpretation of the current policies plays an important role (Taylor et al., 2019). In between these two extremes, supervisors can monitor FinTech development by either modifying the current legislation, by adjusting the regulation perimeter to include new activities or by proposing some new specific FinTech policies (KPMG, 2019b). In this last case, there are typically two kinds of approaches: the principles-base regime, which favors flexibility and speed of innovation but requires a certain amount of trust from the authorities towards the FinTech solutions providers, and the rules-based regime, which ensures expected behaviors from the firms but also acts as check-the-box form of compliance that can remove the purpose of regulation (Brummer, 2014). At times, the introduction of a new specific regulation goes hand in hand with the introduction of some FinTech-specific licenses that force FinTech entities to get authorizations from the supervisors before starting to offer their products and services (Ehrentraud et al., 2020).

2.2.3.2. Clarity and Efficiency of FinTech Regulation

Having some FinTech regulation in place does not necessarily mean that financial innovation will be monitored the way it should. Some issues concerning the clarity and

the efficiency of the regulation can appear. For this reason, the World Bank proposes its services to “review existing frameworks to identify potential reforms that would provide a more conducive environment for FinTech innovation and adoption whilst mitigating risks [...]” (IMF, 2019).

One of the main challenges for FinTech regulation is the adaptation of the perimeter. Because financial technology is a broad topic, it happens that entities fall outside of the supervision perimeter of some FinTech regulation. In these situations, these entities are not fully subject to reporting requirements and can come outside of the authorities supervision (FSB, 2017). Besides this, regulators want to avoid that some FinTech report on things that are not necessary as this opposite situation inhibits innovation.

To solve this perimeter issue, the Basel Committee suggests the implementation of regulatory and supervisory methods that are activities-based rather than entity-based (FSB, 2017). This approach ensures a better coverage of activities that impact financial stability as a whole (Taylor et al., 2019).

3. FinTech Ecosystem in Belgium

3.1. Overview of the FinTech Ecosystem in Belgium

Historically, Belgium has a strong reputation regarding its know-how in the field of payments (Samain, 2019). The fact that global financial companies like *SWIFT*, *Euroclear* or *MasterCard* have all chosen to establish their European or global headquarters in the Greater Brussels area illustrates this point (Deloitte, 2017). Another reason for such a concentration is the geographical and strategic position held by Brussels, often considered de facto as the capital city of Europe for hosting major international institutions like the administrative center of the European Union – the European Parliament and the European Commission – and NATO headquarters.

Today, Belgium seems to have some potential to become an important European FinTech cluster and some additional elements point in this direction. FinTech investments keep increasing year after year as Belgian FinTech businesses raised some

EUR 72 million¹ in 2018 (Samain, 2019), by contrast to less than EUR 12 million² 3 years earlier. 26% of these firms, mostly B2B companies, were valued at more than EUR 15³ million each by the end of 2018 (Godart, 2018). Successful start-ups like *Qover*, *Look&Fin* or *UnifiedPost* clearly pull the ecosystem up (Samain, 2019). Also, since 2016, the Financial Services and Markets Authority (FSMA) – one of the two key financial supervisor bodies in Belgium – officially acknowledged FinTech as being on its radar and started to pay closer attention to development of the sector (Financial Services and Markets Authority, 2016).

Nevertheless, despite these few positive arguments, Belgium takes time to emerge as a meaningful FinTech cluster and some major challenges could delay or even cancel the potential hatching of FinTech players in the country. In 2017, a Deloitte report (2017) pointed out the small market size, regulatory barriers and limited exit options as major obstacles for FinTech expansion in Belgium. Some might also say the lack of ambition from the authorities could also be playing a role in the slow process of development (Godart, 2018).

3.2. Belgian FinTech Ecosystem in Details

3.2.1. Financial Institutions Organizational Structure and Functioning in Belgium

3.2.1.1. Organizational Structure within the Supervisory Authorities

Financial authority in Belgium, mainly composed of two autonomous institutions, follows the “twin peaks model” supervision. Indeed, the National Bank of Belgium (NBB) and the Financial Services and Market Authority (FSMA) share most competences regarding financial monitoring and have some common objectives: insure consumer protection, fair and efficient markets and financial stability (C. Majois, personal interview, June 30, 2020). Concretely though, they also have their own sets of distinct missions. Among others, the NBB represents the principal prudential supervisor for banks, payments, e-money institutions and insurance companies. For its part, the FSMA is notably responsible for the supervision of the financial markets and certain categories

¹ EUR 72 million was equivalent to approximately USD 82 million at the end of 2018.

² EUR 12 million was equivalent to approximately USD 13 million at the end of 2015.

³ EUR 15 million was equivalent to approximately USD 17 million at the end of 2018.

of financial service providers like investment and fund management firms. Next to these two main supervision bodies, another federal institution, the FPS Economy, is accountable for some additional supervision among which consumer credit and payment services (Doornaert, Carlier, & Verkooijen, 2019).

With regard to FinTech supervision, Belgian authorities do not own a dedicated FinTech team or department in itself (C. Majois, personal interview, June 30, 2020). However, since 2016, a FinTech steering group composed of both senior and junior staff from both major supervisory institutions has been set up (M. Van Acoleyen, personal interview, July 3, 2020). The role of this group is to serve as intermediary between the various divisions of both the NBB and the FSMA and other FinTech stakeholders that want to enter in contact with the authorities. Typically, the people from this steering group are responsible for other tasks as well, they have some basic knowledge on FinTech but they also rely on the in-depth expertise of other people within each department, specialized in specific financial matters (C. Majois, personal interview, June 30, 2020).

According to Mr. Van Acoleyen (personal interview, July 3, 2020) currently working at the NBB, taking into account that the European context always proposes activity-based legislation, the way the NBB and the FSMA are working currently is very useful. Indeed, as regulated financial activities generally need a license to be performed, it is therefore more valuable for the counterparties – the FinTech firms – to be directly in contact with the department that is in charge of their respective licenses and not with a centralized FinTech hub that may not have the answer to particular concerns.

3.2.1.2. Up-to-date FinTech Staff

In recent years, the authorities started to hire more data analysts and experts in SupTech. Though, Mr. Majois (personal interview, June 30, 2020), working currently at the FSMA, estimates that the supervisory institutions should not especially be looking for more FinTech experts as this kind of knowledge is acquired with everyday work rather than beforehand.

With regard to FinTech formation, FSMA staff members used to assist to training courses provided by B-Hive, a partially state-funded FinTech innovation platform. This happened a few years ago and stopped when the platform in question ceased to exist in 2019. Then, that same year, the FSMA started to provide some internal training sessions

on FinTech topics to all its employees. A second round of training is expected to take place in 2021 according to Mr. Majois (personal interview, June 30, 2020). The idea of these courses is to keep every employee informed of FinTech development. The classes do not go into too many details but rather provide some overview on the financial innovations happening on the market.

3.2.1.1. Domestic and International FinTech Coordination

On its website, when implementing a FinTech portal in 2016, the FSMA announced that it was “convinced that smooth contact and dialogue, and a better and quicker exchange of information, [would] ultimately benefit all parties concerned: the legislators/supervisor, service providers and the financial end consumers”, showing its interest in having some good domestic coordination (FSMA, 2016). Besides its contacts with the majority of FinTech firms operating in Belgium, the supervisory institutions are frequently in touch with other stakeholders from the private sector too, like *FinTech Belgium*, the first largest FinTech community in the country (C. Majois, personal interview, June 30, 2020).

With regard to international coordination, Belgium is member of the European Securities and Markets Authority (ESMA), which aims at promoting “consistent supervisory practices and investor protection in the EU via the national supervisors and advises the European Commission on financial regulation” (FSMA, 2016). In recent years, some task forces have been established within the ESMA, including one on financial innovation. During the sharing sessions of this task force, the FSMA and the NBB have a lot of contacts with other supervisors from the EU and Mr. Majois (personal interview, June 30, 2020) considers this as a major source of information and knowledge for the Belgian supervisors.

Besides this membership, Belgium is also part of most major international financial institutions, but has not joined the recently created GFIN, like the large majority of EU members, exceptions being Hungary, Lithuania and Luxembourg that are officially members of the network (GFIN, n.d.).

3.2.1.2. Additional Framework Characteristics

In Belgium, every type of regulation come from two sources: a royal decree, which has to be signed by the relevant minister, or a law, which has to be approved by the

parliament and therefore takes more time than the decree to enter into force. Financial regulation sticks to the same rule. In this process, the supervisory authorities do not have much to say, as their role is to supervise the financial activity, not to draft the regulation. It takes approximately 1 year and a half to 2 years to adapt a regulation or publish a new one, from the moment the government takes a decision concerning a topic to the effective application of the regulation (C. Majois, personal interview, June 30, 2020).

According to Mr. Van Acoleyen (personal interview, July 3, 2020), as the innovation usually takes place in the market and not on the regulator's side, the authorities generally have to catch up. Though, in its personal opinion, the topic of being digital is very high on the agenda of the authorities, both in Belgium and in the European and international contexts.

3.2.2. Incentives for FinTech Development in Belgium

3.2.2.1. FinTech Development Facilitators

There is currently no public organism that has FinTech promotion as a main objective in Belgium. Therefore, there is no regulatory sandbox, nor FinTech accelerator run by the Belgian authorities (Samain, 2019), in part because the added benefits of the regulatory sandbox are not worth the costs associated with the creation of such an initiative according to Mr. Van Acoleyen (personal interview, July 3, 2020). To be beneficial, this kind of FinTech development facilitator needs a large enough vibrant FinTech community within the country or region, which is not the case in Belgium for the moment. Unlike other institutions abroad, there simply is no mandate for the FSMA or the NBB to boost the competition in the financial market, it is just not the role of the supervisory authorities to promote FinTech development (C. Majois, personal interview, June 30, 2020).

Nevertheless, since 2016, the FSMA and the NBB offer the possibility for financial technology companies, whether start-ups or established firms, to enter into direct contact with them via a "FinTech Portal" on their websites. The main purpose of this initiative, which serves as an **innovation hub** although it is not called that way, is the exchange of information between both parties (FSMA, 2016). Typically, the authorities intend to provide the firms with an answer within 3 business days after the initial

contact (Financial Services and Markets Authority, n.d.-b) and this can take various forms, from email or phone calls for treating simple requests, to a series of meetings when it comes to more complex concerns. In most cases, the main activity of the firm entering in contact makes obvious whether it is the FSMA or the NBB that will be in charge (M. Van Acoleyen, personal interview, July 3, 2020), and in any case, the supervisors expect the firms to have some basic knowledge on the topic when filling out the online form on the portal (C. Majois, personal interview, June 30, 2020). In some cases, it is the FSMA that spearheads the first contact with FinTech firms, for instance when finding out about their existence through the media (C. Majois, personal interview, June 30, 2020).

Until recently, there was a collaborative FinTech innovation platform in Belgium. Though the project was initially a private initiative, established under the name of *Eggsplore*, the platform was renamed *B-Hive* when it ended up receiving some financial support from the government as of 2017 (B-Hive, 2017). Less than three years later, the project announced the end of its activities, announcing that it had "achieved its objectives", yet leaving a taste of too little (Samain, 2019). Today, in Belgium, there is no state-funded place devoted to FinTech anymore.

3.2.2.2. *Other Incentives*

In 2017, Belgium has introduced a new Corporate Tax Reform. This rearrangement brought significant reduction of the corporate income tax, from 33% to 25% as of 2021. For SMEs, the tax rate has even decreased to 20% and reduction can go further for the first tax base of EUR 100,000¹ (Réforme de l'impôt des sociétés, 2017). One of the aims of such initiatives, being part of a general tax shift in the country, was to boost entrepreneurship and therefore innovation within the country. Since 2003, Belgium also introduced some tax shelter methods in its taxation law to help start-up companies raise money. Indeed, if all the conditions defined by the law are met, companies can be granted reductions in their taxable base according to the sums invested in an eligible work. On their side, investors can benefit from a tax reduction of up to 30% or 45% of the amount they invested depending on some criteria (Service Public Fédéral Finances, n.d.).

¹ EUR 100,000 is equivalent to approximately USD 117'800 at the end of July 2020.

More specifically with regard to FinTech, the Minister of Finance Johan Van Overtveldt shared his intention to create a EUR 200 to 400 million “super fund” to help scale-ups grow in Belgium in 2018. The fund, which is still not active, would be backed by Government itself and by banks and insurance companies, and should provide tens of millions euros for tech firms in the country (De Preter & Sephiha, 2018).

With regard to FinTech promotion, the 2018 words of Fabian Vandenreydt (former President of B-Hive) are a good illustration of the point: he considered that Belgium had the potential to become an important international player within some niche market but it was missing some “killing marketing that would showcase all of [its] FinTech assets” (Godart, 2018).

Though, it seems like notable efforts have been made to improve financial education to the general public within the country (Afore, 2020). For example, the FSMA launched its own financial education program, *Wikifin*, a few years ago. This initiative is based on three pillars: an enjoyable online website regrouping an impressive set of financial information, an improved collaboration with the national education authorities to offer some free educational material for children and teenagers, and a strengthened collaboration with other public and non-profit partners from the financial education sector (Wikifin, n.d.). Although mentioned, FinTech is however really not a main topic within these initiatives (C. Majois, personal interview, June 30, 2020).

Finally, while the organization of FinTech events is not part of the FSMA or the NBB action plans, supervisors do often participate in those organized by the private sector (C. Majois, personal interview, June 30, 2020).

3.2.3. FinTech Regulation in Belgium

3.2.3.1. Types of Regulatory Responses to FinTech Development

Lot of Belgian rules concerning finance regulation come from the European Union directives and regulations. Even if the majority of the existing EU legislations are directives, it seems like as far as finance is concerned, most of the recent publications tend to be regulations from now on, meaning that member countries do not have to transpose EU legislation into national ones anymore and can apply the regulation directly. In Belgium, both principles-based and rules-based regulations are applied for the financial supervision, as it is the case in most EU countries, and FinTech legislation is

formed from both current legislation adaptation and new law creation (C. Majois, personal interview, June 30, 2020). Furthermore, European regulations and directives typically are activity-based rather than entity-based (M. Van Acoleyen, personal interview, July 3, 2020). The same methodology applies for Belgium, in line with the Basel Committee suggestions on that topic (FSB, 2017).

3.2.3.2. Clarity and Efficiency of FinTech Regulation

Mr. Majois (personal interview, June 30, 2020) does not remember that the regulators had to deal with numerous disgruntled saying that the regulation was not appropriate to their activities. He conceived that one topic is a bit more complex though: the cryptoassets. Indeed, depending on the type of services that the firms offer, their activities can or cannot be monitored by the MiFID regulation. Belgium, which relies on European decisions in this regard, is then waiting for the European Commission to come up with clarification on cryptoassets regulation.

At the 2020 edition of the Annual Conference on FinTech and Regulation, Jean-Paul Servais (Chairman FSMA) also noticed some “FinTech [firms] [were] not compelled to engage with supervisors, as their business model is usually outside the scope of action of supervisors” (Afore, 2020).

3.2.3.3. Examples of Specific Regulation on Specific FinTech Activities

In February 2017, Belgium has introduced a new law dedicated on “alternative funding options”, with the aim of regulating **crowdfunding** activities. This followed a series of incentives that had been introduced by the government to promote the crowdfunding phenomenon within the country (C. Majois, personal interview, June 30, 2020). This crowdfunding regime is based on a mini-MiFID framework, similar to the EU directive of the same name, supervised by the FSMA (Afore, 2020). Since the new law entered into force, the supervisory authorities opened a dedicated portal on their website where they provide useful information on this particular topic of FinTech, with a Q&A section, a list of all registered crowdfunding platforms and the relevant law publications. (Financial Services and Markets Authority, n.d.-a)

In early 2020, FSMA Chairman, Jean-Paul Servais introduced information on **cryptocurrencies** during a Senate hearing alongside representatives from the NBB and the Belgian Financial Intelligence Processing Unit (CTIF-CFI). The aim of this initiative

was to promote the establishment of a dedicated legal framework for the use, sale and purchase of virtual currencies and related products in Belgium. During its presentation, Mr. Servais presented some European and international initiatives on this matter, bringing some regulatory contexts to the fore (Financial Services and Markets Authority, 2020).

Regarding **lending** regulation, the Belgian legislation that applies depends on the borrower's status, which is divided into two categories. Commercial loans do not require a license on a stand-alone basis, but there are specific rules of conduct to be applied when lending to SMEs. When it comes to consumer lending, a license and other requirements are requested. Therefore, peer-to-peer lending platforms are forbidden currently, given that the current regulatory framework does not authorize any direct lending between individuals, even through any kind of platform (Doornaert et al., 2019). Amongst other FinTech activities that are also not currently regulated is **factoring** (on a stand-alone basis), also known as invoice trading (Doornaert et al., 2019).

3.3. Parenthesis on European Union's FinTech Regulation

The European Union system of financial supervision was introduced in 2010 as a response to the Great Recession of 2008. It is composed of three supervisory authorities that are in contact with the relevant authorities of each EU member countries: the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA). The European Systemic Risk Board (ESRB), which acts under the supervision of the European Central Bank (ECB), then completes this framework (European Commission, n.d.-b). For several FinTech topics, the financial supervision and regulation in EU member countries highly depends on EU legislation (C. Majois, personal interview, June 30, 2020).

In 2018, as part of its efforts to build a Capital markets union and a true single market for consumer financial services, the European Commission adopted a FinTech action plan to promote competitiveness and innovation within the European financial sector. The plan includes new rules and guidelines on several new financial technologies, including DLT, blockchain or AI for example, and services, such as crowdfunding or cryptoassets management. These initiatives mainly aim at enabling

FinTech solutions to benefit from the economies of scale of the single EU market, while ensuring consumer protection and financial markets stability (European Commission, n.d.).

Besides the implementation of this FinTech plan, the European Union also introduced two key legal acts¹ in 2018 that impacted strongly FinTech industry and innovation: the GDPR and the PSD2.

The General Data Privacy Regulation (GDPR), which regulates the personal data transfer and processing, aims at protecting private consumers privacy. While providing clarity and safeguards on data utilization and bringing new opportunities to the RegTech industry, the implementation of such a regulation has also led to a significant increase in compliance workload and costs for the companies concerned (IMF, 2019).

For its part, the second Payments Services Directive (PSD2) requests banks to provide particular third parties with bank account information of their customers, for the purpose of promoting competition and innovation. This new legislation also impacted the financial sector strongly (IMF, 2019).

Concerning specific FinTech topics, the EU has also been active; ESMA was one of the first institutions to release a legal qualification of cryptoassets for example (Afore, 2020). In late 2018, the EU Commission also introduced a first draft of guidelines on AI ethics, after having mandated a group of experts to look into the matter by proposing future policies (KPMG, 2019b).

4. FinTech Ecosystem in the United Kingdom

4.1. Overview of the FinTech Ecosystem in the United Kingdom

For centuries, London has been a leading international financial center (Cassis, 2006). Today, it is still considered as one of the most important in the world, placing second in the widely quoted GFCI ranking of financial centers, just behind New York City

¹ There are two types of legal acts in European Union law: (i) regulations, which are immediately enforceable as law in all member states simultaneously after their release, and (ii) directives, which, in most cases, need to be transposed into national laws to be effective in member countries.

(Z/Yen, 2020). In recent years, the capital city of the United Kingdom has also experienced a major boom in the tech sector (Deloitte, 2017).

It is therefore not surprising that the country has decided to seize opportunities offered by the recent development of FinTech in order to maintain its leading global position. As a matter of fact, in 2014, UK Chancellor of the Exchequer, George Osborne, announced his Government's intention to make the United Kingdom the "global capital of FinTech", by introducing the "Project Innovate" (EY, 2016) and one could say the country did well with financial technologies since, as FinTech investment deals in UK doubled between 2014 and 2019, going from approx. 200 deals to more than 350 five years later (KPMG, 2019a). During that same period of five years, VC FinTech investments skyrocketed from USD 0.7 billion to USD 5.2 billion (Tech Nation, 2020), which represents 17% of all global investment in 2019, generating GBP 6.6 billion revenues¹ (Tech Nation, n.d.-c). While the workforce in the FinTech industry reaches 76,000 people (Helm, Low, & Townson, 2019), the UK now has one of the highest consumer FinTech products adoption rate in the world: 71% (Tech Nation, 2020).

Specialists consider that UK regulatory authorities played an important role to support FinTech development, showing that regulation is not only about supervision but also a tool for innovation and competition promotion (Helm et al., 2019).

Major actors today include several successful FinTech start-ups such as *Transferwise*, *Greensill*, *Monzo*, *OakNorth* or *Revolut* among others, all valued at more than USD 1 billion (Woodford, 2020).

4.2. British FinTech Ecosystem in Details

4.2.1. Financial Institutions Organizational Structure and Functioning in the United Kingdom

4.2.1.1. Organizational Structure within the Supervisory Authorities

There are two main financial regulatory authorities in the United Kingdom: the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA), which is part of the Bank of England (BoE) – the Central Bank of the UK. They both

¹ GBP 6.6 billion was equivalent to approximately USD 8.6 at the end of 2019.

report to Her Majesty's Treasury (HMT), the government's department responsible for finance and economic policies' development and execution (S. Scorer, personal interview, July 14, 2020).

The PRA, which represents the prudential arm of the supervisors, mainly focuses on reducing and preventing the financial activities that could undermine the national financial system stability. It regulates and supervises relatively large and systemic firms such as banks, credit unions, insurers, investment firms and building societies (Bank of England, 2018).

The FCA, in contrast, monitors the conduct of financial firms, and supervises a wider set of companies, which are not regulated by the PRA. Besides its traditional role of consumer and financial markets protector, it is also aimed at promoting competition, in the interests of the general public (Financial Conduct Authority, 2016). In 2015, it created a separate subsidiary for payment supervision, the Payment Systems Regulator (PSR), aiming at promoting competition and innovation in the payment industry and ensuring its fairness and efficiency (Payment Systems Regulator, n.d.).

With regard to FinTech regulation, an "innovation division" has been implemented within the competition division of the FCA since the introduction of the Project Innovate in 2014 (Helm et al., 2019). This division is spread into three departments: the data department, the RegTech & Advanced Analytics Department and the Innovate Department, itself subdivided into a policy making dimension and a firms support dimension, mainly responsible for three services: a regulatory sandbox, a direct service line and a dedicated robo-advisory advice unit (N. Clark, personal interview, July 24, 2020).

Besides this division, the "FinTech Hub" came into being a few years ago within the BoE (Taylor et al., 2019). Formed at the end of a successful two-year FinTech accelerator project that aimed at learning about the FinTech landscape and its technology by engaging with firms, the objective of the Hub is now to better understand policies implications for FinTech firms and their competitors supervised by the Bank of England. It works under a "hub and spoke model" in the sense that the hub engages with experts from all business areas of the BoE to solve FinTech issues. It also serves as a contact point for FinTech firms in certain cases (S. Scorer, personal interview, July 14, 2020).

There are strong connections between the different financial institutions (Taylor et al., 2019). For example, the FCA, the BoE and HMT recently collaborated to set up a “Cryptoasset Taskforce”, which gathers senior representatives of those three organizations and aim at bringing clarity on current and future cryptoasset and DLT regulation (AFI, 2020). The FCA and the PRA also work closely with other government departments such as the Centre for Data Ethics and Innovation (KPMG, 2019b), the Information Commissioners Office and the Competition and Markets Authority (Helm et al., 2019).

4.2.1.2. Up-to-date FinTech Staff

One could say there is engagement towards FinTech and financial innovation from senior management of financial supervisory authorities. As a matter of fact, the governor of the BoE has given several major speeches on FinTech in the past few years (Taylor et al., 2019), and there is a real pro-innovation mindset within the Innovation division of the FCA. For this purpose, the authorities have hired dedicated experts with knowledge on specific FinTech-related topics, such as AI or cryptoassets, and regularly provide internal trainings to the staff (N. Clark, personal interview, July 24, 2020).

4.2.1.3. Domestic and International FinTech Coordination

It is considered essential for the authorities to be in close contact with external stakeholders (S. Scorer, personal interview, July 14, 2020). As an example among others, the FCA and the BoE designed an “AI Public-Private Forum” this year. This initiative, which is expected to involve both regulators and private companies as of October 2020, will provide both stakeholders an institutionalized place to share information and views on AI and ML within financial services, in order for the authorities to provide the right principles, guidance and regulations, and create a safe environment for the use of these technologies (Bank of England, n.d.-a). The supervisors are also often in touch with FinTech communities and people from the academic sector, and provide support to financial education through several research projects (Helm et al., 2019).

The United Kingdom also takes part in many international gatherings to discuss FinTech matters. The FCA has notably chaired the IOSCO FinTech Network since its creation in 2018, contributing to a range of work fields (International Organization of Securities Commissions, 2019), and its “Innovate team”, once one of the main initiators of the GFIN’s establishment (Taylor et al., 2019), is now part of the “Coordination Group”

of this network. In the meantime, the BoE has been collaborating closely with both the BIS and the FSB's Financial Innovation Network, as well as with colleagues from the G20's central banks (S. Scorer, personal interview, July 14, 2020).

Besides the important roles they hold in these international institutions and networks, British regulatory bodies have also developed a few "FinTech bridges" with other advanced FinTech countries. These bilateral relations, still a recent phenomenon in the FinTech industry, aim at building stronger collaboration on FinTech topics between governments, financial regulators and the whole financial industry of both countries. In a recent report from the UK Department for International Trade (2019), it appeared the country had built five of these bridges already, respectively with Singapore, China, Hong Kong, South Korea and Australia.

To strengthen even more its international relations, the FCA has also organized a global "TechSprint" every year since 2018. During these gatherings, first of their kinds, FinTech firms and regulators from across the globe are brought together to work on solutions for various financial security concerns, like Anti Money Laundering (AML) or data privacy (Helm et al., 2019).

4.2.1.4. Additional Framework Characteristics

Both the FCA and the BoE have an ongoing close relationship with HMT. Whenever one of the two supervisory institutions identifies some area where the legislation would need to be changed, there is a mechanism for engaging with HMT rapidly (S. Scorer, personal interview, July 14, 2020). A similar approach is used at the FCA according to Mr. Clark, currently working in this institution (personal interview, July 24, 2020), as the innovation department serves as an intermediary between the FinTech firms and the policy making dimension of the Innovate Department, making it easy for the supervisory bodies to then "feed" the legislature with specific propositions.

4.2.2. Incentives for FinTech Development in the United Kingdom

4.2.2.1. FinTech Development Facilitators

The United Kingdom was the first country in the world to set up a FinTech **regulatory sandbox** in 2016 (BCBS, 2018). Its main objective has since been to stimulate competition and innovation within the UK financial services (IMF, 2019). In order to do so, the program, monitored by the FCA, seeks to provide firms with

individual tailored guidance and informal steers with the intention of testing products and services in a closely supervised environment (N. Clark, personal interview, July 24, 2020). The tests, which need clear objectives and established proof points before being started, are conducted on a small scale for a limited duration. By participating to the program, firms can expect a reduced time-to-market, better access to finance and potentially a lower development cost. Open to both authorized firms and unauthorized ones that require, or not, an authorization, the sandbox is subject to 5 eligibility criteria: be in the UK scope, provide genuine innovation, deliver clear consumer benefit, have a clear need for FCA support, and be ready for testing. It runs twice a year and has already attracted dozens of participants (Financial Conduct Authority, 2015). Last year cohort – the sixth – was the largest to date and generated some 69 applications, of which 29 went testing (Helm et al., 2019). Since its creation, the sandbox has proved itself to be useful for “identifying gaps in policy, or highlighting unnecessary barriers to entry and innovation” (Helm et al., 2019)

In mid 2020, as a Covid-19 pilot, the FCA launched a new type of regulatory sandbox, entirely digital. This so called “**digital sandbox**” aim at developing a permanent digital testing environment for a certain type of FinTech firms that need large high-quality sets of data to test and validate their financial products and services; datasets that can now be provided by the FCA (N. Clark, personal interview, July 24, 2020).

There are numerous **FinTech accelerators** in the United Kingdom. Amongst those is the *Tech Nation FinTech Program*. Organized by the 80% state-funded growth platform “Tech Nation”, the program is free but is exclusively open to UK-based companies. It lasts for 6 months and includes several meet-ups and insight sessions with experts, networking events and a three-day international showcase trip (Tech Nation, n.d.-b). The British government also funds another “accelerator” via the Bank of England, although it does not meet the definition that most people have in mind according to Mr. Scorer, working currently at the BoE (personal interview, July 14, 2020). Indeed, while each Proof of Concept (PoC) is considered unique and typically lasts for 4 to 12 weeks, the program involves less support from the organizers – the BoE – than in some other classical accelerators. The UK central bank has been running PoCs with both early stage and established innovative firms since 2015, with the objective of

“enabling [the BoE] to function more efficiently and effectively” (Bank of England, n.d.-b). British FinTech start-ups also have the possibility to join a series of private FinTech accelerators in the UK, such as the well-known *Accenture FinTech Innovations Labs*, *Startupbootcamp FinTech* programs and the *Barclays Accelerator* for instance.

On both BoE and FCA’s websites, FinTech firms have the opportunity to enter in contact with the authorities to get information on the regulation (BoE, n.d.-a). To benefit from individual guidance from the Direct Support team, which acts as an **innovation hub**, firms need to meet the same five criteria than those for the regulatory sandbox, and the authorities expect them to be aware of the basic rules applicable to their activities before applying for assistance. For more basic questions, firms can also contact the FCA’s Supervision Hub’s call centers, which will answer their questions without providing tailor-made support (N. Clark, personal interview, July 24, 2020).

4.2.2.2. *Other Incentives*

The strength of the British tech environment is partly due to interesting and effective tax-based incentives for both investors and small businesses. Three significant schemes have been introduced by the Government to promote investment in local firms: the Enterprise Investment Scheme (EIS) from 1994 and the Seed Enterprise Investment Scheme (SEIS) from 2012 aim at encouraging investments in high-risk companies and start-up projects, while the Venture Capital Trusts (VCT) Scheme, initiated in 1995 but revised in 2015, has a similar objective of small businesses promotion thanks to some tax relief for investors. Other incentives such as the introduction of an additional tax relief to encourage R&D since 2002 or the Entrepreneurs Relief from 2008 go in the same direction (EY, 2016).

Besides these, the UK government implemented another scheme to boost small businesses lending since 2014, notably by setting up a dedicated state-owned bank: the British Business Bank (BBB), which aims at increasing the supply of credits to SMEs by sharing the burden of losses on small business loans with British banks (Goff, 2014).

In line with FCA’s mandate to promote competition and innovation within the financial sector, the BoE also started to provide support to smaller firms recently by changing one of its policies. Indeed, previously only made available to large banks, the real time gross settlement (RTGS) system – a funds transfer system that allows instantaneous transfers of money and securities without netting debits with credits

across the BoE books – was made also available to a wider section of non-bank payment firms as of 2018, enabling those to have settlement accounts in the British central bank’s systems (S. Scorer, personal interview, July 14, 2020).

The UK also plays its role as a promoter of its FinTech innovations, notably by organizing “Innovate events” regularly as well as an annual “UK FinTech Week”. Those events held in London and Edinburgh attracted attendees from approximately 20 countries in 2019 (Helm et al., 2019).

British financial authorities are aware that individuals with scarce specific skills, like software engineers, systems architects, or data analysts, are essential to the FinTech industry. To avoid a lack of qualified personnel, the Government recently undertook measures to promote some technology-oriented programs throughout its national education system, including sciences, engineering and mathematics curricula (Helm et al., 2019). Additionally, with the intention to attract talents to work on its soil, the United Kingdom is also granting special *UK’s Tech Nation Visas*, and FinTech represents one of the categories put forth as eligible for the visa (Tech Nation, n.d.-d).

One of UK’s other strength is to make information on FinTech easily available for FinTech companies. For example, in 2016, the PRA published a guide for neo-banks just after the launch of a dedicated New Bank Start-up Unit within it ranks. This guide, frequently updated since its publication, provides practical information on the application process for banking licenses and the regulatory requirements of being a bank (Ehrentraud et al., 2020). Another example is the publication of a FinTech Collaborative Toolkit from the Tech Nation platform, providing guidelines for FinTech start-ups that plan on working with large financial institutions (Tech Nation, n.d.-a).

On another note, the UK has decided to promote diversity in the FinTech sector. Regulators have notably been supportive of their national Islamic start-up and FinTech ecosystems (IMF, 2019) and launched in 2016 the Women in Finance Charter (WIFC) that is running active campaigns to increase gender equality in the financial industry, which includes the FinTech sector (Helm et al., 2019).

4.2.3. FinTech Regulation in the United Kingdom

4.2.3.1. Types of Regulatory Responses to FinTech Development

While some countries do not mandate their financial supervisory bodies to promote competition and therefore FinTech development, the United Kingdom chose to do so, as shown in the FCA's list of objectives: consumer protection, financial markets protection and competition promotion, in that order (FCA, 2016). Additionally, it remains clear that innovation and competition must not take precedence over financial stability either (Helm et al., 2019).

As a general rule, the United Kingdom does not necessarily propose specific regulation for FinTech if it is not necessary to do so. The regulators use a “same risks, same rules” approach, similar to that used for the whole financial system (S. Scorer, personal interview, July 14, 2020). The UK also uses the principles-based approach more often than the rest of Europe (M. Van Acoleyen, personal interview, July 3, 2020).

4.2.3.2. Examples of Specific Regulation on Specific FinTech Activities

In the UK, the FCA regulates consumer lending activities. To lend money to private individuals, firms need to respect requirements from the Consumer Credit Act 1974 (CCA) and to comply with the rules of the FCA's Consumer Credit Sourcebook (CONC). As part of consumer lending activities, P2P lending activities, called **loan-based crowdfunding** by the supervisory authorities, are also regulated by the FCA and by an additional article (36H) of the “Financial Services and Markets Act 2000 (Regulated Activities) Order 2001”. In some cases, lenders on such platforms may also be required to have permissions to enter into regulated credit agreements (Boberg et al., 2019).

With regard to **online banking**, British financial authorities set up regulations to promote greater competition in the retail and SMEs banking sector in recent years. For example, the Competition and Markets Authority now requires UK-based largest retail banks to develop and implement “open banking standard APIs” to give the opportunities for competitors to access information on the services, prices and service quality they provide (Boberg et al., 2019).

Electronic money activities fall under the regulation of payment services provider, that is to say the Payment Services Regulations 2017 (Boberg et al., 2019). In January 2019, following a regulatory perimeter guidance consultation on **crypto-assets**, the FCA

confirmed that the latter are considered as financial instruments and will therefore be subject to the relevant existing rules, providing the necessary clarity for both crypto-assets-oriented incumbents and startups (Helm et al., 2019).

Amongst activities that are not regulated in the UK are invoice trading, with the exceptions of firms that end up under other regulations, and equity-based crowdfunding, for which further analysis and comments from the authorities are awaited (Boberg et al., 2019).

5. FinTech Ecosystem in Singapore

5.1. Overview of the FinTech Ecosystem in Singapore

Singapore is a leading Asian and international financial center (Deloitte, 2017). It is also one of the most attractive hubs for start-ups globally, especially when it comes to FinTech (Palma, 2019), as it was one of the first countries in the world to acknowledge the importance of financial technology for its economy and to provide strong support to its development and regulation (AFI, 2020).

In line with the launch of the ambitious “Smart Nation Initiative” in 2014 aiming at transforming the national economy to make the city-state a global technological innovation hub (Taylor et al., 2019), the government of Singapore set up a Financial Sector Technology and Innovation (FSTI) scheme in 2015. This went together with a commitment of SGD 225 million¹ to develop FinTech projects and other initiatives, such as a regulatory sandbox, innovation labs or dedicated FinTech offices, among others (EY, 2016). That same year, the Monetary Authority of Singapore (MAS) also established a new “FinTech and Innovation Group” in charge of the implementation of new policies and the development of new strategies to promote technology and innovation within the country (AFI, 2020). Singapore also hosts the biggest annual FinTech event of its kind: the “Singapore FinTech Festival” (Trueman, 2019).

Since then, FinTech investments in Singapore have boomed, going from less than USD 25 million shared amongst around 20 deals in 2014 (KPMG, 2019a) to more than USD 700 million distributed into some 65 deals in 2019. Today, there are some 500

¹ SGD 225 million was equivalent to approximately USD 160 million at the end of 2015.

FinTech start-ups based on the city-state (Trueman, 2019), with major actors including *Quoine*, recently rebranded *Liquid*, providing a series of financial services based on blockchain technology, *M-DAQ*, formerly known as *Summit Investment*, or *TenX* and *Everex*, both specialized in payments and cryptocurrencies, (Findexable, 2020).

5.2. Singaporean FinTech Ecosystem in Details

5.2.1. Financial Institutions Organizational Structure and Functioning in Singapore

5.2.1.1. Organizational Structure within the Supervisory Authorities

The Monetary Authority of Singapore is the sole financial regulator in the city-state. It is responsible for the supervision of the whole financial industry, including sectors like banking, insurance, financial advisement, payments, and many more, and also acts as the central bank of Singapore (Taylor et al., 2019). Officially, the MAS has six main functions: regulation, supervision, authorization, surveillance, enforcement and resolution, in order to ensure several objectives: ensure a stable financial system, safety, efficiency, and transparency for the financial intermediaries, infrastructure and markets, and well-informed and empowered consumers, which all aim at one mission: the promotion of a “Sound and Progressive Financial Services Sector” (Monetary Authority of Singapore, 2004).

Because of its unique status, the MAS is therefore also responsible for FinTech and financial innovation. In 2015, a dedicated FinTech and Innovation Group (FTIG) was therefore established and it is since in charge of both the regulation and the development of strategies to better manage risk and improve the efficiency and competitiveness of the Singaporean financial sector. It is now composed of 4 divisions: the Payments Development and Data Connectivity (PDDC) and AI Development (AID) offices, which are responsible for specific FinTech topics, and the FinTech Infrastructure (FIO) and FinTech Ecosystem (FEO) offices, which have wider competencies of both FinTech regulation and promotion (Monetary Authority of Singapore, n.d.-d).

Besides the FTIG, the MAS also has a Technology Group, which consists of three departments: the Data and Technology Architecture Department (DTA), which aim at increasing the use of data analytics for the authorities in order to improve their

efficiency, the Technology and Cyber Risk Supervision Department (TCRD), responsible for the monitoring of cyber security, and the IT Department (MAS, n.d.-d).

5.2.1.2. Up-to-date FinTech Staff

The MAS enjoys a good reputation for being responsive regulator, supporting innovation in the sector (EY, 2016), and its dedicated Human Resource Department is well developed. As a matter of fact, to attract, retain and develop FinTech talents, it proposes needs-based trainings and development programs for its employees, notably via the “MAS Academy” (MAS, n.d.-d).

5.2.1.3. Domestic and International FinTech Coordination

Singapore’s authorities attach importance to maintaining a continuous dialogue with the FinTech industry. As an example among others, the MAS launched a collaborative multi-year multi-phase project with the financial industry a few years ago: the “Project Urbin”. Aiming at “[exploring] the use of Blockchain and Distributed Ledger Technology (DLT) for clearing and settlement of payments and securities”, it has enabled MAS to collaborate with more than 40 financial and non-financial firms (Monetary Authority of Singapore, n.d.-f). The supervisors are also often in touch with FinTech communities like the Singapore FinTech Association (SFA) and work closely with national universities (AFI, 2020)

With regard to international coordination, Singapore has established several FinTech agreements with other regulators across the world in recent years. In 2017, it was leader in that matter, having built eight bilateral agreements already, with the UK, Korea, India, Switzerland, Australia, Abu Dhabi, Japan, and France – in order of agreement date (Deloitte, 2017). Other recent initiatives have been exploring connections with other countries since. For example, the MAS and its counterpart from Honk Kong, the HKMA, have been working closely on DLT concerns within their respective banking sectors, and came up with a common solution to avoid fraudulent and multiple international transactions between banks of both countries (Taylor et al., 2019).

More recently, alongside central banks from Thailand and other ASEAN countries, the MAS established a common committee on payment and settlement systems in order to promote efficient and safe retail international payments within the countries

concerned. This has eventually led to the publication of the ASEAN Payments Policy Framework (AFI, 2020). Singapore also takes part to all major international financial institutions gatherings, and the MAS is part of GFIN's Coordination Group since its creation (GFIN, n.d.).

5.2.2. Incentives for FinTech Development in Singapore

5.2.2.1. *FinTech Development Facilitators*

Singapore is one of the very few countries worldwide that currently have the three main types of FinTech development facilitators: regulatory sandboxes, innovation hubs, and accelerators (Ehrentraud et al., 2020).

Established in 2016, the main objective of Singapore's FinTech **regulatory sandbox** is to "ensure the regulatory framework is fit-for-purpose" (IMF, 2019). The MAS offers the participants an appropriate regulatory support and safeguards by relaxing some specific legal requirements for the duration of the sandbox (Monetary Authority of Singapore, n.d.-e). A team of experts, which provides support to the supervisors in their assessments of technology risks, is in charge of the selection of applicants (Taylor et al., 2019). In addition to the classic sandbox, the authorities also propose a simplified version for smaller firms since 2018: the "**Sandbox Express**". The revisited version of the sandbox allows firms to quickly start experimenting their innovations (Ehrentraud et al., 2020), but it relies on pre-determined rules that cannot be customized. (MAS, n.d.-e)

Through its website, the MAS gives firms the opportunity to "send general feedback, questions or suggestions about MAS or the website". It also gives access to a toll-free phone line for firms to engage with the authorities and provide suggestions on MAS' services. These initiatives serve together as a FinTech **innovation hub** (Monetary Authority of Singapore, n.d.-a).

Through funding from the FSTI scheme, Singapore Government has sponsored many FinTech **accelerators** since 2015. Today, it still proposes incubator and accelerator programs financial and non-financial support via its "Startup SG Accelerator" program, partially funded by the wholly state-funded "SG Innovate" organization (Startup SG, n.d.). Thanks to these funding schemes, MAS has been encouraging private financial institutions to set up FinTech Innovations Labs and urge its local FinTech start-

ups to participate in these. The authorities notably dressed a list of 36 FinTech accelerators available on the island (Monetary Authority of Singapore, n.d.-b).

5.2.2.2. *Other Incentives*

In line with the “Smart Nation Project”, Singapore has an effective tax benefit scheme that foster innovation and development in specific industries. Thanks to the Productivity and Innovation Credit (PIC) Scheme introduced in 2010, companies that engage in “innovative activities”, such as R&D activities or software and design development, can benefit from tax advantages. The city-state also proposes a very beneficial taxation system for start-ups. As a matter of fact, Singapore-based SME’s are offered a full tax exemption on a certain amount of their taxable base for their three first years of activities if they meet some criteria (EY, 2016).

In addition to these, other tax incentives and funding are provided to Singaporean start-ups and SMEs active in certain industries – including for the finance sector. For example, the MAS introduced a new “Artificial Intelligence and Data Analytics (AIDA) Grant” worth SGD 27 million¹ a couple of years ago. This subsidy provides up to 50% reimbursement of qualifying costs to companies conducting research or using AI, ML, and data analytics techniques (Monetary Authority of Singapore, 2019a). In recent years, direct funding of FinTech initiatives has been frequent, especially since the introduction of the FSTI scheme in 2015, which committed the MAS to provide about USD 170 million for this purpose (Taylor et al., 2019).

FinTech activities stimulation has been a powerful marketing tool for Singapore’s authorities in last five years, notably thanks to the development of innovative ideas such as financial training and general encouragement (Taylor et al., 2019). Indeed, as part of the “National Digital Identity” plan, the government has been fostering the utilization of digital transactions with public and private sector to all citizens (Ehrentraud et al., 2020). The most famous example of FinTech promotion is probably the creation of the annual Singapore FinTech Festival. Organized by the MAS since 2016, this weeklong event is the largest of its kind and aims at bringing together the whole FinTech community to connect and collaborate (AFI, 2020). In 2019, it attracted over 60,000 participants, 1,000 exhibitors and 20 regulators from 140 countries (Singapore FinTech

¹ SGD 27 million was equivalent to approximately USD 20 million at the end of 2017.

Festival, n.d.). Additionally, the MAS provides funding to programs and training providers that work on financial sector workforce education, via the Institute of Banking and Finance Standards Training (IBF-STS) and the Finance Training Scheme (FTS) (Monetary Authority of Singapore, n.d.-c).

Finally, the authorities have made it a point to make the relevant information easily available for FinTech start-ups to facilitate their development. For instance, the MAS and the Association of Banks in Singapore published an API Playbook recently to guide both the providers and the consumers of API-related services (Ehrentraud et al., 2020). In 2019, the monetary Authority also developed the “Payments Regulatory Evaluation Program” with the Singapore Academy of Law to connect legal service providers and FinTech companies (Taylor et al., 2019).

5.2.3. FinTech Regulation in Singapore

5.2.3.1. Types of Regulatory Responses to FinTech Development

In an interview given last year (Palma, 2019), Mr. Menon (Managing Director of the MAS) stated that the legislation of Singapore aimed at promoting FinTech innovation by using an activities-based regime that focuses on the risks carried by each activity, rather than by regulating the providers as entities. He added that the city-state is more likely to regulate the use-cases of some products and services rather than the technologies themselves, giving a good overview of the approach of the government towards FinTech development (Palma, 2019).

5.2.3.2. Examples of Specific Regulation on Specific FinTech Activities

In June 2019, the MAS announced they would issue up to five new **digital bank licenses** – up to two digital full bank (DFB) licenses and up to three digital wholesale bank (DWB) licenses to be precise – distinct to the existing authorizations established under a previous Internet banking framework from 2000, and therefore available to new non-bank players. Candidates had until the end of the year to apply (Monetary Authority of Singapore, 2019c), and the MAS revealed since that they received some 21 applications, shortlisted to 14 six months later, in June 2020 (Monetary Authority of Singapore, 2020). Some of the main criteria taken into account for the selection are: proven successful experience in the technology or e-commerce field, clear and

sustainable value proposition and business model (Ehrentraud et al., 2020), and the level of originality and innovation brought by the applicants (KPMG, 2019a).

The two distinct types of new licenses will not provide the same rights to their new owners. While the DFB license will allow the licensees to take deposits from private individuals and provide a wide range of financial services after having received an initial “restricted DFB license”, the DWB will allow to serve SMEs and other businesses but not to accept deposits from retail customers or only with few exceptions (Ehrentraud et al., 2020). In an interview from last year (Palma, 2019), the Managing Director of the MAS admitted that the reasons of this rare initiative were different from what was expected from the general public. Indeed, the granting of new digital banking licenses is mainly to ensure Singapore will stay a top global financial center if the digital banking industry takes off in the next decade, and they are therefore not simply granted to induce competition and innovation (Palma, 2019).

Not long after the first announce, the rating agency *Fitch* issued a paper reporting that these new licenses should not pose any significant threat to the incumbents of Singaporean banking industry, due to the current advancements of big banks with respect to digital banking and to the willingness of the authorities to prevent any unhealthy competition (Palma, 2019). In contrast, one can expect that these new licenses will create a new wave of fundraising activities and maybe reach underserved customers and segments thanks to the introduction of new types of products and services (KPMG, 2019a).

In early 2020, new **payment legislation** came into force: the “Payment Services Act 2019”. Since its introduction, this new framework has regulated, among other things: domestic and cross-border money transfer services, merchant acquisitions, digital payment services, cryptocurrencies dealing or exchange and money-changing services (Monetary Authority of Singapore, 2019b). The new legislation, which is said to provide additional safeguards to the general public while encouraging the development of mobile payment services, brought about 200 supplemental payments companies under MAS supervision (Palma, 2019).

Concerning **robo-advisory** services or **loan and equity crowdfunding**, two hot FinTech topics, Singapore set up both FinTech-specific guidelines and regulations. Concretely, the MAS provides licenses that depend on the activities performed

regardless of the type of business the firms are in. For robo-advisory services for example, the company can be required to hold several licenses that will depend on the services that are offered, such as a Financial Adviser's license or a Capital Markets Services (CMS) license – that is even elaborated into a CMS license in fund management in some cases (Ehrentraud et al., 2020).

Part II – Analysis: Application to Belgian FinTech Ecosystem

1. Cross-country Comparison

1.1. Similarities between the three Ecosystems

1.1.1. Similarities between Belgian and British Ecosystems

First of all, Belgium and the United Kingdom have the same financial supervision organizational structure as both countries set up a “twin peak” model. Even though the Belgian NBB and FSMA do not fulfill the same roles than the British BoE and FCA, their regulatory approaches both include a prudential supervisor – which is also the national central bank – on the one hand, and a conduct supervisor on the other hand.

With regard to FinTech regulation, both central banks, the NBB and the BoE, use the same “hub and spoke model”, in the sense that in both institutions, a small FinTech-focused group relies on the expertise of other departments of the organizations to address specific concerns.

Finally, both countries' financial legislatures use the same approach to regulate the development of new financial technologies: “same risks, same rules”. This means that they both very rarely publish FinTech specific laws, but rather prefer to adapt existing legislation accordingly.

1.1.2. Similarities between Belgian and Singaporean Ecosystems

A first similarity between the two countries is their relatively similar market sizes. Although Belgium has twice the population of Singapore, the GDP of the two countries has tended to move closer together in recent years¹, and in comparison with the United Kingdom, their market sizes of Belgium and Singapore are comparable.

Both countries also share a commitment to educating their citizens on financial matters. Indeed, while the Belgian FSMA has a dedicated “financial education”

¹ See Appendix 1

department within its organizational chart, the MAS provides funding to programs and training providers that work on financial sector workforce education.

1.1.3. Similarities between Belgian, British and Singaporean Ecosystems

Belgium, the United Kingdom and Singapore share a similar attitude of entrepreneurship promotion thanks to fiscal incentives. Indeed, the three countries similarly developed interesting taxation systems for start-ups. While Belgium's recent Corporate Tax Reform allows SMEs to pay less taxes and investors to recoup some of their investment in those companies, some British fiscal schemes also encourage seed investments in start-ups by proposing tax relief for investors, and the Southeast-Asian city-state offers SMEs full tax exemption in some particular cases. Also, similarly to what is expected to be active in Belgium in the following months or year, Singapore and the UK have set up large funds to sponsor some national start-ups, some of them being FinTech firms.

Then, all three of them attach importance to providing information on FinTech sectors and technologies in which legislation is already well advanced. In Belgium, the FSMA has set up an entire web portal for crowdfunding firms for instance, while British and Singaporean authorities have done the same for API-related businesses and neo-banks respectively. The three countries have also had innovation hubs for years, to provide FinTech firms with information on the regulatory requirements of their activities. Additionally, the MAS, the FSMA and the FCA all provide internal trainings to keep their staff updated about FinTech.

The three countries follow the recommendations of the Basel Committee on Banking Supervision with regard to financial regulation, in the sense that they enact regulatory and supervisory methods that regulate the financial solution providers on the basis of their activities. Regulation is then activities-based rather than entity-based.

1.2. Specificities of each Ecosystem

1.2.1. Specificities of the Belgian Ecosystem

Probably one of the main differences for Belgium, in contrast to the UK and Singapore, is its membership of the European Union. Interviewees highlighted many times the importance for Belgium to take into account the position of the Union for its

financial regulation. Culturally, Belgium is also known for being quite conservative when it comes to money and finance.

With regard to FinTech regulation, Belgium is the only country that does not have a full-time dedicated FinTech team, besides its “steering group”. This means that, although it is not ignored, the FinTech sector is not yet considered important enough to devote more resources to it, unlike the other two countries that have taken the lead in this area.

Besides its interaction with other European supervisors from the EU, Belgian FinTech international coordination is not as strong as those from the UK and Singapore. Belgian financial supervisors have not built any “FinTech bridges”, nor participate to international FinTech gatherings organized by the GFIN or other financial innovation networks.

1.2.2. Specificities of the British Ecosystem

The British market is way bigger than those of the two other countries analyzed. This is, according to interviews conducted as part of this thesis, one of the reasons the United Kingdom is an attractive FinTech cluster for FinTech firms.

Another reason is what makes the UK an almost unique case in Europe: the mandate of its financial regulatory authorities to boost competition and innovation. These special objectives, mainly performed by the FCA and its Innovate team, brought up several FinTech development incentives for FinTech firms based in the country, such as regulatory sandboxes, state-funded accelerators or a state-funded bank dedicated to provide loans to SMEs. These incentives have also served to attract foreign start-ups into the UK, thus further increasing the size of the market and creating a virtuous circle that does not exist in Belgium.

Then, British authorities are also particularly well organized when it comes to both internal and external coordination. Indeed, the FCA and the BoE are well connected with HM Treasury, the finance and economics’ branch of UK’s government, and keep in touch a lot with external stakeholders, ensuring a real alignment and dialogue between the regulation and the market’s needs and concerns.

1.2.3. Specificities of the Singaporean Ecosystem

First of all, only one financial regulator represents Singapore's financial regulation authorities: the MAS. As opposed to the Belgian and British models, the latter is therefore solely responsible for the supervision of all financial industry, and also acts as the central bank of the city-state.

Then, similarly to the UK, perhaps the biggest point of divergence between Belgium and Singapore is the special attention given by the MAS and more particularly the FTIG to FinTech, following the "Smart Nation" plan introduced a few years ago. While Belgium only introduced few new elements in its organization chart to respond to the evolution of the growing phenomenon, Singapore has reacted quickly and strongly, creating several new departments dedicated to FinTech-related technologies and taking some unique measures to boost and promote its national ecosystem. Amongst those is the Singapore FinTech Festival, or both regulatory sandboxes, which do not exist in Belgium.

Finally, Singapore's MAS has a well developed HR management department that not only provides training to its personnel, but also proposes development programs for its employees, notably via a dedicated internal "academy".

2. Selected Measures to Improve the Belgian FinTech Ecosystem

Given all the information presented above, we can build a few scenarios regrouping some measures that Belgian financial authorities could take to develop their FinTech ecosystems, and allocate those according to the level of ambition of the authorities.

2.1. Scenario 1: Low Ambition

In scenario 1, we consider that Belgium does not change anything with regard to its current level of ambition to develop its national FinTech ecosystem. In this situation, only a few actions are likely to be carried out by the authorities. Some of them will nevertheless be necessary for the country's level to be at least maintained, considering that the FinTech market should continue to grow in the coming years.

In any case, Belgium will need to have some clear regulation for all types of FinTech sectors and technologies. On the one hand, this goes hand in hand with keeping up to date with evolving technologies and thus maintaining an important dialogue with as many stakeholders as possible. To do so, the Belgian supervisory authorities must continue their efforts of dialogue with the FinTech companies via their innovation hub, as well as those with their counterparts in the financial control authorities of the EU member states, as is already the case today. On the other hand, the country's legislative authorities must put in place a new regulatory framework for some FinTech activities or at least adapt one or more existing ones in order to cover all of them, including peer-to-peer loans crowdfunding and factoring or invoice trading, which are not regulated to date.

In order to achieve this situation, an improved dialogue between the legislative authorities and the FinTech steering group of the FSMA and NBB would be beneficial. Indeed, while the implementation of new laws may take quite some time, it is important for the authorities to act proactively, especially with regard to rapidly evolving technologies and activities such as those related to financial innovation. As is the case in the UK, FinTech issues do not necessarily need to be discussed in dedicated meetings, but can be included on the agenda of committees that have been established for years already.

Finally, to retain its few promising players, Belgium must continue to apply an attractive tax regime for young innovative companies and their investors. The arrival of a fund dedicated to the development of scale-ups, promised in 2018, should also go in the same direction.

2.2. Scenario 2: Average Ambition

In scenario 2, we consider that Belgian authorities decide to think bigger and raise their ambition with regard to FinTech, without intending to become a significant player on the European or world market though. In this second case, we can think about several actions that could be taken by the authorities at a relatively low-cost to enhance the Belgian ecosystem in addition to those proposed for scenario 1.

The vast majority of such measures could be coordinated by an improved version of the steering group formed jointly by the FSMA and the NBB currently. Indeed, while

the steering group is made up of employees who also have other roles within their respective entities for the moment, the establishment of a permanent team entirely dedicated to FinTech could facilitate its development without having a proper promotional role, as may be the case in the United Kingdom's FCA or Singapore's MAS. This improved FinTech team would still work under a "hub & spoke model" in the sense that it would still engage with experts from all business areas of both supervisory institutions.

Besides simply serving as a contact point for FinTech firms as an innovation hub, this team could also be responsible for the implementation of a regulatory sandbox for example. Several EU countries – Denmark, Lithuania, the Netherlands, Poland and the United Kingdom obviously, before it left the EU – already took this initiative in recent years, and one could expect this to be a "normal" infrastructure in Europe soon, as more and more EU countries intend to do so. The idea of this sandbox would not be to facilitate the development of some FinTech firms but rather to produce an ongoing relationship with companies in several FinTech sectors, providing those with a particular follow-up during the development of their solutions while identifying gaps in policy, or highlighting unnecessary barriers to entry and innovation. Such a sandbox could run once a year and start with a small cohort composed of a short number of participants given the size of the current market, and potentially get bigger over the years. Furthermore, to act proactively, Belgium could also already think about implementing a digital sandbox, like the one that should soon be active in the UK.

Then, in this second scenario, Belgian authorities might want to increase their international relations with their peers from across the world. Although the FSMA and NBB are for the moment relatively well connected with their counterparts from member countries of the European Union, this does not prevent them from establishing relations with other financial supervisory authorities. To do so, one of the two entities could join the GFIN in line with what has been already the case for other EU member countries such as Luxembourg, Lithuania or Hungary. Also, the Belgian authorities could decide to establish privileged bilateral relations with selected countries to build stronger collaboration on FinTech topics, similarly to what both the UK and Singapore have done with several advanced FinTech national ecosystems.

2.3. Scenario 3: High Ambition

In scenario 3, we consider that Belgian authorities decide to fully use the potential the country has to offer and the large size of the EU markets to become a significant European cluster with regard to some specific FinTech topics by hosting significant players in certain niche markets. Technologies, products and services related to payments could probably become a focus as Belgium already enjoys an enviable reputation in this regard, and already attracted major international incumbents as *SWIFT*, *Euroclear* or *MasterCard* and start-ups like *Transferwise*.

In this case, in addition to the actions proposed for scenarios 1 and 2, it would make sense to grant a new mandate to the NBB and/or the FSMA, which would now have as one of their main objectives the promotion of competition on their soil, or even better, the promotion of Belgian know-how internationally by supporting Belgian FinTech companies with selected measures. If the granting of new mandates is not feasible, the authorities could instead create a new financial body that would handle these tasks. In this respect, it would clearly make sense to hire some FinTech specialists from the private sector, having worked in accelerators or top tier banks active in the promotion, development and support of innovative financial companies.

Several measures can then be envisaged for this purpose. For example, without organizing their own, the Belgian authorities could sponsor accelerators dedicated to Belgian FinTech. Similarly to what is done in France or in the UK, Belgium could also facilitate the obtaining of working visas for certain types of FinTech specialists or entrepreneurs active in the niche market chosen by the country, being mobile payment or not, in order to enlarge the Belgian FinTech community on the subject.

Then, national know-how promotion could be done by the organization of an annual event, like the ones happening in the UK and Singapore every year. Given that such an event already exists with the annual FinTech Belgium Summit, the Belgian authorities could invest in this kind of initiative just like what was done with B-Hive (or Eggsplore then) a few years ago for example.

3. Quantitative Analysis of the Impact of the Measures

Measures taken by countries that have some of the most advanced FinTech regulations and infrastructures today, such as the United Kingdom and Singapore among others, are relatively recent¹. Indeed, the British government announced its intention to make the country a “global capital of FinTech” and presented its “Project Innovate” with the intention to promote FinTech development in 2014, and Singapore launched its “Smart Nation Plan” that same year, introducing its FSTI scheme in 2015. Actions like the creation of dedicated FinTech departments and regulatory sandboxes, and the publications or modifications of specific FinTech-oriented regulations all appeared later, in the latter half of the 2010 decade. For these reasons, it is relatively difficult to draw clear conclusions on the influence of these initiatives at this time.

We can nevertheless use reliable databases published by globally recognized international financial institutions to analyze the evolution of financial development and financial innovation in the last decade, and observe the potential similarities that these may have with the actions taken by the three countries concerned.

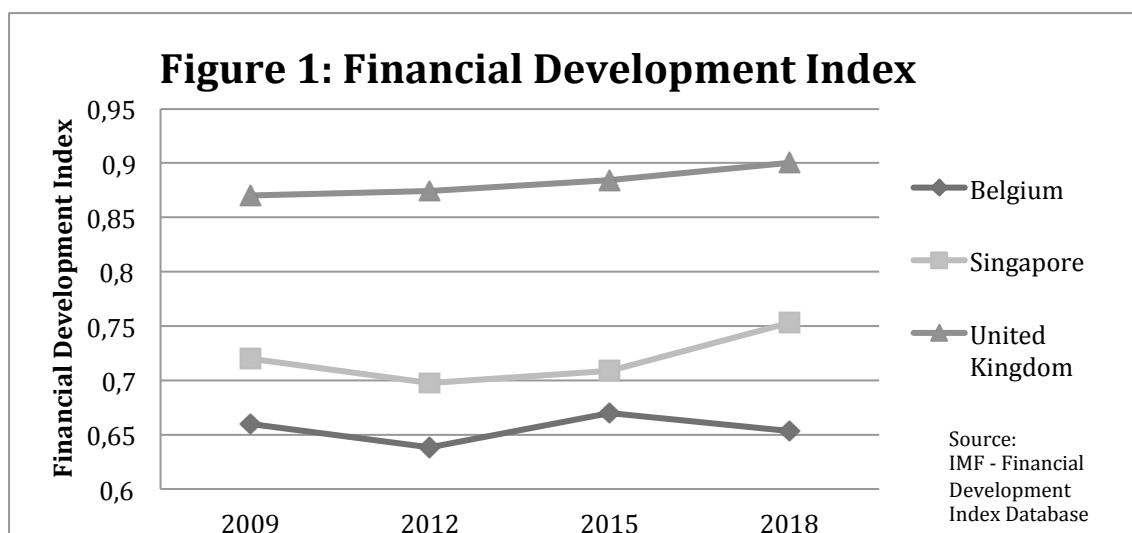
3.1. IMF's Financial Development Index Database

In 2016, the IMF created a “Financial Development Index” dataset. It includes nine indices that “summarize how [both] developed financial institutions and financial markets are in terms of their depth, access, and efficiency” (Svirydzenka, 2016), covering 183 countries on annual frequency between 1980 and 2013, updated since with data up to 2018.

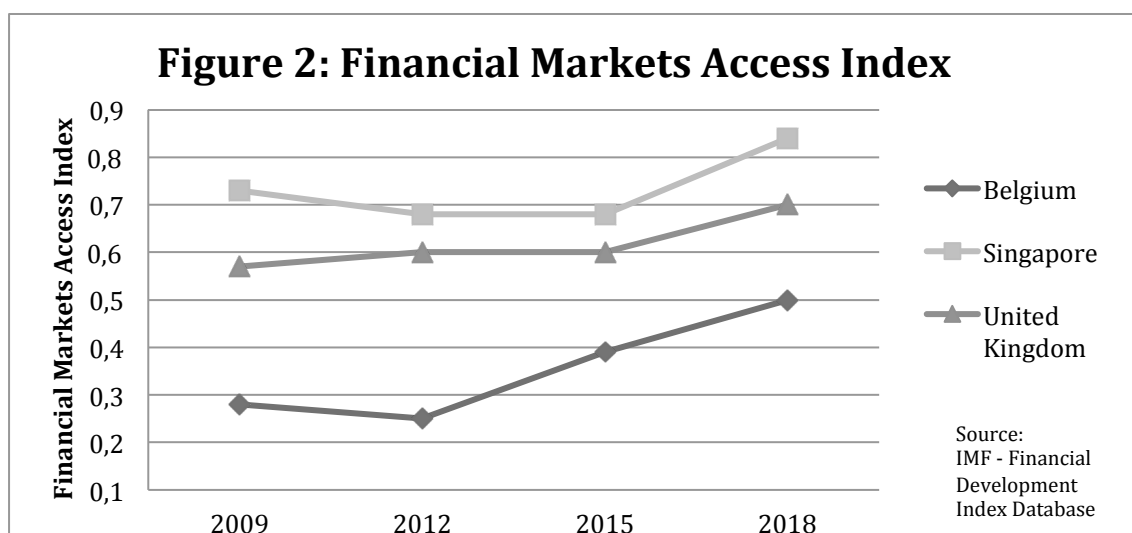
By analyzing the main index of the database, representing the evolution of financial development over the years, for the three countries studied, we notice that it evolves differently for those since 2015. Indeed, while it increases slightly for the UK and Singapore, going respectively from 0.88 and 0.71 in 2015 to 0.9 and 0.75 in 2018 – year of last dataset update – the Belgian index stagnates and then even regresses during the same period of time, from 0.67 in 2015 to 0.65 three years later (Figure 1). It is interesting to note that it is precisely since 2014-2015 that the financial authorities of the UK and Singapore have started to take measures supposed to promote the

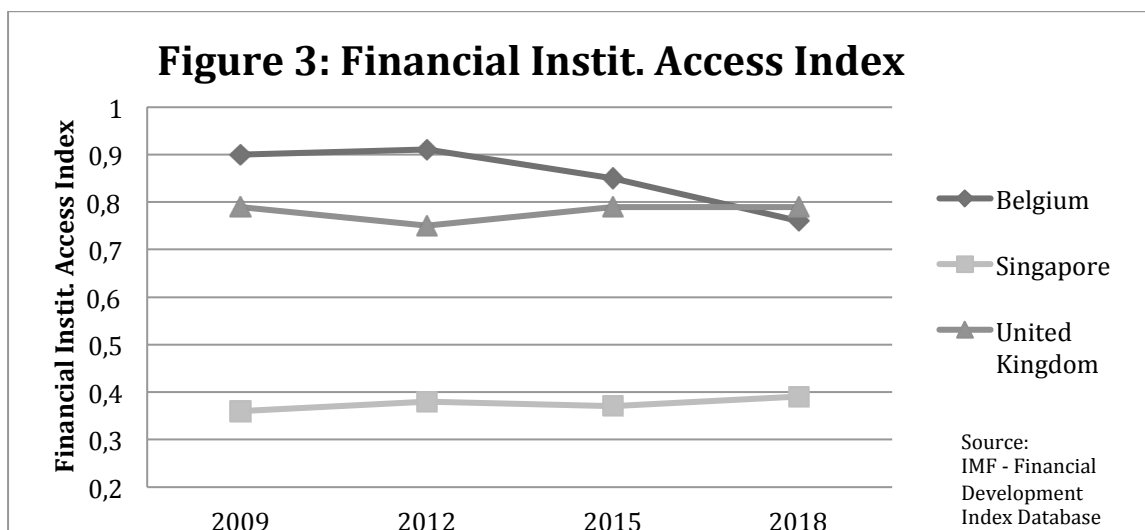
¹ See Appendix 2

development of FinTech, while during this same period of time, the Belgian authorities have in comparison been less active and took fewer significant measures vis-à-vis FinTech.



By analyzing the database in greater depth, it is possible to identify the sub-indices responsible for these evolutions. As a matter of fact, while most indices have remained relatively stable in recent years, it appears that all three countries improved strongly in term of Financial Markets Access between 2015 and 2018 (Figure 2). However, during the same period, Belgium saw a strong decline of its Financial Institutions Access index, from 0.85 in 2015 to 0.76 in 2018, while the indices for the United Kingdom and Singapore did not change, or changed only slightly positively (Figure 3). Considering that the increase in financial inclusion is often cited as one of the positive impacts generated by the development of FinTech, there is perhaps here one element of explanation.

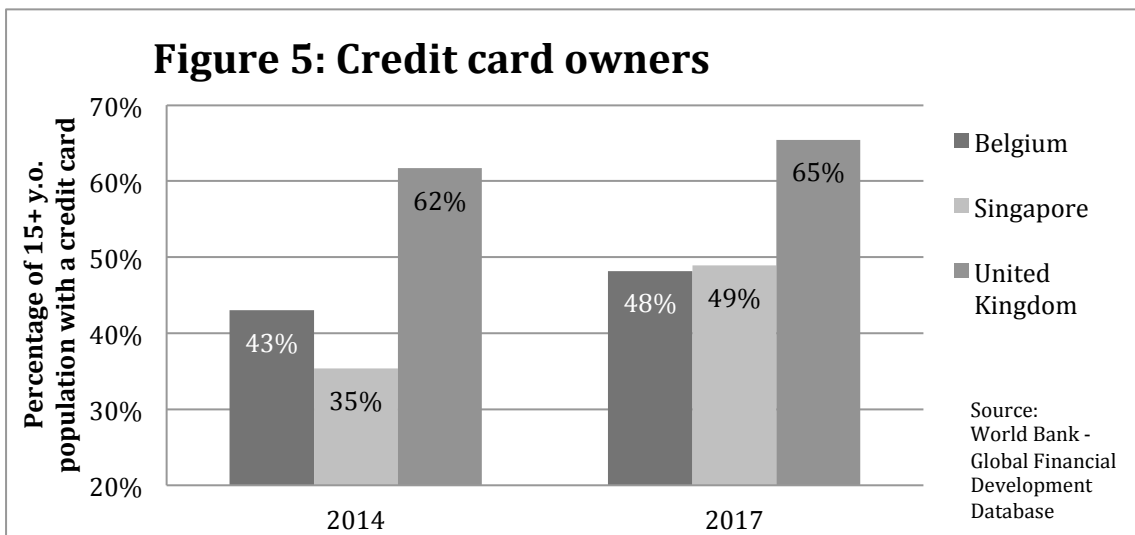
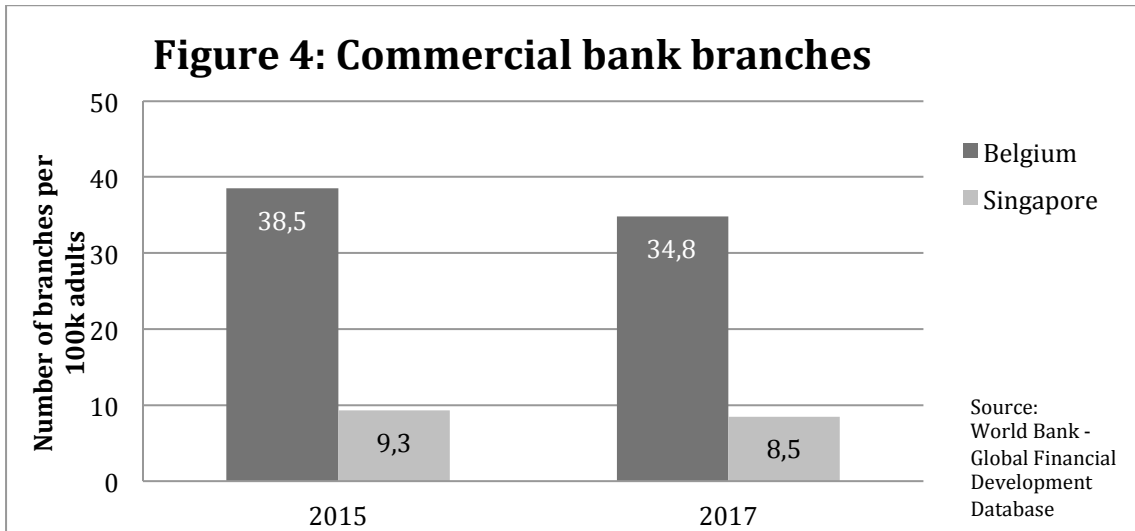




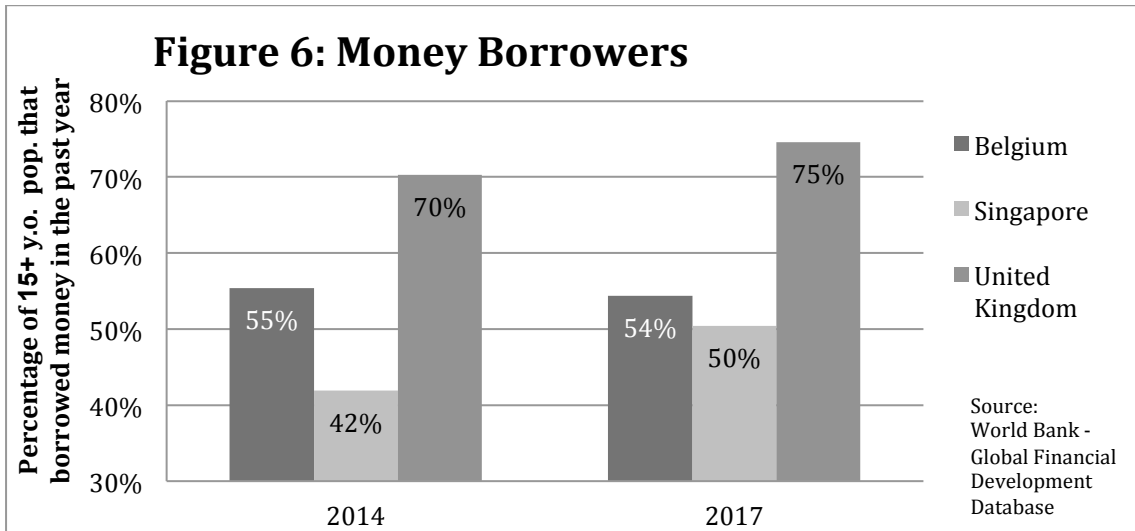
3.2. World Bank's Global Financial Development Database

The World Bank also has its own financial development database. Containing more than a hundred explanatory factors, the analysis of some of them brings additional information and illustrates certain points.

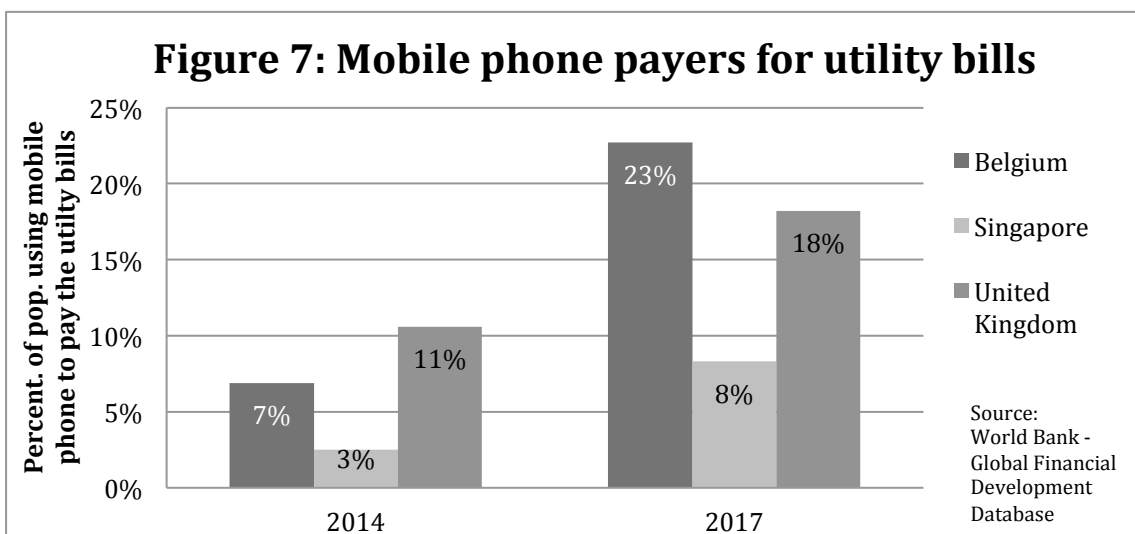
Looking at statistics on the number of commercial bank branches per 100,000 adults, we notice Belgium and Singapore witnessed an approximately 10% decrease of branches between 2015 and 2017, from 38.5 and 9.3 to 34.8 and 8.5 per 100,000 adults for both countries respectively – no data available for the UK (Figure 4). While this situation was expected in both countries given the shift of consumer habits since the 2008 crisis, both national authorities did not react the same way to this decrease. Singapore, which has recently started a digitalization process of its economy since 2014, notably decided to issue new digital bank licenses in 2019 to stimulate its banking industry. In the meantime, Belgian authorities did not promote such alternatives for its citizens. Perhaps this is a first explanation for the decline in Belgian IMF Financial Institutions Access Index in recent years. Interestingly, the evolution of credit card owners (aged 15 or more) increased for the three countries since 2014, showing that it's not so much impacted by the number of branches (Figure 5).



Since 2014, Belgium and the other two countries have experienced different developments with regard to another statistic: the percentage of population having borrowed money from any source in the past 12 months. Indeed, while this percentage decreased slightly in Belgium, from 55.4% in 2014 to 54.4% in 2017, it went up in both the UK and Singapore, from 70.3% and 41.9% to 74.6% and 50.4% respectively, in the same period of time (Figure 6). Again, it is interesting to notice that Belgium does not authorize P2P loan crowdfunding platforms while these have existed in both the United Kingdom and Singapore for a few years now.



Finally, one last statistic worth mentioning: the percentage of respondents who report making regular mobile payments for utility bills – e.g. water, electricity, or trash collection – in the past 12 months. Although all three countries saw a sharp increase in this type of payment between 2014 and 2017 – the only two years in which such statistics were collected – Belgium experienced a particularly impressive development, to the point that three years ago, it had a higher percentage of respondents (22.7%) than the United Kingdom (18.1%) and Singapore (8.3%) (Figure 7). This high adoption rate for mobile payments reinforces the idea that the country has a real card to play at this level, if it chooses to promote its know-how in this type of financial technology.



Conclusions

General Conclusion

Multiple factors do explain the current status and the recent evolution of national FinTech ecosystems. I decided to group those into three categories in this thesis.

- An efficient organizational structure and functioning at the level of financial supervisory authorities, which requires (i) the establishment of a dedicated FinTech unit within the organization chart of financial supervisors, (ii) a motivated and innovative-minded staff that is constantly up to date with the evolution of financial technologies, and (iii) a close coordination with both the legislative power and other national agencies, as well as with other financial supervisors around the world and other national and international external stakeholders, such as FinTech solution providers – the FinTech firms.
- The establishment of financial innovation incentives, such as (i) "FinTech development facilitators", like regulatory sandboxes, accelerators, innovation hubs and possibly co-working spaces, and (ii) other incentives, such as tax reductions, provision of public funds for the FinTech industry, and promotion of these new technologies to both the local general public and international financial investors.
- A clear and effective regulation, which makes it possible to control financial innovation without inhibiting it, by either adapting existing laws or by creating new ones, by adopting regulation that may be both principles-based or rules-based, and by trying to impose activity-based rather than entity-based rules.

Although it does not adhere all these recommendations strictly, Belgium is however not totally lagging behind with FinTech development and regulation as a number of interesting initiatives have been taken. Amongst other things, the authorities have implemented a FinTech steering group within their financial supervision institutions, they have enabled FinTech companies to get in touch with this group for several years through a web portal acting as an innovation hub, they set up several

interesting financial incentives for start-ups and SMEs and they have already build a relatively comprehensive regulatory framework.

Nevertheless, depending on their level of ambition for the future, there are several other elements Belgian authorities could implement to further develop their national FinTech ecosystem and infrastructure in my opinion. Even if the said ambitions are “low”, the authorities should take care of improving improve the existing dialogue between the legislature and financial supervisors on FinTech in my view. Then, in order not to fall behind, the implementation of a regulatory sandbox also seems to make sense, as well as the improvement of international coordination with financial regulators from outside the EU. Finally, it seems to me that Belgium should take advantage of its reputation in the field of payments and seize the opportunity to position itself as a real niche cluster in this field. To this end, it should put in place a series of new incentives such as the provision of special work visas and new tax incentives specific to the mobile payments technologies, and special attention should be given to the promotion of Belgian know-how in this field at international level, by organizing and attending one or more events on financial innovation.

Limits of the Thesis and Suggestions for Future Research

Several limitations were encountered during the elaboration of this thesis and are worth mentioning. In a certain point in the future, these could lead to further research completing the conclusions presented above.

First of all, it is important to take into account the small number of countries analyzed in this thesis. Although the United Kingdom and Singapore, studied in detail, are considered by many to be among the most advanced countries in terms of FinTech development and regulation, these are not necessarily the best on all fronts, and not all measures taken by their authorities may be the most effective. For further research, it might be interesting to use the same factors presented in this thesis to analyze other countries, some considered "advanced" in terms of FinTech development and others rather "lagging behind", in order to better compare different degrees of progress and further possibilities of actions to be taken in the case of Belgium. Alternatively, certain factors could be studied in more detail, such as the specific legislation of all FinTech's categories or the legislative process for creating or adapting FinTech-related rules and

directives in the countries concerned. Also, other criteria could be taken into account, such as the size of the markets and the number of players, for example.

Then, given the recent soaring of the FinTech industry, there are to date very few relevant statistics to analyze this phenomenon. Although the few available datasets have made it possible to identify certain trends for the countries studied here, these are obviously to be taken with caution given their recentness and their scarcity. It will be interesting to analyze these databases in greater detail when more of those will be available, and particularly when figures will be available on a longer period. It will then be possible to draw clearer conclusions about the effectiveness of the measures analyzed here.

As a final conclusion, let us be aware that all findings being drawn here will, a priori, only be valid for a limited period of time, given that the FinTech industry and technologies are in perpetual evolution.

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Appendices

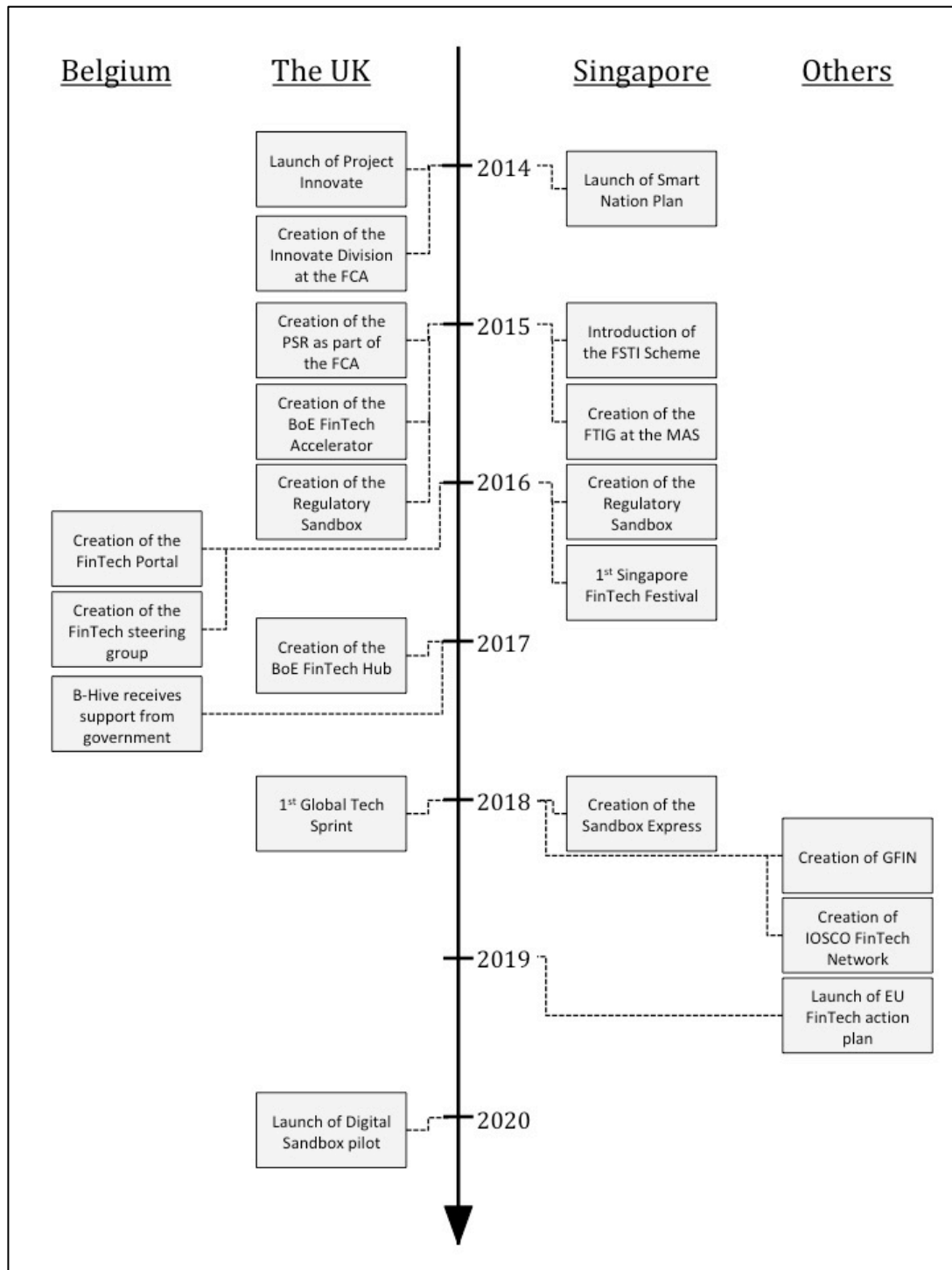
Appendix 1: General Information on Belgium, the United Kingdom and Singapore

Information	Belgium	United Kingdom	Singapore
Population (M, 2019)	11.5	67.5	5.8
GDP (B, current US\$)	529.6	2,827.1	372.1
GDP, PPP (B, current international \$)	626.4	3,255.5	578.2
GDP per capita (K, current US\$)	46.1	42.3	65.2
GDP per capita, PPP (K, current international \$)	54.5	48.7	101.4
GDP growth (annual %, 2019)	1.4	1.4	0.7
Inflation, consumer prices (annual %)	1.4	1.7	0.6
Human Development Index (Global Position)	0.919 (17th)	0.920 (15th)	0.935 (9th)
National Currency (ISO Code)	Euro (EUR)	British Pound (GBP)	Singapore Dollar (SDG)

Sources: United Nations, World Bank.

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Appendix 2: Timeline of FinTech Regulation and Infrastructure Evolution in Belgium, the United Kingdom, Singapore and internationally



Sources: FSMA, B-Hive, FCA, BoE, MAS, GFIN, IOSCO, EU.

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Appendix 3: Interviews Guide

i. Introduction of the interviewee:

- Academic background? Career path?
- Current situation in the institution? (e.g. number of years in the institution, job title and description)

ii. Topic 1: Financial Institution Organizational Structure and Functioning

- Structure of the institution:
 - Presence and role of a dedicated FinTech or Innovation staff?
 - Cross-department connections to discuss FinTech?
- FinTech staff & Coordination:
 - Specific innovative mindset or corporate culture promotion?
 - HR management: staff development, attraction and retention?
 - Sharing initiatives with external people? (e.g. with FinTech companies, other institutions, investors, academic researchers, etc.)
- Additional Framework Characteristics:
 - Ease/speed of regulation implementation?
 - Available tools? (e.g. sufficient budget, access to latest technology)

iii. Topic 2: Incentives for FinTech Development

- Presence and operation of FinTech Development Facilitators? (e.g. regulatory sandboxes, innovation hubs, accelerators, co-working spaces)
- Establishment of other incentives? (e.g. subsidies, tax incentives, special visa agreements, organization of FinTech events, promotion of FinTech to the general public)
-

iv. Topic 3: FinTech Regulation

- Type of approach? (e.g. Specific FinTech legislation in place already? FinTech activities based? Similarities/differences with other financial regulations?)
- Clarity and efficiency of the regulation?
- Examples of specific FinTech activity regulation?

v. If any: Additional discussion topics

- Additional discussion topics specific to the interviewee's position or institution/company
- Additional discussion topics introduced by the interviewee

Note: These are the questions that were originally prepared. Some of them have been modified according to the interviewee's position and institution as well as to the course of the interview and the interviewee's answers.

Appendix 4: Interview Transcript – Christophe Majois, FSMA – 30/06/2020

Institution: Financial Services and Markets Authority

Department: Policy, Legal services and International relations

Position: Economic Unit Coordinator

DISCLAIMER: The opinions, views and thoughts expressed by Christophe Majois are his own and may not necessarily reflect the official opinions and positions of the Financial Services and Markets Authority.

i. Introduction of the interviewee:

- Pouvez-vous présenter votre parcours académique et professionnel et expliquer le rôle que vous tenez aujourd’hui à la FSMA ?

Mon diplôme est le même que celui que vous allez obtenir dans quelques temps (i.e. Master en Ingénieur de gestion). J’ai ensuite poursuivi par un doctorat en sciences de gestion que j’ai obtenu à la FUCaM qui s’appelle aujourd’hui l’UCL Mons, en partenariat avec l’Université de Toulouse. J’ai commencé à travailler à la FSMA en octobre 2011. Je travaille au sein d’un département qui s’appelle Policy et Relations Internationales, et au sein de ce département je suis le coordinateur de la cellule économique. Depuis quelques années, nous suivons au sein de ce département tout ce qui est attiré au FinTech de manière générale. C’est notamment à l’aide de mes collègues qu’on a mis en place un portail FinTech sur le site web de la FSMA et c’est nous qui suivons ça.

ii. Topic 1: Financial Institution Organizational Structure and Functioning

- Cela signifie-t-il que votre unité est la seule qui s’occupe de la FinTech au sein de la FSMA ou existe-t-il d’autres départements liés cette thématique ?

On peut dire qu’on est en "front" dans le sens où c’est notre unité qui gère le portail et qui a une vision générale, et lorsqu’il y a des contacts avec des entreprises, nous nous reposons sur les connaissances plus détaillées des personnes dans les services concernés puisque notre organisation est structurée par service en fonction de certains

thèmes. Donc en fonction du thème concerné, on prend un spécialiste du thème avec nous lorsqu'on a des contacts avec les entreprises.

- Pouvez-vous me donner des exemples de thèmes ?

Par exemple, il existe un service qui contrôle les règles de conduite, qu'on appelle le service des inspections. Si dans le cadre d'une discussion avec des [entreprises] FinTech, celles-ci se posent des questions relatives à la mise en place des règles de conduite, on a une personne de contact dans ce département pour tous les aspects FinTech qui vient avec nous. Cette même démarche s'applique aussi à la surveillance des marchés par exemple, et dans d'autres cas qui concerne moins la FinTech comme la surveillances des institutions de retraites professionnelles.

- Ce genre de coordination est-elle mise en place dans le cas où vous prenez contact avec certaines entreprises ou l'inverse ?

Ce que je viens de vous décrire c'est ce qui se passe lorsque nous avons des contacts avec des entreprises FinTech. C'est-à-dire lorsqu'une entreprise s'adresse à la FSMA ou à la BNB, étant donné que ce portail est le fruit d'un projet commun avec la BNB depuis 3 ans. Dans ce genre de cas, nous réagissons et notre réaction peut être de différentes natures. Parfois il s'agit juste de répondre à une question bien spécifique de manière électronique ou par contact téléphonique, ou bien alors on doit aller plus loin via une rencontre, et c'est dans ce cas là que nous prenons contact en interne avec le service concerné pour voir quelles réponses apporter à la personne ou pour l'inviter à une rencontre avec l'entreprise FinTech.

- Le phénomène inverse se produit-il aussi ?

C'est effectivement déjà arrivé que nous prenions contact avec une [entreprise] FinTech si nous apprenons son existence via la presse par exemple. Si nous tombons sur un article de presse qui décrit l'arrivée d'un nouvel acteur dans un domaine qui, à priori, tombe dans le champs de compétence de la FSMA, et qu'il s'agit d'une entreprise que nous n'avons jamais rencontré et dont nous n'avons jamais entendu parler ; dans ce cas là, nous prenons contact avec elle. Il ne s'agit pas là de la majorité des cas, mais c'est déjà arrivé à plusieurs reprises.

- Prenez-vous parfois contact avec d'autres types de partie prenante, comme des communautés de FinTech (ex. FinTech Belgium) par exemple ?

Effectivement nous avons des contacts avec, par exemple, FinTech Belgium, qui existe depuis maintenant 4 ou 5 ans et il arrive que la FSMA soit invitée à intervenir lors de conférences organisées par cette communauté par exemple. Il existait aussi jusqu'il y a quelques mois un autre organisme qui s'appelait B-Hive, qui visait à développer l'écosystème FinTech en Belgique, avec lesquels nous avons eu un certain nombre de contacts, notamment lors de certaines formations et séminaires auxquelles la FSMA a pris part.

- Avez-vous fait appel à des experts externes à certaines occasions ?

Il nous arrive de prendre contact avec certaines entités par exemple lorsque nous voulons mettre en place en interne des nouvelles approches ou des nouvelles technologies. Nous prenons dans ce genre de cas contact avec des entreprises qui sont spécialistes en la matière mais c'est plus à but d'utilisation interne, et non pas dans un but de contrôle ou de supervision des entités sous notre contrôle. C'est en fait assez similaire à ce qui se passe dans d'autres entreprises lorsqu'elle décide de développer ses outils informatiques.

Aussi, la FSMA est un superviseur national, mais vous savez peut-être qu'à l'heure actuelle, beaucoup de règles, dans le domaine financier mais pas seulement, sont établies au niveau européen. La FSMA s'inscrit donc dans un cadre européen, dans lequel on trouve des superviseurs tels que l'ESMA et leurs équivalents pour les banques et les fonds de pensions. Au sein de l'ESMA, il existe un certain nombre de groupes de travail qui existe, et notamment un groupe de travail sur l'innovation financière, et là nous avons beaucoup de contacts avec les autres superviseurs européens. Beaucoup d'informations et de connaissances sont échangées via ces canaux.

- Les prises de position de l'ESMA sont-elles modifiable pour les pays membres ou s'appliquent-elles directement ?

Au niveau européen de manière générale, c'est la Commission Européenne qui propose les lois, et l'ESMA n'est qu'une autorité de supervision qui n'a pas de pouvoir législatif. Elle peut par contre proposer des standards techniques qui complètent les

règlements et directives proposés par la Commission. Ensuite, il faut bien faire la distinction entre les directives et les règlements européens. Les directives, comme la directive MiFID, doivent être transposées par les pays dans leurs lois, avec généralement la possibilité d'adapter certains éléments. De leur côté, les règlements européens s'appliquent d'office sans qu'il soit même nécessaire de les transposer dans les règles nationales, et avec généralement peu de "marche de manœuvre". Ce qu'on constate, en tout cas dans le domaine du secteur financier, c'est qu'il y a une tendance à aller de plus en plus vers des règlements européens plutôt que des directives, c'est-à-dire des règles assez standardisées.

- Peut-on dire qu'il s'agit là d'une majorité des cas ?

Les derniers cas que je connais sont en tous cas surtout des règlements. Je prends le cas de crowdfunding par exemple, il y a un règlement qui est en cours d'adoption. C'est un règlement et pas une directive. Dans les autres derniers cas que je connais il y a aussi le règlement "Prospectus" par exemple, de 2016 ou 2017, c'était de nouveau un règlement et pas une directive donc peut-être que l'existant reste en majorité des directives, mais de plus en plus on va vers des règlements.

- En revenant au cas de la Belgique et de la FSMA en particulier, existe-t-il des formations proposées au personnel ?

Ce que nous faisons depuis l'année passée, ce sont des formations en interne à destination du personnel, sur justement les sujets FinTech. On a fait ça en 2019. En 2020 ce n'était pas prévu et c'est tant mieux au vu des circonstances, mais on est en train de planifier la même chose pour 2021 donc ce sont des formations à destination de l'ensemble du personnel pour l'informer des développements en la matière puisque chaque service a sa spécialité et n'est pas forcément au courant de tout ce qui se passe dans les services à côté. Ces formations sont donc une manière de conscientiser les gens sur les développements qui sont en cours en matière de FinTech.

- Avez-vous mis en place un schéma d'attraction et rétention des "talents" en FinTech ?

Disons que lorsqu'il y a des engagements, les profils qui sont recherchés sont des profils adaptés pour lesquels on les engage, donc par exemple, ces dernières années, il y

a eu de plus en plus de profils en terme d'analyse de données qui sont recherchés. Il s'agit en fait plutôt de profils SupTech et non FinTech qui sont recherchés afin de pouvoir être à même de développer ce genre d'outils, de façon à améliorer encore la supervision financière. Pour ce qui est de la connaissance des FinTech, je pense qu'elle se fait au jour le jour sur le terrain à l'aide des rencontres qu'on a avec ces entreprises. Je pense qu'on a pas nécessairement besoin de gens qui soient spécialisés dans les FinTech, d'autant que le terme FinTech est extrêmement général qui recouvre des réalités qui sont très diverses. Donc quand on parle de FinTech, on parle de sujets qui sont tellement différents que chaque sujet doit faire l'objet d'une analyse séparée. Les techniques qui sont en train de se développer dans le domaine de l'assurance n'ont rien avoir avec ce qui se fait en terme de blockchain ou de robo-advice. Ce sont des problématiques différentes et il faut donc regarder quels sont les services qui sont offerts au client. La thématique FinTech doit pout moi se décomposer en ces différentes composantes et segments.

- Que pouvez-vous me dire sur la facilité et la rapidité d'implémenter des réglementations qui attrait à la FinTech ?

On s'inscrit dans un cadre légal qui est déterminant. Donc en terme de réglementation, ce que j'ai dit au niveau européen s'applique aussi au niveau belge. C'est-à-dire que les lois sont votées par le parlement, et les arrêtés royaux sont signés par les ministres. De notre côté, nous sommes une autorité de contrôle et nous ne sommes pas le pouvoir législatif. La FSMA peut adopter certains règlements mais ceux-ci ne sont jamais que l'application de lois ou d'arrêtés royaux existants. Ces règlements sont mis en place pour préciser certains éléments lorsque cela est nécessaire. La FSMA peut prendre un règlement relativement rapidement dans la mesure où il doit juste être approuvé par un arrêté royal, alors qu'une loi c'est différent.

Prenons un exemple concret, lié au crowdfunding. A l'origine, il n'existait pas de réglementations spécifiques relative aux plateformes de crowdfunding en Belgique. Le phénomène a commencé à se développer en 2012, 2013, et le marché a vu apparaître certaines plateformes qui avaient développés un business model qui ne les obligeaient pas à adopter un statut spécifique sous le contrôle de la FSMA. Ce qu'elles faisaient était légal mais pas contrôlé. A un moment donné, en 2015 ou en 2016, le gouvernement de l'époque a voulu favoriser le crowdfunding en prenant un certain nombre de mesures

fiscales (tax shelter ou autres), permettant aux investisseurs via des plateformes de crowdfunding d'avoir des avantages fiscaux, mais en décidant qu'il fallait implémenter un régime de contrôle pour les plateformes en question. A ce moment là, il a donc fallu passer une loi pour établir un statut pour ce qu'on appelle en Belgique les "plateformes de financement alternatif", mais pour cela il a fallu la rédiger, elle a fait l'objet d'une consultation et donc au final, je pense que c'est en Février que la loi 2017 est entré en vigueur. Donc entre le moment où le gouvernement a décider de mettre en place une loi et quand la loi est entré en vigueur, s'est écoulé une période de 1 an et demi à 2 ans je dirais ; ce qui est le processus législatif relativement normal pour une loi "normale". Une fois que la loi était mise en place, la FSMA a mis en œuvre le statut, après avoir déjà rédigé des brochures à l'attention des plateformes de crowdfunding lorsque la loi était "en préparation", afin de leurs faire savoir comment constituer un dossier pour recevoir l'agrément, etc. Il ne faut donc pas oublier le rôle principal de la FSMA qui est un rôle de supervision et pas un rôle de rédaction de lois ou de favoriser le développement des entreprises de crowdfunding. Notre rôle c'est d'assurer la protection des consommateurs, d'assurer que les marchés soient "fair and efficient" et que il y ait aussi une certaine stabilité financière.

iii. Topic 2: Incentives for FinTech Development

- Vous m'expliquer qu'il n'est pas dans les mandats de la FSMA de favoriser le développement de l'écosystème FinTech. Cela signifie-t-il que vous ne possédez aucun "facilitateurs" de développement FinTech ? Qu'en est-il de B-Hive, cette plateforme collaborative d'innovation FinTech qui existait en Belgique dans le passé ?

B-Hive était une initiative d'entrepreneurs FinTech initialement. Cela avait été créée sous le nom de "Eggsplora", et renommé ensuite, au moment où le gouvernement a décidé de mettre de l'argent dans ce consortium. Ils ont cessés leurs activités il y a de ça quelques mois.

De notre côté, nous avons mis en œuvre le portail FinTech en 2016 et c'est en réalité notre "Innovation Hub", c'est un point de contact. En fait, ce qu'on sait c'est que les entreprises FinTech, en particulier les jeunes entreprises FinTech, elles ne connaissent pas la réglementation financière. L'objectif principal de notre hub c'est de leur dire : "nous existons, et si vous offrez des services financiers, vous tomberez à un

moment donné sous la loi et donc sous le contrôle, soit de la FSMA, soit de la BNB". Et ce vu qu'en Belgique, nous fonctionnons sous forme d'un modèle "twin-peaks", qui propose donc un contrôle qui est réparti en fonction des services et des statuts. Donc ce portail FinTech c'est quand même une facilité qui est offerte aux entreprises et qui n'existait pas avant, pour pouvoir mieux naviguer dans les méandres de la législation, même si, je le précise car c'est un élément important, on attend que ces entreprises aient un minimum de connaissances. C'est repris très clairement sur notre portail. Parce que, j'y reviens encore, notre rôle n'est pas d'aider l'entreprise à développer son activité, mais de faire en sorte surtout que lorsqu'elle développe son activité, celle-ci se fasse dans le respect de la législation. Nous ne sommes donc pas un conseiller légal ou un bureau d'avocat, on a besoin que les entreprises sachent un peu ce qu'elles font, mais on sait très bien qu'il y a un certain nombre de ces entreprises qui démarrent en n'ayant vraiment aucune connaissance. Dans ces cas là, on les reçoit une première fois quand même un première fois, mais au terme de ce premier rendez-vous, on leur dit qu'elles ont intérêt à se faire conseiller parce que nous ne pouvons pas jouer ce rôle là et qu'elles en auront besoin dans leurs projets.

- Puisque ce n'est pas votre rôle, existe-t-il une autre institution publique dont le rôle est de promouvoir de développement de l'innovation financière en Belgique ?

B-Hive était un cas un peu particulier puisqu'elle mélangeait des initiatives privées et publiques mais son rôle était de favoriser l'écosystème FinTech en Belgique. Au delà de ça, il y a parfois un certain nombres de fonds publics qui servent à mettre de l'argent dans des entreprises, y compris dans des entreprises FinTech, mais il n'y a, à ma connaissance, pas un organisme public dont c'est le seul et unique rôle. Je pense d'ailleurs que ça n'existe pas à l'étranger non plus.

- Je pense que dans le cas des deux autres pays que j'analyse, c'est-à-dire le Royaume-Uni et Singapour, il existe tout de même une mise en avant d'objectifs de promotion de l'innovation et de la concurrence. Je prends notamment l'exemple de la "sandbox" qui existe dans les 2 pays en question.

Je vais rebondir là dessus. Vous venez d'évoquer la question de la concurrence. Il s'agit là d'une différence majeure qui existe entre la FCA et la FSMA : la FCA a depuis 3-4

ans un nouveau mandat qui est de promouvoir la concurrence. Je pense qu'en Europe, c'est un cas unique d'avoir une autorité de supervision financière qui a par ailleurs aussi dans ses mandats la promotion de la concurrence. Au niveau européen, il y a des "sandboxes" qui sont présents dans d'autres pays et certaines autres en développement, mais la seule vraie sandbox qui avait en Europe, c'était celle de la FCA. Dans les faits, les autres sandboxes restent plutôt des "innovations hubs" plutôt que des sandboxes quand on regarde les résultats.

Autre point : on revient à ce qu'on avait dit au départ, la majeure partie de la réglementation en Europe, elle est établie au niveau de l'UE. Donc, quelque part, si on veut déroger à des règles européennes, on ne peut pas. Le concept de la sandbox n'a en fait que du sens lorsqu'il s'agit de déroger, ou plutôt apporter des adaptations à des règles qui sont nationales.

- Avez-vous connaissance d'incitations fiscales destinées à la FinTech, aux PME ou au domaine de la finance de manière générale?

Je pense qu'il y avait eu quelque chose pour favoriser la FinTech, mais étant donné que la FSMA ne connaît pas les matières fiscales, c'est un domaine que je ne suis pas particulièrement.

- Organisez-vous ou prenez-vous part à des événements relatifs à la FinTech tels que le "Digital Finance Summit" ?

Cet événement est organisé par FinTech Belgium depuis maintenant 3 ou 4 ans. Nous sommes régulièrement invités à intervenir en fonction des sujets qui sont abordés (quand ils ne relèvent pas des compétences de BNB). Néanmoins, jusqu'à présent nous n'avons jamais été dans l'organisation de tels événements.

- Qu'en est-il de la promotion de la FinTech auprès du grand public ? J'ai entendu parlé d'un projet nommée WikiFin Lab. La FSMA est-elle à l'initiative de cela ?

Le WikiFin Lab est un centre d'éducation financière qui va être lancé par la FSMA bientôt puisque l'éducation financière est une de nos compétences depuis 2011. Un de nos départements est le département d'éducation financière qui en place un certain nombre de programmes. Le premier, qui est sans doute le plus visible, c'était le

lancement du site web WikiFin.be, pour informer le grand public des informations financières. Il y a à côté de cela des programmes d'éducation financière en partenariat avec le monde de l'enseignement, et il y a aussi ce projet de WikiFin Lab.

- La FinTech est-elle mentionnée ou plébiscitée lors de ce genre d'initiatives ?

Il faudrait voir cela avec le service en question. En tous les cas, je pense que quand il y a des études qui sont réalisées pour évaluer le niveau de connaissances financières des gens, ce qu'on constate c'est qu'il est extrêmement faible. Donc je pense que l'objectif du WikiFin Lab, qui est destiné principalement aux enfants, est surtout d'inculquer les principes de base de l'éducation financière. Maintenant, je pense, en ayant eu l'occasion de voir certaines parties de ce lab, qu'il existera des informations sur les nouveaux modes de paiements ou les crypto-monnaies, mais ce n'est pas l'objectif premier.

iv. Topic 3: FinTech Regulation

- La Belgique suit-elle plutôt une approche "rules-base" ou "principles-based" pour ce qui est de la réglementation financière ?

Je vais revenir au niveau européen en prenant l'exemple de la directive MiFID : cette directive est principalement "principles-based", bien qu'elle ait été complétée par des directives de niveau 2. Concrètement, la directive impose aux entreprises d'effectuer certains tests mais chaque entreprise a la liberté d'effectuer ces tests comme elle le veut. Par contre, il y a à côté de ça certaines réglementations plus prudentielles qui ne relèvent pas des compétences de la FSMA, qui demandent aux entreprises de respecter certains ratios financiers par exemple. Dans ce cas-là, on est plutôt dans du "rules-based". C'est vrai qu'on dit souvent que l'Angleterre est plus "principles-based" en comparaison des autres pays européens, mais je dirais que cette distinction "rules-based" - "principles-based" est moins pertinente.

- Pour réguler la FinTech, la Belgique procède-t-elle plutôt par des modifications et adaptations de sa législation existante ou par la créations de nouvelles lois spécifiques ?

Je dirais que c'est un mélange des deux. Je vais prendre l'exemple de la loi sur le crowdfunding. C'est une loi qui a été rédigée spécifiquement pour ces plateformes, mais d'un autre côté, elle s'inspire du régime qui est actuellement en œuvre pour les entreprises d'investissements : le régime MiFID. On pourrait résumer très brièvement la loi sur les plateformes de financement alternatifs comme un régime MiFID "light", c'est-à-dire qu'on applique des règles qui sont inspirées des règles MiFID européennes, mais en réduisant certaines des exigences pour faire preuve de proportionnalité.

- Avez-vous eu écho ou êtes vous au courant de problèmes ou de difficultés pour réguler les entreprises FinTech ?

Je n'ai pas d'éléments qui me viennent en tête particulièrement. Je ne pense pas qu'on ait eu de nombreux cas [d'entreprises] FinTech qui sont venues nous dire que la réglementation n'était pas adaptée à ce qu'elles faisaient. Après il existe tout de même un cas assez particulier en cours de discussion au niveau européen : celui des crypto-actifs. Il y a des hésitations quand à la manière de qualifier ces actifs sur le plan financier, et en fonction du type de services que ces actifs offrent, ils peuvent, ou non, tomber sous la directive MiFID, et il y a des incertitudes à ce niveau là.

v. Additional discussion topics

- Y a-t-il un ou plusieurs sujets que nous n'avons pas abordé mais que vous aimeriez mentionner ?

Peut-être ce qui est important de mentionner c'est l'idée qu'il y a FinTech et FinTech. Ce qu'on constate quand même c'est qu'on en parle beaucoup sans pour autant en voir beaucoup. Nous avons bien sur eu pas mal de contacts avec des entreprises FinTech depuis que nous avons mis en place le portail, mais il n'y a eu pas de nouveaux acteurs qui ont reçu des agréments de la FSMA à part les plateformes de crowdfunding. Alors il est vrai que beaucoup de choses se passent actuellement dans le domaine des paiements et ça c'est le domaine de compétence de la BNB et non de la FSMA. A côté de ça, ce qu'il y a beaucoup en matière de FinTech, ce sont des entreprises qui fournissent

des solutions à des entreprises qui ont déjà des licences, comme les entreprises active dans le domaine du RegTech. En tout cas, en Belgique, je peux vous dire qu'à part les entreprises de crowdfunding, on ne voit pas beaucoup d'entreprises FinTech qui s'adressent au grand public. C'est sans doute aussi lié à un aspect culturel : le Belge, de manière générale, est quelqu'un de très prudent. On sait qu'en Belgique il y a quelques 270 ou 280 milliards d'euros sur les comptes d'épargne, et avant de pouvoir réellement activer cette épargne, il faut déjà changer la culture des Belges.

Aussi, je reviens avec cette idée que la FinTech est constituées de technologies très diverses, et à l'époque, B-Hive essayait d'instaurer une terminologie qui parlait de "tech for fin" plutôt que FinTech, c'est-à-dire des entreprises qui développent des technologies pour d'autres qui sont actives dans le domaine financier. Je pense que l'écosystème est effectivement surtout constitué de ça, donc des entreprises avec lesquelles nous n'avons pas spécialement de contact.

Appendix 5: Interview Transcript – Michiel Van Acoleyen, NBB – 03/07/2020

Institution: National Bank of Belgium

Department: Surveillance of Financial Market Infrastructures (FMI), Payment services, and Cyber Risks

Position: Analyst, specialized in Innovation concerning payment services

DISCLAIMER: The opinions, views and thoughts expressed by Michiel Van Acoleyen are his own and may not necessarily reflect the official opinions and positions of the National Bank of Belgium.

i. Introduction of the interviewee

- Can you present yourself: academic background, career path and current role at the NB?

First of all, what concerns my academic background, I would say I have a domination of two degrees: on the one hand I completed a Master's degree in Economics at the KU Leuven, and in addition to this I also did a Master's degree in Management at ESADE Business School in Barcelona. I have been working for 4 years at the NBB. I am currently working in a department that is responsible for the surveillance of financial market infrastructures, payment services and cyber-risk.

You have to understand that the NBB is kind of divided into two broad buckets of departments: on the one hand, there is the classic central banking departments, which are busy with monetary policies and their implementation, a statistics department, and then the running of payment systems for example. On the other hand, within Belgium, the central bank is also responsible for the financial supervision of the financial sector. In that sense, the department I am working in is actually one of the departments that's doing the supervision of the financial sector. There is also another department that is doing the supervision of the banks, the one that is responsible for the policy, and another one that is responsible for insurances undertakings so to say.

Specifically, I am actually working on everything related to innovation in term of payment services, so everything relating to new banks, mobile banking, PSD2, and all

those things. That is actually where we see that the majority of the latest innovation is taking place. Next to that, I am also involved in policy work at the European and global levels, financial innovations and mainly anything related to innovation in payments. Lastly, I am also responsible for organizing the NBB's single point of contact for FinTech, which has been organized jointly with the FSMA. I guess that Christophe Majois already talked a lot about it, but it is actually an "entry point" for start-ups or established firms that have the ambition to launch a financial product or service, for which it might be required to have a license. And the idea is that we can provide them a "guide", and direct them to the right people that they should speak with, and also give them a broader view on the financial regulation.

ii. Topic 1: Financial Institution Organizational Structure and Functioning

- You already introduced my first topic, namely the structure of the NBB. Can you tell me more about the organization when it comes to FinTech?

The current model we have at the NBB is that we have a dedicated FinTech steering group, which consists of people from all over the NBB, both senior and junior staff, which convene at a regular time. But then, in term of real innovation facilitators, so really the NBB's FinTech spoc (single point of contact, ed.) we really use a "hub and spoke" model. We actually receive the questions, most of them really related to payments services, so that is why the NBB decided to put the spoc in the department I am working in. We then forward the questions to the relevant staff, which I am in contact with, and that will follow-up with the question.

- What is your personal vision on this way of working?

I think you need to be careful with these kind of questions, in the sense that from a regulator's perspective, the view you will always have is "what are the existing legislation and regulatory framework?", and in the European context, all the legislation is activity-based. So as soon as a company decides to provide a regulated product or service, it needs to have a certain license. Taking that into account, this "hub and spoke" model is then very useful from our experience, because as soon as you want to provide a regulated service, you need a specific license. So in that sense, it is more valuable for the

counterparty to be directly in contact with the department or the people that are in charge of those licenses. I think this model is mostly implemented across Europe.

In my view, it is a different question if you want to look at how central banks or regulators themselves want to implement new technologies and new digital solutions for their own operations. This is something the NBB is also working on, but that is different perspective, and in that sense it can maybe be useful to have a transformation department or something similar, which looks at the internal ways of working of the organization.

- You just mentioned that having a transformation department could be interesting for the regulators. Do you consider that you have enough tools at your disposal to regulate the financial sector in the best way possible?

That is a difficult question for me to answer. What I would say is that it is normal that the innovation takes place in the market most of the times, so in that sense, we are always, by definition, forced to “catch up” with the adoption of new technologies. Without extending that, I think that in both international and European contexts, this topic of “being digital” is high on the agenda. And it also high on the agenda of all senior decision makers to transform their own organizations into digital ones.

iii. Topic 2: Incentives for FinTech Development

- You already mentioned that there is a FinTech Innovation Hub in Belgium. Can you explain to me more in details how this works? How easy is it to determine who will be in charge of the contact person between the FSMA and the NBB?

You have different types of scenarios. In the majority of the cases, it is pretty clear depending on the activity of the firm that contacts us. But there are also some overlapping questions, like when it comes to RegTech for example. Another topic that is also special, especially in the past, is the crypto-assets.

- I was surprised to learn that the FSMA had no role in competition development. Is it the case at the NBB?

It is the same at the NBB. You need to remember that the law limits those things. The NBB has no mandate to boost competition in the financial markets, which is

different than the FCA in the UK for example. That is probably one of the main reasons no regulatory sandbox was created in Belgium, but I think that another element you need to take into account is that in our view, the added benefits of a regulatory sandbox that are not so sure yet. Also, if you look at the UK market for example, it is very large, and they have a lot of FinTech actors in their market. If you look at Denmark, which also implemented a regulatory sandbox, there is no people that want to join the regulatory sandbox. So from a cost-benefit perspective, it might not be the best strategy.

- Don't you think that the creation of a regulatory sandbox and other incentives could create a virtuous circle?

It is difficult to assess that I would say. The presence of a vibrant FinTech community in a country or a region depends on a lot more other elements than simply having a regulatory sandbox or not. I think that having an Innovation Hub is helpful though.

- Are you aware of other incentives for the development of FinTech in Belgium?

I cannot really say anything about those other incentives, as the NBB is not responsible for those. I don't have an overview of what exists there.

iv. Topic 3: FinTech Regulation

- You mentioned already that the regulation was more activities-based rather than entity-based in Europe; can you tell me more about it?

When you talk to an entity that is not regulated yet, the first assessment from a regulatory perspective is to estimate if the activity should be regulated or not. Then we assess the type of license is needed if the entity has to be regulated. So for example, what we see a lot is people that want to become active in the open-banking world, which is linked to the PSD2 directive. In this case, the entities need to get a license.

Also, banks can also provide payment services of course. The legislation in Europe is actually quite smart in Europe with that perspective, in the sense that it is a bit "risk-based" as well because if you only want to provide payments services and you do not want to take deposits, you do not need any credit institution license but you can provide your payments services with another license.

- I learnt in a previous interview that most of the financial regulation in Belgium is based on EU legislation. Because of this, have you noticed that some regulations were difficult to apply or that the perimeter did not include all firms that had to?

This is a very difficult question to answer. I think it really depends on the topics and on the instruments that are used. At the European level, the Commission always come back with some impact evaluation study, and these documents give a good idea as to what the outcome of certain instruments was, and whether or not the intentions were achieved.

- Could you give me examples of specific FinTech regulations that have been set up in recent years?

I am mostly familiar with everything related to payments, so I will outline the process there. Regarding payments, I would say there was no specific European legislation 20 years ago. Western Union, for example, was not regulated at all 20 years ago, except maybe by some specificities in certain countries. In Belgium, there was maybe some sort of legislation that existed at that time, but then the European Union thought that it needed to harmonize this, to ensure that the European markets could become more competitive. They came up with the Payment Services Directive (PSD) then. I think that the first text was published in 2007 or 2009 and it was transposed into some Belgian law in December 2011. What we could then see is that some countries were more liberal while some others were stricter. Then a few years later, the EU published a new version of this directive, the PSD2, after having taken into account learning from the first directive. In the end, PSD2 is not really a FinTech directive because it only includes payments and payments are only a specific part of the broad FinTech industry that includes a lot of elements.

Also, what you really need to take into account is that within Europe, legislation is really activities-based.

- I understand that the majority financial regulation rules come from the EU. Though, are there some rules that come from Belgium instead?

Indeed, it is the case and it is important that you mention it. For example concerning crowdfunding, Belgium implemented a new law a few years ago, and now

Europe is bringing some new legislation. We will then have to adapt to that. The same happens with crypto-assets, for example in Malta, which is quite early in the process of regulating these,

v. Additional discussion topics

- Do you want to add anything?

Yes. In the beginning of your introduction, you mentioned that the UK and Singapore are considered as “vibrant regulators”, but you need to be careful there to distinguish the correlation between the amount of publications that take place and the amount of effective underlying actions that are taken by the regulators.

A good example maybe is to look at what happened after Brexit: a lot of companies that were based in the UK needed to relocate themselves in the EU, and you can see that there were really specific types of licenses. For example, for banking licenses, Paris, Frankfurt and Dublin were in high demand, but regarding payment services, within Belgium we were also able to attract a couple of large global players such as Transferwise and MoneyGram.

Appendix 6: Interview Transcript – Simon Scorer, BoE – 14/07/2020

Institution: Bank of England

Department: FinTech Hub

Position: Senior FinTech Specialist

DISCLAIMER: The opinions, views and thoughts expressed by Simon Scorer are his own and may not necessarily reflect the official opinions and positions of the Bank of England.

i. Introduction of the interviewee

- Could you give me an introduction of your academic and professional background, your career path and your current role at the Bank of England?

My academic background is in Math and Computer Sciences. When I graduated, I joined the graduate scheme at one of the big four accountancy firms in the UK, qualified as an accountant and quickly moved to the Bank of England then. I initially moved into a fairly mainstream accountancy finance position at the Bank, where I stayed for a few years. Then I moved internally into a job that was more FinTech focus, into what was a new team at the time: the Digital Currency Team that was set up in 2015, which mostly focused on crypto currencies, like the bitcoin, but also did some research into topics for the Central Bank to implement some new policies. A few years after that, the Bank created a FinTech Hub, a central team in the back that deal with FinTech issues, which I joined to become a Senior FinTech specialist.

ii. Topic 1: Financial Institution Organizational Structure and Functioning

- Given that there are quite a few institutions in charge of the financial regulation in the UK, could you give a brief presentation of these?

The Bank of England is the UK Central Bank. As higher objectives, it has to maintain financial stability and monetary stability. The PRA is a part of the BoE that regulates banks and insurance firms from a prudential regulation point of view. Alongside the Bank of England is the FCA, which supervises a wider set of firms and

topics (in comparison with the BoE which supervise larger and more systemic institution firms). Its role is more focused on consumer protection, and the conduct of financial firms. Then, the PSR, which I don't know that much but that is linked to the FCA I think, focuses specifically on payments and competition in payment. HM Treasury (HMT) is the UK treasury organization to which we ultimately report to. We have contacts all these institutions when it comes to FinTech issues.

- You mentioned you are part of a specific team that focuses on FinTech at the BoE, could you give some more details about its role?

Before getting there, maybe it could be interesting for you to go through some of the history of FinTech at the BoE. In 2015 I think, a first FinTech team was set up, and it was called at the time the "FinTech accelerator". This was the initial project and the aim was to engage with FinTech firms to run some sort of proofs of concepts, mainly for us to better understand the technologies, the particular solutions and problems and to learn about the FinTech landscape and about how to engage with firms. It was a really use exercise but it only run for a couple of years as it has an end date.

When the end date came up, the Bank though about how to structure its FinTech work going forward, and it ended up by creating a new permanent team I am in now, which is the FinTech Hub. There was then a slight change in focus from what the accelerator was doing. The accelerator was mainly focused on engaging with FinTech firms and PoCs. The FinTech hub is more about understanding policies issues and their implications for FinTech and the other firms the Bank supervises. The BoE still does POCs from time to time but when they are needed, but it is not the point our team focuses the most on.

- As "FinTech Hub", are you then the point of contact within the BoE?

It depends, we are one point of contact but we are not the only one. It depends on what the firms that contact the Bank wants to talk about. Though, we would be the default contact if there were no clear or obvious topic. Also, what is important to point out is that as the Bank of England supervises more systemic organizations, there is generally less a need to get in touch with the authorities, by opposition to the FCA that supervises smaller firms.

- Is there any other FinTech focused team in the BoE?

The FinTech hub is the main area that is accountable for FinTech across the Bank, but it works with each department depending of the topics. Actually, each department has a few people that really have this kind of FinTech expertise, relevant to their areas. There are probably some departments where there are dedicated teams for FinTech, like the Digital Currency Team I worked in a few years ago. I am not sure but there might also be a team that is focused on data.

As a main suggest, what we have done is to implement a kind of “hub and spoke model”, where we are a central team that works, helps and engages with all business areas of the Bank, depending on the topic. Our team (the hub) is relatively small, because the idea is not that the hub would do all the work itself, but more that the hub would send strategic directions on specific FinTech topics

- Do you have any kind of innovative mindset or culture that is set within the Bank in order to better promote FinTech development?

We don't have a remit on promoting the UK FinTech firms. Though, a part of our job is also to identify opportunities from FinTech.

- What about HR management? Do you have specific program to attract some specific profiles? Do you provide some internal training with regard to FinTech?

It is a difficult question to answer. We don't have particular training on FinTech, which is quite a broad topic. In term of profile attraction, I would say that the members of our team come from quite different backgrounds. This gives us diversity in the topics of expertise the team has. We try to bring different people in the Hub to have a blended skilled team.

- Concerning domestic coordination, how does it work? Could you provide some examples of contacts you have with the FCA or the HMT?

Coordination varies quite a lot depending on the topics. What is important to keep in mind is that we don't want to create entirely new structures where it is not needed.

The Bank has several assertive committees already established and we try to bring FinTech topics through these existing committees. Though, sometimes coordination also happens besides these “traditional” gatherings. For example, there is a crypto assets task force, a collaboration between the BoE, the HTM and the FCA, which started about a couple of years ago and aims at bringing together senior representatives of those 3 organizations.

- What about coordination or collaboration with external stakeholders from the UK?

Again, it would vary depending on the topics, but we do quite a lot of external engagements, that is part of our work. We speak to FinTech firms, incumbents from some financial institutions, academics. We actually published a discussion paper in March, with the intention of inviting feedback and inputs from as wide as possible sources. Also, some of my colleagues have set up an AI public forum to talk about topics like artificial intelligence, machine learning, etc. But indeed, we do quite a lot of external engagements with the industry.

- How does it work for international coordination now?

We collaborate a lot with the Bank for International Settlements (BIS) and the FSB when it comes to FinTech work. We also work with colleagues from the G20. It is interesting to speak with our counterparts of other central banks. We have quite good relationships with lots of central banks in general. We also have these kinds of established international groups, which we kind of work closely with.

- Is this coordination formal and organized or does it also happen informally?

Coordination happens both ways. So the BIS and the FSB have these well-established formal groups that focus on FinTech. For example the FSB has its own FIN (Financial Innovation Network), BIS also has a bunch of other work groups that work on FinTech topics. These have quite organized structure around them. But we also have more informal discussions with colleagues on particular topics.

iii. **Topic 2: Incentives for FinTech Development**

- Though you already mentioned that it was not the BoE's role to promote FinTech, do you have some other kinds of incentives in mind?

Honestly, not really in term of promotion. I guess that the FinTech accelerator we used to have could be part of these incentives you think of but just to be clear on that, it probably did not meet the definition that most people have in mind. In, the FinTech world widely, an accelerator is more like a process where you kind of help firms to grow quickly, but that was not our accelerator. Ours was kind of more focused on to do short one-off proofs of concept. It did not involve us investing in any of those firms. It is then probably a misleading title. Then obviously there is the regulatory sandbox run by the FCA, which I think was one of the first of its kind. Though it not our mandate to supervise the sandbox, we (the BoE) have a good insight of what is happening there.

- Do you organize or take part to some FinTech-related events?

Yes. Quite a lot of our senior managers make a round of speeches throughout the year. There is definitely more elements of those speeches that are FinTech-related. We would take part of quite a lot of FinTech events, so we do quite a lot of engagement in that way. I also think we have on occasion one quite academic conference on FinTech topics tough I don't have any example in mind.

iv. **Topic 3: FinTech Regulation**

- Though the Bank of England is not a legislative body, do you have insight on some FinTech legislation issues you might have had?

I will confess that is side of the topic is not my strongest side. I am not really in the regulatory part of the organization. I think that in short, if the Bank of England identifies some area where the legislation would need to be changed, we have a mechanism for engaging with HMT. I think we have an ongoing relationship with them, though not necessarily specific to FinTech but these topics would just fit into that process.

- What would you say is the type of approach the UK has towards FinTech development?

Again, it is not my strongest asset, but I can say that when it comes to FinTech regulation, it is definitely not promotion. We want to make sure that the regulation (not especially FinTech one) kind of fits within the current legislation. We do not necessarily come up with specific FinTech regulation if we don't need to. It is a "same risk, same regulation" kind of approach, not different than for the whole financial system.

One of the things that I can point out is that in December every year, a sort of regular report on financial stability is published. In the latest publication from December last year, a part was focused on the payment landscape, thinking about how the emerging things would affect the regulation. Basically, what we could say is that this kind of analysis does not look at how the payment system is structured but rather estimates the risk that comes with innovation and if it is not different from the ones already existing, there should not necessarily be modification of the current regulation and should stay to the same kind of standards. The idea is really "same risk, same regulation".

- Do you have examples of specific FinTech activities regulations?

Well for the payment regulation for example, one of the things we provide is the real time gross settlement (RTGS) system, which kind of underpins various service payments in the UK. Traditionally, that system is only made available to large banks and not to a wider section of payment firms, but we changed that policy a few years ago to widen access to certain forms of non-banks payment firms, which enable them to then have settlement accounts in our system. I think that kind of help competition and innovation among payment firms. In the past, these smaller firms would have had to contract some partnerships with larger commercial banks to have access to the system. It is actually an increasing topic of conversation going forward: what kind of firms could have access to the central bank facilities. But I think we were one of the first to offer this kind of access to firms beyond the traditional banks.

Appendix 7: Interview Information - Nick Clark, FCA - 24/07/2020

Institution: Financial Conduct Authority

Department: Strategy & Competition Division, Innovate

Position: Sandbox & Advice Unit Manager

DISCLAIMER: The opinions, views and thoughts expressed by Nick Clark are his own and may not necessarily reflect the official opinions and positions of the Financial Conduct Authority.

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