

Louvain School of Management

How to strengthen the FinTech sector in Belgium?

Author: François DENOËL
Supervisor: Edoardo TRAVERSA
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- Nicolas Quarré, Co-Founder and CEO, Accountable
- Fabian Vandenreydt, Advisor, Abu Dhabi Global Market
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The author can be reached at denoel.francois@gmail.com

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Glossary

AFM	Dutch Authority for the Financial Markets
AI	Artificial intelligence
AISP	Account Information Services Provider
API	Application Programming Interface
ATM	Automated Teller Machine
BCBS	Basel Committee on Banking Supervision
BE	Belgium
BGF	Belgian Growth Fund
BNB	National Bank of Belgium
B2B	Business to Business
B2B2C	Business to Business to Consumer
B2C	Business to Consumer
CSC	Common and Secure Communication
DESI	The Digital Economy and Society Index
DG	Deutschsprachige Gemeinschaft
DG	Directorate-General
DNB	De Nederlandsche Bank
DU	Delivery Unit
EBA	European Banking Authority
ESG	Environmental, Social and Governance
ESMA	European Securities and Markets Authority
EU	European Union
EUR	Euro
FCA	Financial Conduct Authority
FEBELFIN	Belgian Financial Sector Federation
FESeC	Fédération de l'Enseignement Secondaire Catholique
FS	Financial Services
FSB	Financial Stability Board
FSMA	Belgian Financial Services and Markets Authority
FWB	Fédération Wallonie-Bruxelles
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
ICT	Information and Communications Technology
IMF	International Monetary Fund
IPO	Initial Public Offering
IL	Israel
IT	Information Technology
KPI	Key Performance Indicator
KYC	Know Your Customer
M&A	Mergers and Acquisitions
NBB	National Bank of Belgium
NCA	National Competent Authorities
NL	Netherlands
OECD	Organisation for Economic Co-operation and Development
PISP	Payments Initiation Service Providers

PMO	Program Management Office
PSD2	Payments Services Derivative 2
P2P	Peer-to-Peer
R&D	Research and Development
RBC	Région de Bruxelles-Capitale
ROI	Return on Investment
RTS	Regulated Technical Standards
SaaS	Software-as-as-Service
SCA	Strong Customer Authentication
SDG	Sustainable Development Goal
SE	Sweden
SeGEC	Secrétariat Général de l'Enseignement Catholique
SME	Small and Medium Enterprise
STEM	Science, Technology, Engineering and Math
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TPP	Third-party provider
UN	United Nations
VC	Venture Capital
VG	Vlaamse Gemeenschap
WEF	World Economic Forum

Introduction

The development of new digital technologies combined with their widespread dissemination and adoption by companies, public institutions and the population at large has caused major disruptions in the economy all around the world. The new technologies change the way people think and act in their private lives. They allow companies and public institutions to offer new services, to operate differently and more globally, often at lower costs. In the financial sector, this technological revolution has been associated with the emergence of FinTech companies, i.e., companies leveraging digital technologies for the provision of financial services. Those companies bring significant changes and challenge the incumbents of the financial services industry.

Interestingly, in a recent UN report, it is explained that *digitalization amplifies the potential for the financial system to empower and to better serve the interests of people, whose money it manages - as savers, lenders, borrowers, investors, and taxpayers -, and whose collective interest is expressed by the Sustainable Development Goals adopted by all United Nations Member States* (UNSG Taskforce on digital financing of the SDG, 2020, p.105). The same report highlights *several barriers and digital risks which, if unchecked, could deepen exclusion, increase inequality and further divide the world population* (p.8).

Some countries, regions or even cities have understood the opportunities associated with a thriving FinTech industry (e.g., affordable financial services, driver of productivity growth and business innovations, job creation and associated tax revenues). They have acted more decisively than others to ensure that all the required ingredients were in place, i.e., the right infrastructure, incentives, and regulations. As a result, these locations have been successful at growing and developing their FinTech ecosystem.

In this context, a vibrant FinTech ecosystem could be of strategic importance for Belgium. Unfortunately, in all the international FinTech rankings, Belgium does not belong to the group of the leading places in the world. This is both disappointing and frustrating as Belgium seems to benefit from many advantages, for example:

- EU institutions, watchdogs, regulators, and professional financial services industry groups are all present or well represented in Brussels.

- For decades, several key players in the field of interbank communications, payments, post-trade clearing and settlement, collateral management and custodian services (e.g., Swift, Euroclear, MasterCard, Worldline...) have established their headquarters and operations in Belgium.
- Moreover, Belgium has always been a forerunner in payment system innovations (e.g., Bancontact, Mistercash, Banksys).

So, what is going on with the FinTech sector in Belgium? How come Belgium does not come up at the top in the global or European rankings? What are the lessons learned from successful FinTech clusters in the world? What could be done to improve the situation and develop Belgium's leadership in the FinTech industry?

Our master's thesis aims at answering those questions. To be as concrete as possible, our key end-product will be a set of recommendations and initiatives to help transform Belgium into a leading cluster for FinTech. To that end, we will follow a three-step approach:

- First, we will provide an overview of the FinTech sector in general and then give more details about the current situation in Belgium.
- Second, we will compare the FinTech sector in Belgium with three other countries (the Netherlands, Sweden, and Israel) to end up with a SWOT analysis.
- Third, based on the cross-country comparison and the SWOT analysis, we will identify and assess a large number of improvement ideas. We will prioritize them and select the most attractive initiatives with the objective to develop a comprehensive action plan going forward, i.e., a roadmap to transform the Belgian FinTech sector into a leading cluster, building on its unique existing assets while also addressing the weaknesses identified in our cross-country comparison.

We are aware that, for such an action plan to succeed, it would be of the utmost importance to involve right from the beginning key stakeholders in order to generate enough buy-in and commitment. This clearly goes beyond the scope of our master's thesis. For that reason, the end-product of our thesis, i.e., our proposed portfolio of initiatives, should be seen as a first draft to engage meaningful conversations with interested protagonists of the FinTech sector in Belgium.

Chapter 1: Methodology

1.1 Overview of the industry and the Belgian FinTech sector

After introducing and clarifying some of the key FinTech concepts through a comprehensive review of the existing literature, we will give an overview of the Belgian FinTech ecosystem. In academia, primary data refer to original data collected for a specific research goal, while secondary data invoke the reused of data originally collected for a different purpose (Hox and Boeije, 2005). Chapters 2 and 3 are based on both secondary and primary research:

- For the secondary research, several documents from the non-profit association FinTech Belgium were used, including their 2019 annual report in partnership with Avolta Partners. In addition, some documents from SIRRIS, a non-profit technology industry organisation, have been used.
- To cross-check and complement the secondary research, primary data from different online databases (Dealroom, Crunchbase, LinkedIn) have been added.

1.2 The cross-country comparison

The cross-country comparison aims to identify the best practices to develop a FinTech cluster and provide an analysis of the strengths and weaknesses of the Belgian FinTech ecosystem. To that end, we have used an analytical framework developed by the consulting firm Ernst & Young (EY). In their report “*UK FinTech On the Cutting Edge*” (2016), EY identifies four key attributes to assess the strength of a FinTech ecosystem: (1) Talent, (2) Capital, (3) Regulatory, and (4) Demand.

Our analyses have been based on information gathered either from international indicators and rankings or from the interviews we have conducted with 28 stakeholders from Belgium and abroad. The interviewees whom we have selected had different backgrounds and perspectives on some aspects of the FinTech ecosystem: entrepreneurs from several segments (Payment, Insurtech, Regtech, AccounTech, and Infrastructure), but also regulators, investors, policymakers, academics, and incumbents from the banking and insurance sectors.

For our secondary research, we have analysed several indicators from various institutions, such as the European Union, the World Economic Forum, and the OECD. In addition for our cross-country comparisons, we have relied on four different FinTech rankings or indexes:

- The **Findexable Global Fintech Index City Rankings** is the first global ranking of Fintech ecosystems and probably the most complete. Findexable ranks the FinTech ecosystems of more than 230 cities in 65 countries. Its database includes 7000 Fintech companies. The scores obtained by countries and cities take into account the quantity and quality of companies in the ecosystem as well as the business environment of the location.
- **The GFCI FinTech Ranking** is part of the Global Financial Centres Index, realised by *Z/Yen*, the City of London's leading commercial thinktank. The scores of 105 centres are based on two sets of inputs: (i) Instrumental factors and (ii) Financial centre assessments. As instrumental factors, they use indicators coming from various international sources (e.g., ICT Development Index by the UN, Ease of Doing business from the World Bank). To assess the financial centres, they use online questionnaires (sent to 655 respondents) with questions on the four most important attributes to generate a vibrant FinTech community.
- **The Global FinTech Hub Index (GFHI)** is an index report published by several Chinese universities and institutes to provide a tool for governments and businesses to understand FinTech developments. The GFHI takes into account different points of view (enterprise, consumer and government) to create a multi-faceted indicator: (i) FinTech Industry, (ii) FinTech Consumer Experience and (iii) FinTech Ecosystem.
- **The Global Fintech Ecosystem Report 2020** is a report prepared by Startup Genome. This US-based company is a research and policy advisory organisation for governments wishing to accelerate the growth of their startups' ecosystem. They ranked FinTech ecosystems through a weighted average of the following factors: (i) Performance, (ii) Funding, (iii) Talent & experience, (iv) Focus and (v) Legacy.

1.3 Policy recommendations

For the last step of our research, we have used several management practices to develop the first draft of an action plan, building on the findings of the previous steps. The management practices which we have used include idea generation based on our SWOT analyses and cross-country comparisons, multi-faceted assessment of the proposed ideas, prioritization, and selection of initiatives.

Chapter 2: Overview of the FinTech industry

Although the word “FinTech” might seem a recent buzzword, the first known use of the term goes back to 1971 (Merriam-Webster, 2021). As shown on the Google Trends chart below, the word started to draw people’s attention in 2014. Since then, its popularity has been growing steadily and has now gained worldwide acceptance in the broader business world (Schueffel, 2016). The popularity of the term is undeniable when compared to other new industries, such as “MedTech”, “HealthTech”, “EdTech”, or “AgriTech”.

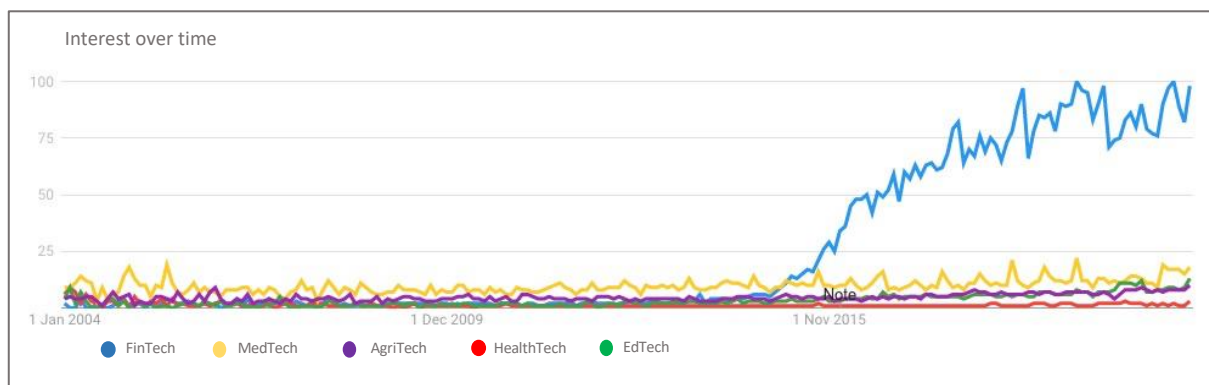


Figure 1. Interest over Time “FinTech” (Google Trends)

In this Chapter 2, we first define the word “FinTech”. Second, we share some historical perspectives on the strategic eras of the FinTech industry. Third, we present a taxonomy of the different industry segments. Fourth, we give an overview of the funding aspects for FinTechs and fifth, we explain the regulatory factors. Sixth, we review the strategies followed by incumbents to react to FinTech companies attacking them. Finally, we discuss how Tech platforms are competing in the FinTech sector.

2.1 Definition of the word “FinTech”

« *Mal nommer les choses, c'est ajouter au malheur du monde* » (Albert Camus).

When it comes to defining the term FinTech, “*the devil is in the definition*” (Ehrentraud et al., 2020). Despite being in vogue, FinTech is a word that remains elusive in terms of a concise definition. The word has been applied in various business contexts, often inconsistently and ambiguously. The Merriam-Webster Dictionary defines FinTech as “*product and companies that employ newly developed digital and online technologies in the banking and financial*

services industries”. Below, we review some common denominators in the sources listed in our bibliography at the end of this document.

The first common dimension in all FinTech definitions is **technology**. The word FinTech is a neologism created from the merger between the words Finance and Technology. For the *EU Directorate-General of Communications Networks*, FinTech refers to “*technology-enabled innovation in financial service*”. In line with this idea, Schueffel (2016) describes FinTech as “*a new financial industry that applies technology to improve financial activities.*”

A second dimension which most definitions highlight is the **new opportunities** created by FinTech. For the IMF (2020), FinTech is “*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*”.

A third dimension is about the **disruptive nature of FinTech innovations**. According to Arner (2015), FinTech is an “*ongoing process during which finance and technology have evolved together and which led to numerous incremental and disruptive innovations, such as Internet banking, mobile payments, crowdfunding, peer-to-peer lending, robo-advisory, online identification etc*”.

Sometimes, FinTech **refers directly to companies** (often startups and scale-ups) that structure their core business model around financial technology. FinTechs are companies “*that disrupt the financial sector by making use of the Internet and automated information processing to provide innovative, secure and flexible financial services*” (Gomber et al., 2017).

In our thesis, the word FinTechs (in plural) will be used to refer directly to those companies. However, we must be aware that FinTech initiatives can also be taken by traditional incumbents (banks, insurers) transforming their existing business models leveraging advanced financial technology solutions.

2.2 Strategic eras of the FinTech industry

The interaction between finance and technology is not a new phenomenon (Kuzmanova, 2020).

Historically, technology has always played a significant role in financial markets and institutions. It has been crucial to a wide range of applications such as customer onboarding, order management, investment analysis, position reporting, risk analysis, post-trade processing, regulatory reporting, and more. The use of technology for financial services has evolved over three (or four) distinct eras, i.e., time periods (Arner et al., 2015):

2.2.1 FinTech 1.0 (1866-1967)

Key events in this era include the first transatlantic cable (1866) and Fedwire in the US (1918), the first electronic money transfer system, which relied on now-archaic technologies such as the telegraph and Morse code. In the 1950s, credit cards were introduced to ease the burden of carrying cash (Zigurat, 2019).

2.2.2 FinTech 2.0 (1967-2008)

The second era marks the development of financial services from analogue to digital, as well as their globalization by traditional institutions. At that time, there were a series of new revolutionary financial innovations, e.g., the first ATMs (automated teller machines), which appeared in 1967. It was also during that era that SWIFT, the Belgian-based company specialized in international payment systems, was founded in 1973.

2.2.3 FinTech 3.0 (2008- ...)

The third era is about financial innovations by new players competing with existing large companies. This third era has emerged due to multiple events and long-term trends. We want to highlight three of them:

- ***The 2008 financial crisis.*** The public image of banks has deteriorated after the 2008 crisis. As a result, many customers lost faith in the traditional financial institutions and started to look elsewhere at newcomers. In addition, at that time, large numbers of young graduates and former employees of financial institutions were unemployed: they searched for jobs in other sectors, including new ones such as FinTech (Hasse, 2021).
- ***Regulatory compliance.*** The 2008 crisis led to changes in the regulatory environment, in particular, the development of measures designed to quantify and mitigate the financial risks. The Basel Committee on Banking Supervision (BCBS) increased banks' regulatory reserve requirements to consider individual contributions to global risk. Similarly,

regulators asked many companies to verify and improve their solvency. In addition, new directives forcing banks to be more transparent emerged in the European Union (GDPR, PSD2) and around the world. This has opened up new opportunities for FinTech.

- **Technology and customer services.** The development and adoption of revolutionary technologies (e.g., Artificial Intelligence) have accelerated. These technologies have created new opportunities to offer better and cheaper customer experiences. With the success of smartphones apps and platforms such as Amazon, Airbnb or Uber, there is a growing demand for personalized customer services. Customers are now seeking features that traditional banks do not offer, for example, 24/7 service, personalized interaction wherever and whenever they want, peer networks and instant gratification (Deloitte, 2015).

2.2.4 FinTech 4.0 (2020-...)?

For the FinTech industry, the Covid crisis has been a game-changer (KPMG, 2021). The pandemic crisis has underscored the importance of technology for the financial sector globally. With most banks closed for long periods, this has encouraged people to use digital channels, and consumers are now accustomed to quick, easy and low-cost financial transactions. According to McKinsey (2020), between 5% and 20% of consumers in Western Europe say they expect to do more digital banking. As many as 80% of consumers in these markets say they prefer to handle everyday financial transactions, such as checking balances and transferring money, digitally. Between February and August 2020, Febelfin (2020) has noticed that the share of contactless payments among all card payments has doubled: people tried to reduce physical contacts by all means. Compared to incumbents, FinTechs had several advantages during the pandemic: they are native to the digital arena, with more efficient cost structures, organizational agility, and, most importantly, higher customer loyalty (McKinsey, 2020). Even if it is too early to conclude that Covid has triggered a fourth FinTech era per se, the changes observed in 2020 will not likely stop when the Covid pandemic wanes (KPMG, 2021).

2.3 Segments of the FinTech Industry

As for defining the term, there is no consensus on which activities the FinTechs encompass. In the literature, several taxonomies have been proposed to describe the different segments of the FinTech industry. In our thesis, we propose to use the typology developed by Dorfleitner and al. (2017) in the book *“FinTech in Germany”*. Dorfleitner simplifies the distinction of the

FinTech segments by making an analogy with the traditional value-adding areas of universal banks: (i) Financing, (ii) Asset Management, (iii) Payments and (iv) the “Other FinTech” category, which includes all activities which do not fit into the classic universal bank scheme.

2.3.1 Financing

In the “Financing” segment, FinTechs tend to focus on a single solution designed to provide an enhanced experience for a limited number of products and services. Compared with large traditional banks stuck with old and heavy legacy processes and systems, FinTech companies have more degrees of freedom to offer innovative solutions, a few of them being the following:

- **Crowdfunding** facilitates the collection of money from a group of individuals (known as *the backers*) to finance various types of projects. There is a whole range of crowdfunding platforms:
 - **Equity crowdfunding** (e.g., Wefunder, Crowdfunder, AngelList) allows individuals to invest their savings via the Internet in the capital of young companies.
 - **Crowdlending** (e.g., Mintos, Peerberry) allows individuals to finance a company’s project via Internet through an interest-bearing loan.
 - **Donation-based crowdfunding** (e.g., KissKissBankBank, Kickstarter) allows individuals to donate funds to support specific projects they care about. They do not expect any meaningful (financial) returns.
- **Credit and Factoring** (e.g., Klarna) enable SMEs or individuals to obtain short-term financing by extending credit. Credit Factoring is not a loan per se but rather the purchase of outstanding invoices by a third party (a FinTech company in our case). Although Factoring has existed for years, FinTechs have adapted the concept to the digital environment, making it simpler, more flexible, and transparent to their customers.

2.3.2 Asset Management

In this second segment, we will illustrate three sub-segments where FinTechs are active:

- **Robo-advisors** are automated digital platforms to invest money in portfolios composed mainly of Exchange-Traded Funds (ETF). Investment decisions are made based on

complex algorithms. An example of robo-advisor is Birdee from the startup Gambit, a smart online savings management robot for the general public.

- **Personal Financial Management (PFM)** helps consumers make better decisions in different areas (e.g., accounting, tax, retirement). These platforms (e.g., Mint) also offer the possibility to centralize information from different user bank accounts on a single platform, combined with great user interfaces to make it more user-friendly to their customers. They allow customers to more easily manage their transactions. They also give them a better understanding of their spending patterns and provide them with enhanced tools to manage their finances.
- **Social Trading** aims to create online communities for investors. Users with no financial background have access to analyses published by professional investors, and they can copy their strategies. The world-leading platform in social trading is the Israeli Etoro, with over 20 million registered users. Related to social trading platforms are the online brokers' apps (e.g., Robinhood, BUX) that offer commission-free trading; their turnover has skyrocketed in recent years.

2.3.3 Payments

The “Payment” segment refers to any activities through which monetary value is shifted between parties to carry out transactions. Historically, payments were managed by traditional incumbents (mainly banks). In recent years, several FinTechs have entered that segment with some success. We want to highlight two subsegments:

- **Alternative Payments Methods.** FinTechs can offer various services. There are all the mobile payment solutions, i.e., regulated transactions with a mobile device (e.g., Wise). Instead of paying by cash, cheque or credit card, mobile payment technology allows those transactions to happen with a connected mobile device. Other examples include e-Wallets or cyber-wallets.
- **Blockchain and crypto currencies.** Blockchain is the new buzzword. It refers to a technology that allows information to be stored and transmitted transparently, securely and without a central controlling entity. Blockchain technology is still relatively young, but some applications are already operational, for example, security tokens, digitised financial securities registered on the blockchain. Another example of the use of blockchain in the financial sector is the development of cryptocurrencies such as

bitcoin, a fully digital, dematerialised currency that uses cryptographic processes to secure transactions and control the creation of money.

2.3.4 Other FinTechs

This “Other FinTech” segment includes all activities that do not fit into the traditional services offered by universal banks (Financing, Asset Management and Payment) but are considered to belong to the FinTech industry. Two sub-categories are detailed below:

- **InsurTech.** Many universal banks offer insurance services, “bankinsurance”. For ease of clarity, we still have preferred to follow the methodology of Dorfleitner et al., keep InsurTech in the “Other FinTech” segment. InsurTech (e.g., Lemonade, ZhongAn) refers to the use of innovative technologies in the insurance sector with as primary goals: cost reduction, increased flexibility and enhanced customer service compared with traditional insurance business models (Braun & Schreiber, 2017).
- **RegTech.** Regulatory developments have a profound impact on financial markets and institutions: compliance costs due to manual processes and inefficient IT infrastructures have skyrocketed. RegTech companies help financial institutions manage their regulatory obligations efficiently by taking over their compliance and risk management departments. RegTech companies are also active in the areas of “Know Your Customer” [KYC] and anti-money laundering processes. Typically, RegTech’s rely on sophisticated machine learning and Artificial Intelligence software.

2.4 Funding of FinTech companies

To fund disruptive ideas and startups, entrepreneurs need financing sources: FinTechs are no different. Considering the risks involved¹, startups cannot get loans from a bank. Most of the time, they must finance themselves via Venture Capital (VC) funds. VC funds provide capital to startups and scale-ups that they deem to have high growth potential and attractive expected risk-return profiles.

To discuss VC and startups funding, Duruflé and al., in their paper *“From startup to scale-up: examining public policies for the financing of high growth ventures”* (2017), draw an analogy

¹ In 2019, the failure rate of startups was around 90% in the US. Research concludes 21.5% of startups fail in the first year, 30% in the second year, 50% in the fifth year, and 70% in their 10th year (Bryant, 2020)

between entrepreneurship and a car journey. The car represents the startup, and it needs an engine (a business model), a driver (a management team), fuel (financing) and a GPS (a strategy). The journey involves a series of risks and misadventures (failures, liquidity problems, slowdown) and is divided into two main periods: (i) the startup period and (ii) the scale-up period. To start the car and begin the journey, the driver needs a certain amount of fuel; this is the launch of the startup. In the beginning, the financing needs are usually low; the entrepreneur can ask for capital around him. This is the pre-seed stage, also known as the unofficial “FFF” round (for Friends, Family and Fools). After driving for several kilometres, the driver has to refuel: the entrepreneur enters the seed funding stage. At that time, (s)he does not have a product yet, but he already has various expenses to cover (e.g., salaries, R&D, taxes): (s)he will seek funding from VC firms. If the project is relevant, the entrepreneur (as the driver) can continue on his way and launch his or her activities. As time goes by, (s)he will advance further in his journey, but (s)he will have to fill up more and more. The refuels represent the different fundraising with investors. Overall, the financing of startups is organised in several rounds (Reiff, 2021):

- **Pre-seed funding** is a non-official VC stage when founders are first getting their operations off the ground. The pre-seed is also nicknamed the 3F round (for *Friends, Family and Fools*).
- **The seed phase** is the first real financing stage, mostly for amounts below one million EUR. If we make an analogy with a tree, the seed will help to grow the business and finance its first steps (e.g., market research, product development).
- **Series A** is the second round of financing; the objective is to make the business scalable and move towards profitability. At that time, the startup is developing in its home turf and is beginning to go international (Wydden, 2016).
- **Series B** allows for internationalisation, further scalability of the model and buy-outs. At this stage of financing, international investment players emerge; their financing means can be very large.
- **Series Cs** are used to continue to grow rapidly or to have an aggressive strategy, for example, towards competitors by acquiring them to gain market share.

Knowing the distinction between the different rounds allows us to assess the developmental stage of a startup. The aim of the different rounds remains to support the startup in the process of turning an ingenious idea into a revolutionary global company, which could go public

through an IPO (Reiff,2021). At some points in the journey, the entrepreneur will arrive at a crossroads during the scale-up. (S)he will have to choose between three paths, described as follows (Duruflé et al., 2016, p.4):

- ***Stay private.*** Keep driving straight ahead; please refuel first.
- ***Go public.*** Turn left onto the fast lane; please pay at the toll.
- ***Get acquired.*** Turn right; please make room for a new driver.

The scale-up phase is crucial for every startup as it determines how the business will continue to grow. Entrepreneurs must make fundamental choices with implications for the company's strategy, governance, and financing. Each path has its defaults and advantages. If a startup goes public or continues to fund itself with VCs, it will remain independent. Going public, however, involves heavy administrative and economic constraints, and the company becomes more exposed to short-term constraints. If the company is taken over by another, it will be totally reshaped. For the startups, an acquisition is a final decision, and an IPO is a strong commitment. In contrast, funding through private VCs is a temporary decision and does not prevent the startup from going public or being acquired later.

Duruflé et al. (2017) identify four key requirements for scale-up investors. Those requirements are directly relevant for the FinTech industry:

- ***Deep Pocket:*** The term refers to an investor's ability to put up large amounts of money. As operating in the financial industry requires significant capital (from the regulatory authorities), VC in FinTechs must be prepared to invest considerable amounts compared to other sectors (Press, 2018).
- ***Smart Money:*** Besides the money, a good investor needs to help the startup through its knowledge and skills. Good venture capitalists are essential for a thriving entrepreneurial ecosystem as their role is to identify the opportunities and the right people. Moreover, FinTechs are strongly regulated, investors need a deep knowledge of the current regulatory environment (Press, 2018).
- ***Networks:*** Access to business and financing networks is also essential. If a VC has a good network, he could help the startup identify the right bankers, managers, administrators.
- ***Patient Money:*** Investments in startups are very risky and long term. Unlike the stock market, where it can be very short term, VC investors need to take a long term perspective and be prepared to hold assets for an extended period.

2.5 Regulatory overview of FinTech

Regulation plays an essential role in the financial sector, given its complexity and the risks involved. The emergence of FinTechs only add complexities: regulators need to strike a balance between promoting innovation and effective competition while protecting consumers and investors. Without real oversight and regulatory coordination, there is a real risk of financial instability. However, financial authorities are also aware that FinTechs have more difficulties complying with the various regulatory constraints than the incumbents.

In this section, we discuss successively: (i) the overall financial supervisory architecture for FinTech, (ii) innovation facilitators which can be put in place by regulatory authorities and (iii) some examples of legislation that protect consumers, ensure financial stability, but also support financial innovation.

2.5.1 Financial Supervisory Architecture

The financial authorities in each country are sovereign to handle the supervision of FinTechs on their territory. Yet, in some situations, country regulators are expected to follow common standards defined and negotiated at supranational levels by organisations such as the Basel Committee on Banking Supervision (BCBS), the Financial Stability Board (FSB), the International Organisation of Securities Commissions (IOSCO), the International Association of Insurance Supervisors (IAIS) or the Joint Forum (Hazevoets, 2020). Overall, financial supervisory arrangements can be roughly structured in three different ways: (i) *sectoral model* where one authority is responsible for the prudential and conduct of business supervision of bank (another for insurance, a third for securities and market integrity), (ii) *integrated model* with a single agency responsible for all oversight functions in all three sectors and (iii) *twin-peaks model* with two agencies responsible for prudential oversight and conduct of business for all types of financial institutions (Calvo et al., 2018; Hazevoets, 2020).

2.5.2 Innovation facilitators

The rise of FinTech carries new risks to the financial system and presents many regulatory challenges. To take into account those new risks, regulators need to increase their understanding of the FinTech activities, business models, risks and incentives. They need a significant overhaul of their supervisory knowledge and expertise. The various forums for

supervisory outreach to the FinTech industry have become more institutionalised in the form of “innovation facilitators”. There are two main types of innovation facilitators:

- **Innovation hubs** to provide a specific scheme, via which FinTechs can engage with the supervisory authority to raise questions and seek clarifications (Directorate-General for Internal Policies, 2020).
- **Regulatory sandboxes** to provide a testing environment for innovative products, services or business models under a specific testing plan, which usually includes some degree of regulatory lenience combined with certain safeguards (Directorate-General for Internal Policies, 2020). Overall, we can distinguish two main sandbox’s regimes: (i) regulatory sandbox based on an explicit, timewise limited experimentation clause and (ii) regulatory sandbox without exemption/waiver, but with the close supervision of the agency (winnovation, 2020).

The literature on innovation facilitators is very recent as the first innovation hub and regulatory sandbox were created respectively in 2014 and 2015. Academics and FinTech specialists do not yet have enough experience to quantify all the effects of innovation facilitators and draw definitive conclusions. However, it appears that innovation hubs are effective while the opinions on the sandboxes’ benefits are rather mixed.

Regulatory sandboxes have various potential benefits. They signal strong openness, encourage innovation, reduce time-to-market-cycle. Another type of benefits is that they can help regulators gain enhanced knowledge of FinTech and the latest market trend. Nevertheless, regulatory sandboxes may entail increased risks for consumers, investors, and the financial system’s stability. By prioritising innovation at all costs (including through sandboxes), regulators may engage in a race-the-bottom race that would undermine the financial balance and consumer interest (Directorate-General for Internal Policies, 2020; ESMA, 2018).

Sandboxes can also pose competition issues, creating two tiers between those firms in the sandboxes and those outside it. Finally, there is a risk with sandboxes that the solutions tested may be perceived by consumers as endorsed by the regulator. This would add legal risks to the regulatory authority if consumers turn against the regulator in case of problems, such as bankruptcy (Directorate-General for Internal Policies, 2020; ESMA, 2018).

By comparing regulatory sandboxes and innovations hubs, Buckley et al. (2020) argue that innovation hubs provide nearly all the benefits that the policy discussion associates with regulatory sandboxes while avoiding most downsides of regulatory sandboxes. For them, the most significant role of regulatory sandboxes is their “*signalling function*”, showing regulator’s openness and flexibility to innovators. This function should not be underestimated but reduces over time. Moreover, despite the assumptions, promoting innovation in financial services through innovation facilitators is very demanding: regulators need to make their staff available to interact with FinTechs and issue waivers for specific rules. If additional resources are not brought, there could be a negative impact on other areas of responsibility of the supervisor (UNSGSA FinTech Working Group & CCAF, 2019). Buckley et al. (2020) conclude their paper by highlighting: “*Where resources are limited, regulators should focus their resources on developing innovation hubs in order to build FinTech ecosystems, rather than sandboxes*”. For policymakers, the regulatory sandbox is not the only tool they have to support a FinTech ecosystem. Other levers exist and can be more effective: those levers will be discussed in the following chapters.

Finally, another important factor for European countries is the impact of EU legislation on the implementation of innovation facilitators, especially for regulatory sandboxes. Within the EU, the highly harmonised financial regulatory framework does not allow broad flexibility for the national supervisory authorities. The established sandboxes “*do not entail disapplication of regulatory requirements that must be applied as a result of EU law*” (ESMA, 2018, p.5). Flexible application of the rules appears possible only in few contexts². As a result, the regulatory sandboxes currently operating in the EU apply the second regime type, focusing on the interpretation of the applicable legal framework. Following the conclusions of an EU Council report on the role of regulatory sandboxes and experimentation clauses, the Commission is currently working on a harmonised framework for the design and operational parameters of innovation facilitators.

2.5.3 Legal framework

To support the development of a FinTech cluster, the authorities have two roles to play: (1) to set up an attractive legal framework favourable for FinTech, and (2) to ensure legal security,

² Regarding innovation facilitators in the EU, more information’s can be found in the reports of the ESMA and the DG for internal policies (references available in the bibliography).

i.e., laws and regulations must be unambiguous, stable, understandable and reduce any uncertainties. As examples, we will briefly present two recent EU directives which have a profound impact on the financial sector, including the FinTech sector:

- **General Data Protection Regulation (GDPR).** Implemented in 2018, GDPR aims to strengthen and unify the protection of individuals' data within the European Union, putting the control of their personal data in their own hands while increasing their level of protection. GDPR concerns all companies collecting and processing individuals' data, including financial institutions (banks, insurance companies, FinTech...). If customer data is leaked or their privacy violated, the fines for the involved company will be up to 4 per cent of its annual turnover or EUR 20 million, whichever is greater. Within the EU, the GDPR has been a game-changer: many companies now pay much closer attention to how they design and implement their internal processes and tools so that the customer's security and privacy are always guaranteed. For many experts, GDPR is an opportunity for FinTechs as they could have comparative advantages over incumbents (Don, n.d.), e.g., it could be less costly for FinTech to be GDPR-compliant or easier for them to demonstrate to their customers that 'privacy by design' required by GDPR is embedded in their products and corporate culture.
- **Payments Services Directive 2 (PSD2).** "Open Banking" refers to the sharing by a bank of customers' data (under their consent) with third parties. Effective in Belgium since March 2018, the PSD2 is an EU directive that allows "Open Banking", i.e., bank customers (individuals and businesses) authorise a third party to access their financial data or to manage their finances. The developments introduced by PSD2, and "Open Banking" initiatives are partly based on Application Programming Interfaces (APIs), which allow third parties to create applications and services around financial institutions. The purpose of the PSD2 is to trigger competition and innovation within the payments fields through the emergence of Third-Party Providers (TPPs), Account Information Services Providers (AISPs) and Payments Initiation Service Providers (PISPs).

Let us illustrate PSD2 with a concrete example. Following the implementation of PSD2, the startup Cake was created in Belgium. Cake provides a free banking app that allows users to manage multiple accounts from one app, gives advice and cashbacks and allows users to earn rewards by processing their banking transactions to sell insights to other businesses. Today, the company employs 25 people and has raised 6 million VC funds in 2020. Without the PSD2 directive, Cake would probably not exist.

2.6 Strategies of incumbents towards FinTech

"Banking is necessary, banks are not" (Bill Gates).

Supporters of FinTechs often use this quote to indicate that banks will be disrupted in the near future. However, Gates's sentence was made in the 90s. Still, today, traditional banks remain powerful and part of our daily lives. When talking about the development of the FinTech sector, we must acknowledge that the incumbents – despite being under attack - continue and will continue to play a crucial role. They are not standing still. In fact, when dealing with FinTech, incumbents can adopt different strategies (Deloitte & Directorate-General for Communications Networks, 2018). Below, we will briefly present six possible strategies:

- ***Set up an incubator and/or an accelerator dedicated to FinTechs.*** An incubator provides startups with access to mentoring, potential investors, logistical and technical resources and shared office space. Startups that have outgrown the incubator stage find support from a business accelerator instead. Although there are overlaps, the two concepts are different. Companies that use accelerators have completed their 'adolescence', which means that they are self-sufficient, but require guidance and support from their peers to become stronger. In general, an incubator programme lasts three to six months (one to five years for the accelerator). Incubator/accelerator programmes are popular with incumbents: they allow them to develop contacts and privileged relationships with FinTechs. For FinTechs, however, there is the risk that incumbents take benefit of the accelerator/ incubator to copycat their innovative solutions and to develop them internally (Deloitte & Directorate-General for Communications Networks, 2018).
- ***Set up their own Venture Capital fund to invest in FinTech.*** Incumbents can invest in FinTech startups and scale-ups by setting up their own VC fund. By doing so, incumbents will benefit from the potential increase in the shareholder value of the FinTechs in which their VC fund has invested.
- ***Acquire FinTech companies.*** While many banks and insurance companies have dedicated teams working on internal innovation, the capacity to innovate in the sector seems to be rather low. Of course, banks and insurance companies operate in a highly regulated environment, but they also have difficulty attracting and retaining creative and entrepreneurial talents with digital expertise. Acquiring a FinTech might be an easier route to follow. Another good reason to favour the FinTech acquisition strategy

is that the range of innovations is so broad that it may be easier for an incumbent to focus on spotting and acquiring the few most attractive emerging FinTechs than to pursue in-house the development in parallel of many new technologies with little chance of succeeding. Finally, incumbents can decide to acquire some successful FinTechs to prevent their competitors from acquiring them. Recent examples of global acquisitions include Visa buying the Open Banking platform Tink for USD 2.1 billion and JPMorgan Chase, America's largest bank, acquiring OpenInvest, an ESG investing platform.

- ***Develop privileged partnerships with FinTech.*** For a long time, it was inconceivable for banks to collaborate with FinTechs. Over the last years, attitudes have been changing, and both incumbents and FinTechs have understood the potential benefits of cooperation. For example, leveraging their distribution networks and their extensive customer databases, incumbents can provide FinTechs with fast growth opportunities. By partnering with banks, FinTechs can avoid the time and money-consuming process of obtaining a banking licence. FinTechs often focus only on one customer pain point. If they collaborate with incumbents (such as a universal bank), they can develop a more comprehensive understanding of the clients' situation and the capabilities required to meet the clients' financial needs (Rohner, 2016): things which they could not have done alone. FinTechs too can bring a lot to the incumbents: disruptive technologies that will change the face of banking in the coming years. Partnerships with FinTechs could also allow incumbents to increase their operating efficiency (Rohner, 2016).
- ***Develop consortia with other incumbents.*** In inter-bank ecosystems, financial institutions are working together to be at the forefront of the disruptions of their industry. There are multiple reasons which drive banks to collaborate (Deloitte, 2021): to realise economies of scale to benefit customers, to increase market adoption in products with network effects, to cater to & defend local clients needs, to generate new revenue streams and/or acquire data, to reduce risk by sharing data & assets, and to improve financial & digital inclusion and education. The banking consortia can cover various domains, the most popular being payments and cash, mobile payments, and IT services. Through those collaborations among themselves, incumbents join forces and resources: in doing so, they are in much better position to counterattack the FinTechs.
- ***Develop internally.*** As discussed in the "Acquire FinTech companies" strategy, the range of innovations is so broad that it may be difficult and too costly for an incumbent to pursue in-house development in parallel with many new technologies with little

chance of succeeding. However, depending on the incumbent organisation's specificities and internal skills and competencies, this may be a viable strategy.

- ***The « Do Nothing” scenario.*** Some banks do not yet understand the threats FinTech could represent for them. In some cases, smaller banks also do not have the financial resources to transform themselves, particularly given the high IT costs. They prefer to leave the leadership to the top-tier banks and adopt a fast-follower approach. It remains to be seen if this is a viable strategy!

2.7 Strategies from Tech platforms

“The United States has the GAFA (Google, Apple, Facebook and Amazon), China has the BATX (Baidu, Alibaba, Tencent and Xiaomi). And Europe? We have the GDPR. It's time to have our own technological sovereignty and not depend only on American or Chinese solutions!” (Emmanuel Macron)

We cannot discuss the FinTech sector without paying attention to the strategies followed by the Big Techs (e.g., Google, Apple, Facebook, Amazon) and other Tech platforms (e.g., Netflix, Uber). These companies are increasingly making inroads into financial services and FinTech (Bank for International Settlement, 2021). Recently, the Big Techs carried out a series of initiatives to establish themselves in FinTech (CB Insights, 2020):

- *Google*: Partnership with Axis Bank and Visa for a new credit card.
- *Apple*: Launch of a credit card issued by Goldman Sachs.
- *Facebook*: Plans to launch its own currency Diem (formerly known as Libra) in 2021.
- *Amazon*: Creation of a FinTech lab in Dubai by Amazon Payment Services.

These initiatives are just recent examples of a much broader and global trend. BigTechs are building their success on their existing customer relationships to offer a holistic proposition of products and services. Furthermore, they can extensively count on their vast databases. Customers' databases, rich in private and commercial data, are generated from customers by analysing their interests, needs, wishes and purchases (EY, 2020).

In China, the BATX (Baidu, Alibaba, Tencent, and Xiaomi), i.e., the Chinese Tech giants, already dominate the FinTech market. The mobile apps Ant Financial (formerly known as Alipay belonging to Alibaba) and WeChat Pay from Tencent maintain a duopoly domestically

on the payment services: they have respectively 800 million and 1200 million active users per month! Zhong An, an online insurance company, founded by Alibaba and Tencent, provided services to 413 million users in 2017! The Chinese big FinTech companies have outgrown state-owned banks. Because of the strengths they have developed and accumulated, some of them are under scrutiny by the Chinese government.

In Europe, Tech companies are not yet as active in the financial sector as the BATX is in China. Currently, they appear to be trying to stay away from becoming full financial institutions, preferring to be a *"layer between the financial institutions and customers, giving them access to customer data and the relationships they seek, while all the regulatory burden and potential liabilities remain with the banks and financial institutions"* (Deloitte & Directorate-General for Communications Networks, 2018, p.166). However, in the long term, that situation might change. There is a real risk for banks to become suppliers for platforms, keeping their financial services infrastructure but losing their direct client relationships (Deloitte, 2021).

More generally, at European level there are sovereignty interests in developing local Tech companies, including FinTechs. The EU missed the first digital revolution and is too dependent on foreign tech companies. The challenge for European decision-makers is not to miss the next digital revolution. Therefore, digital sovereignty has become an integral concept in the EU's bid to become a global Tech powerhouse, fighting back against the dominance of large American and Chinese tech companies.

Chapter 3: The FinTech sector in Belgium

This chapter aims to provide an overview of the FinTech ecosystem in Belgium.

We present a brief history of FinTech in Belgium and analyse in more detail the sector (segments, locations, business models...). We review the invested amounts and the profile of the investors. We also discuss the strategies followed by the incumbents. Finally, we explain the implication of the new Belgian recovery plan for FinTechs.

3.1 History of FinTech in Belgium

A strong banking sector, the host of major international institutions and a legacy of financial innovations, have paved the development of financial technology in Belgium. Belgium is a small, open economy with a high level of savings; banks have always represented a significant relative weight in the economy (Vincent, 2012). Following the establishment of the European Common Market and the role of Brussels as a capital city, subsidiaries and branches of foreign banks came to Belgium.

In addition to the main EU institutions (Commission, European Council and Parliament), a series of watchdogs and regulators have set up their offices in Brussels (Single Resolution Boards, European Money Markets Institute) as well as professional interest groups (European Banking Federation, European Fund and Asset Management Association and Invest Europe – The voice of Private Capital). The neutral political status of Belgium has led to the creation of financial collaborations and infrastructural ‘plumbing’ (Norman, 2007) related to interbank communications, payments, post-trade clearing and settlement, collateral management and custodian services (Hendrikse and al, 2020).

In Europe, the Belgian financial sector has always been a front-runner in the field of financial innovation, in particular for payment systems. In 1979, the four major banks created Bancontact and Mistercash. The competitive banking market in Belgium has pushed the financial institutions forward and stimulated them to develop innovative products. Bancontact and MisterCash merged ten years later to become the only electronic payment structure in Belgium to reduce costs. The new entity renamed Banksys has made Belgium one of the world leaders in payment transactions. Later on, Banksys has been acquired

by Atos, headquartered in France. Major market infrastructures, Wordline, SWIFT, Euroclear, MasterCard, BNY Mellon, have established offices and operations in Belgium.

Moreover, Belgium has also served as a test country for a series of innovations that later on were rolled out abroad, e.g., the Proton system (in 1995) or, more recently, Payconiq (both tested first in Belgium before being implemented in the Netherlands).

In 2015, the Eggspore platform was founded by Jurgen Ingels and Wim De Waele, with the support of the four major incumbent banks (ING, KBC, BNP Paribas Fortis, Belfius), Euroclear and Swift. Eggspore, renamed B-hive (after the federal government's support), served as a collaborative platform for FinTech startups. The Belgian government invested several EUR million in B-Hive to make Brussels the centre for companies developing new technologies for the financial sector. Less than three years later, B-Hive stopped its activities, announcing that the platform had reached its objectives. There are no longer any significant government-funded initiatives to accelerate the development of FinTechs in Belgium.

In 2020, Unified Post, the invoice digitisation specialist, has been the first Belgian FinTech to go public on Euronext Brussels. Nowadays, more than 130 FinTech companies exist in Belgium, with a higher concentration in specific segments, such as Payments, Infrastructure and InsurTechs.



Figure 2. Mapping of the Belgian Fintech ecosystem

Fintech Belgium is the only organisation that represents the Fintech sector. They aim to “bring together all financial professionals, startup entrepreneurs and investors who are interested in discovering and discussing disruptive business models and new technology for the financial services industry” (Fintech Belgium, 2021).

3.2 Mapping of FinTech companies in Belgium

After cross-checking different online databases (mainly on Dealroom and LinkedIn), we estimate that there are more than 130 FinTech startups and scale-ups in Belgium, which would represent about 2100 direct jobs.

In this Belgian FinTech universe, 85% of the FinTechs follow a B2B business model, 9% a B2C and 6% a B2B2C business model. Two elements can explain this heavily skewed distribution in favour of B2B models. First, Belgium is not the most attractive market to launch B2C startups for entrepreneurs and investors. The market is small and complex, with different cultures, regions and languages (TechCrunch, 2021). Two, Belgian entrepreneurs are risk-averse, and B2Bs are known to be less risky than B2C solutions (El Dick, 2018).

The three main geographical hubs are located - by order of importance - in Brussels, Antwerpen and Gent. Brussels is the reference FinTech cluster in Belgium: 31% of Belgian FinTechs are based in Brussels. This figure rises well above 50% if we include companies located in the broad Metropolitan area of Brussels, e.g., companies such as Unified Post or Digiteal located in the Provinces of Brabant. In addition to Brussels, Flanders is a popular region for FinTechs, with Ghent and Antwerp as front-runners. To a lesser extent, Leuven is also home to some FinTechs, thanks to its proximity with the KULeuven. Along with Leuven, Mechelen also hosts some FinTechs. Clearly, Wallonia is not performing very well in this sector, with the exception of some companies located in the Walloon Brabant.

Building on the taxonomy presented in the previous chapter, we will give a brief overview of the different FinTech segments in Belgium.

3.2.1 Payment

Among Belgian FinTechs, the payment segment is the most popular. One reason for this success is the historical presence of companies like Ogone, Swift, MasterCard or Isabel. By

developing financial talents, they have created market size and knowledge spillover effects. Another reason is the consumer changing habits: Belgians are used nowadays to make their payments online. In this area, the mobile applications of the Belgian banks, KBC and Belfius, are among the best in Europe.

This segment includes a large number of players in various sub-categories: Money Transfer (ibanfirst), Billing (Twickey), Payment Systems (Loyaltek) and Infrastructure (Ibanity). Among the payment infrastructure segment, the API aggregators allow digital apps to communicate with each other. Since the PSD2 regulation, API aggregators, such as Ibanity, BankingSDK, BanqUP are becoming more and more popular: *“Our growth is exceptional, from 15 to 20% per month, everyone wants to use APIs!”* (Ibanity, Co-Founder). PSD2 offers new opportunities for FinTechs. However, with the dominance of historical players, this sector is certainly not the easiest one for startups. The four largest banks in Belgium operate de facto as an oligopoly, and they do not hesitate to collaborate in interbank ecosystems, especially in the field of payments. In this segment, 28% of FinTechs have been acquired by established companies such as Isabel Group (El Dick, 2018).

3.2.2 Financing and Investment

FinTechs such as Spreads, Beebonds, Ecco Nova, Look&Fin are all offering lending and funding services. These “financing” activities, i.e., crowdfunding, equity crowdfunding, crowdlending, are all growing in Belgium, e.g., Look & Fin has just passed the 100-million-euro mark on its platform (L’Echo, 2021). These companies have also benefited from tax incentives for startup investors or SMEs. An individual who invests in a company on these platforms can benefit from a tax reduction between 25 and 40% of the amount invested. Unlike other segments, 75% of startups in “financing and investment” offer B2C activities in addition to B2B.

3.2.3 InsurTech & Neobank

InsurTech, i.e., the use of technology innovations in the insurance industry, is growing fast. This can be explained by the fact that the insurance sector has lagged behind the banking sector in terms of digitalisation for about ten years (L’Echo, 2020). About ten startups are operating in this segment in Belgium; one is particularly successful: Qover. The company is valued at

more than 120 million euros and has raised 20 million from VCs in April 2021. The InsurTechs can be distinguished by looking at the disruption area: brokers (e.g., Seraphin), insurers (e.g., Qover) or tools used by the incumbents (e.g., WeGroup).

Because of the dominance of traditional banks, there are very few neo-banks in Belgium, but new players are starting to emerge. For example, Rise (formerly known as Upy) will launch in September 2021 a banking app for 10-18 years old.

To be complete, we should also mention NewB, the bank which positions itself as an alternative cooperative value-driven bank and less as a FinTech / Neo-bank. It remains to be seen if its business model will prove to be viable.

3.2.4 Infrastructure & Enabling Technologies

This segment includes a wide range of FinTechs operating in other activities such as IT infrastructure, invoicing, accounting, and expense management. In the Belgian FinTech ecosystem, this segment is popular with several successful startups. For example, Unified Post, a cloud-based platform for SME business services, is one of the European leaders in its field. In 2020, the company raised more than 250 million euros during its IPO. Another promising startup is *Accountable*, which provides financial assistance to self-employed workers. Several international VC's have selected Accountable in the list "*the future of work startups to watch in 2021*" (Sifted, 2021).

3.2.5 RegTech

RegTechs provides technical support to financial institutions to help them comply with the ever-growing regulations. Their main activities include (i) *reporting*, i.e., updates on products, clients, turnover and accounts requests by the regulators and (ii) *client onboarding*, i.e., KYC requirements checks to ensure compliance.

Today, there are only a few Belgian-based RegTech companies. However, this could change in the future, given the presence of several important regulatory institutions and global transaction-based companies like Euroclear or Swift. This could indeed lead to the creation of knowledge spillovers. For example, a former Euroclear employee has created the RegTech b-fine, a reporting platform for the banking industry. B-fine has just received EUR 1 million in

funding from the VC fund Pamica. Among the other RegTechs, we can *mention* finoryx, Harmony or Neterium.

3.2.6 Blockchain & Crypto

Although blockchain and crypto have become buzzwords in the FinTech world, this segment is not significantly developed in Belgium: only 7% of the funds raised in 2019 were for startups dedicated to cryptocurrencies.

Several reasons can explain this situation. One of them is probably the fact that, in general, there seems to be little interest in crypto currencies among the Belgian population (ING, 2021). Moreover, in its regulatory role, the FSMA is also very cautious about crypto currencies. Therefore, Belgium is not really the ideal place to start a business in blockchain or crypto.

Yet, our country has acquired a certain degree of expertise in the field of crypto, notably in academia at the KULeuven and to a lesser extent at UCLouvain. Today, the companies active in this segment are, among others: Keyrock, Venly, SettleMint or NGrave.

3.3 Capital investment

To check the importance of FinTech hubs, a relevant KPI is the strength of the VC funds (Kuzmanova, 2020), i.e., the number of deals, their sizes and the evolution over time. The year 2020 was, despite Covid, a record year for the Belgian FinTech sector: startups and scale-ups have raised more than EUR 368 million in investments, an increase of 490% compared to 2019 (L'Echo, 2020). Contrarily to Belgium, in 2020, global VC investments in FinTech have decreased for the first time in the past six years (McKinsey, 2021). This decline was particularly sharp in the EMEA region (Deloitte, 2021). In Belgium, nearly EUR 890 million have been invested in FinTechs over the last 20 years.

However, this record number should be put into perspective as it includes the Initial Public Offering (IPO) of Unified Post on Euronext Brussels. This IPO represents an exceptional event, the first for a Belgian FinTech company. It corresponds to the injection of funds for more than EUR 250 million, 68% of the investment raised for 2020!

In addition to Unified Post, it is worth mentioning other scale-ups such as SilverFin which raised EUR 26.8 million during its Series C round and iBanFirst which closed its Series D³

³ The Series D is not in the normal VC financing progression as it is raised for financing special situations, such as mergers or acquisitions (Financial Advisory, 2021).

round with EUR 21 millions. The year 2020 was also prolific for the startups Cake and Investsuite; both companies raised EUR 6 million in investments.

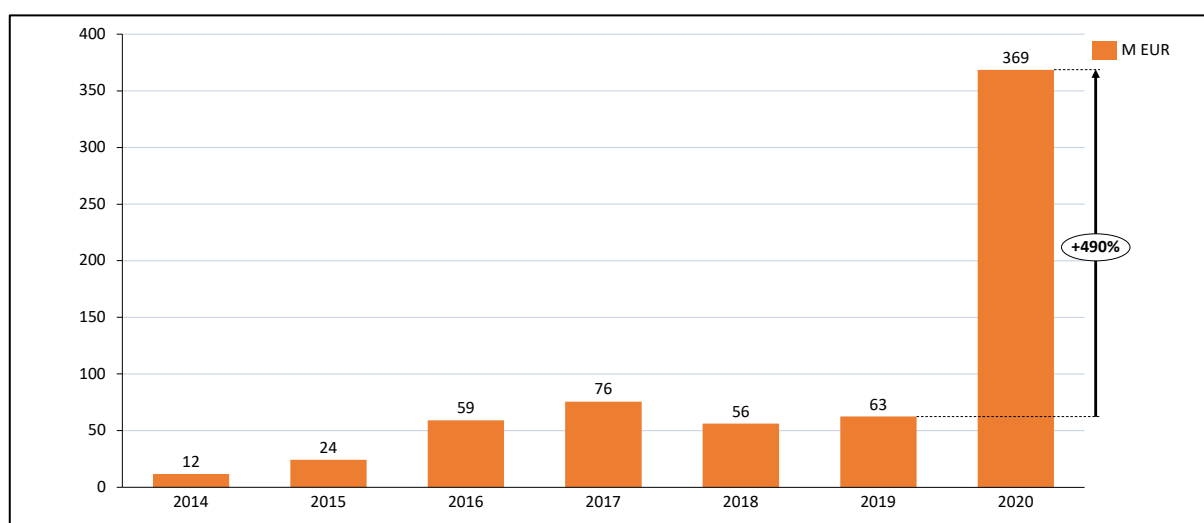


Figure 3. Annual Investments in Belgian FinTech Companies

In its report “*FinTechs in Belgium: 2019*”, Avolta Partners indicated that the Series A and B were gaining ground in addition to Seed capital. Regarding the distribution of raised funds, 39% were Seed, 45% were Series A, and 15% were Series B. According to them, 17% of startups that raised funds in Series A raised funds in Series B within three years.

Concerning the number of new FinTechs in Belgium, the number has decreased: only two were created last year, while there were eleven in 2018 (Dealroom, 2021). The Covid pandemic could have discouraged the launch of new startups, but this number was already down sharply in 2019. Therefore, we can assume that the industry is maturing: fewer new startups but increased fundraising. On an international scale, the appetite for FinTechs has not declined; the European FinTech sector has by far raised more capital than any other industry vertical (e.g., enterprise software, healthcare, marketing) (Atomico, 2020). However, in Belgium, the FinTech sector is only ranked (#4) in terms of new VC investments and startups/scale-ups created, well behind HealthTech (#1), Manufacturing (#2) and HRTech (#3) (Sirris, 2020).

3.4 Investor categories

In Belgium, the VC investment funds in FinTech can be broken down into three main categories: (1) investment funds, (ii) business angels, and (iii) corporate venture capital: (Avolta Partners, 2019):

- **Investment funds (59% of the funds).** The majority of them are “Seed specialists VC”, but some “Vanilla VCs” are also involved in larger fundraising. Investment funds mainly operate on post-seed rounds.
- **Business angels (21% of the funds).** There are very active in the Belgian VC scene, taking significant stakes in both Seed and Series A. The business angel is an investor who decides to support the management team and invest in a company whose project is attractive. On top of investment funds, the business angel makes available to the startups his or her network, experience and skills. As for the overall Belgian startup ecosystem, the FinTech network is concentrated around a few influential figures. Michel Akkermans and Jurgen Ingels, two co-founders of the company Clear2Pay, have created their own VCs (Pamica NV, SmartFin) and are very active in the FinTech ecosystem.
- **Corporate venture capital (18% of the funds),** i.e., the investment of corporate funds directly in external startup companies.

For early-stage funding, startups mostly turn to Belgian investors. However, from series B onwards, they finance themselves primarily from foreign venture capital and private equity funds as there are only a few significant Belgian VC funds. In terms of geographical distribution, 32% of total funding came from France, ahead of Belgium (30%), then the USA (20%), the UK (8%), and the rest of Benelux (6%). Below, readers can find an infographic that lists the funding sources for FinTech startups in Belgium, according to the different funding stages.

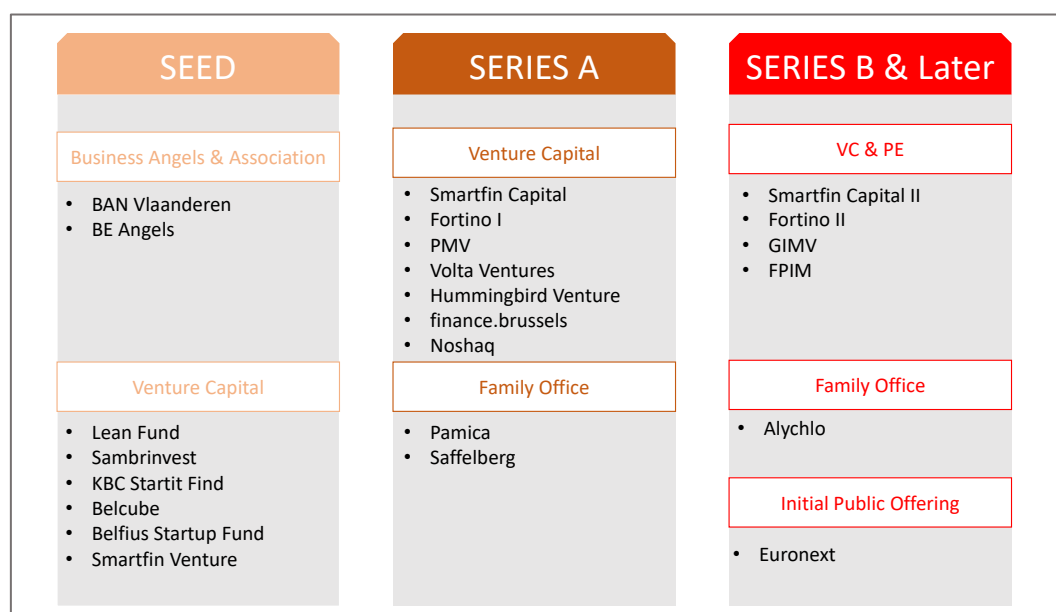


Figure 4. Where to Find Funding for FinTechs in Belgium

3.5 Relationships between FinTechs and incumbents

The Belgian banking model follows a *winner-take-all tendency*. Like in other countries (e.g., France), banks act as *one-stop shops* (PayBelgium, 2021). In addition to their traditional core activities (deposit, loan), they cross-sell a wide range of services from insurance to asset management. This model leads to additional costs for banks but creates intense customer loyalty. Switching from one bank to another one is relatively rare (S&P Global, 2020). The Belgian banking landscape is close to an oligopoly: the four largest banks (BNP Paribas Fortis, KBC Groupe, Belfius Banque and ING Belgium) hold 85% of total banking assets. Their returns on equity are higher than second-tier banks, while their cost/income ratios are lower (S&P Global, 2020). More consolidation in the Belgian banking market is likely to occur due to the heavy investments required in IT and the low margins banks face, given the low interest rate levels. The income of banks comes from two primary sources: net interest income (65%) and fees/commission income (24%). Among those four banks, two have their headquarters abroad: BNP Fortis (France) and ING (Netherlands). Overall, banks and insurance companies play a central role in the Belgian economy. They represent 6.46% of the value-added as a percentage of the total economic output and employ 113.100 people (OECD, 2020).

Looking at the activities of the traditional banks, we can give some perspectives about those which are more likely or not to be disrupted:

- In the Lending segment, the risk of disruption is relatively low. Currently, banks are not challenged by significant new players. There is no sign that the situation may change in the short or medium term. If some FinTechs want to compete with the Belgian banks, they would have to cut prices, which seems unlikely to happen given the high level of regulation and low-interest rate levels (S&P, 2020).
- In the Payment segment, the major banks are making efforts to develop their mobile applications. KBC and Belfius apps are even considered among the best worldwide (SiaPartners, 2020). According to Deloitte's study (EMEA Digital Banking Maturity 2018), 45% of Belgians have a "mobile-first" attitude to banking. More than 80% also prefer smartphone payments, i.e., one of the highest scores in Europe, after the Netherlands and Spain. Thanks to their customer-centric apps, Belgian banks protect themselves against the entry of FinTechs in the payment field. Unlike in other countries, neo-banks like N26 and Revolut are not popular in Belgium. On the Apple Store or the Google Play Platform, traditional bank applications are the most downloaded, well

above neo-banks. Moreover, most Belgian banks do not charge a monthly account maintenance fee, which lowers the attractiveness for neo-banks. Traditional banks have also understood the interest of collaborating so that FinTechs or Big Techs do not disrupt them. They do so, mostly in payment activities (e.g., Payconiq, Batopin).

- In the Savings and Investment Management segment, which still account for 25% of bank revenues in fees and commissions income, the threats could be higher. S&P has estimated that the total revenue at risk of disruption is approximately EUR 3 billion, amounting to about 13% of sector revenue in 2019. Belgian households are among the richest in Europe: they own EUR 1.3 trillion in financial assets (three times the Belgian GDP), and most of these assets are very liquid (bonds, shares or investment funds). Two-thirds of the assets under management come from individuals and one third from institutional investors. In other countries, this distribution is generally reversed. Given the low-interest rates and the relative ease of switching banks, there is a risk that Belgians switch from incumbents to new players.

Yet, despite all the digital disruptions, Belgium remains a country with a high density of bank branches: 41 branches per 100,000. Compared to 2010's levels, the numbers are in sharp decrease (a 43% reduction) but still well above the European average. This does not exempt banks from thinking about the best strategy towards FinTech. Referring to the different strategies described in Section 2.7, we observe the following:

- **Incubators/Accelerators.** In Belgium, the four major banks all have their own accelerator/incubator programmes: Co-Station (BNP), Start it @ KBC, The Studio (Belfius), ING Lab. Some initiatives have been carried out in collaboration with other companies. For example, Belfius has partnered with Accenture to create The Studio, the bank's digital innovation laboratory. Several successful Belgian FinTech startups have emerged from these initiatives, among others: Accountable (ING Labs), b-Fine (Start it @ KBC) or Spreds (Co-Station).
- **Venture Capital.** All major banks in Belgium have a VC fund responsible for investing in startups (e.g., *BNP Paribas Capital Partners*), including FinTechs. The funds of the four major banks are all among the top 100 corporate venture capital in European scale-ups (Omar Mohout, 2021): BNP Paribas (4th), ING (24th), KBC (33th) and Belfius (77th). For example, BNP recently invested in PaxFamilia, a wealth planning platform, for EUR 1.4 million via its VC fund. Through this VC investment, *Pax Familia* allows

BNP to be more flexible and responsive to its clients. For its part, BNP ensures that *Pax Familia* satisfies all the regulatory requirements to operate in this field.

- **Acquisition.** Some Belgian banks have chosen to acquire FinTechs. For example, BNP Paribas acquired Birdee Money Experts, an online savings management solution dedicated to the public. Another example is Isabel Group, a consortium of the major Belgian banks, which decided to acquire Ibanity, a developer-oriented startup specialized in financial services.
- **Partnership.** In Belgium, there are several examples of partnerships between banks and FinTechs. ING has teamed up with Accountable, an AccountTech, to offer the newly self-employed banking and accounting activities in one place. Thanks to the partnerships, any self-employed person who started up less than 18 months ago and opened a business bank account with ING will now automatically benefit from the Accountable services. In order to catch up digitally with other major banks, Argenta has signed a partnership agreement with the FinTech Cake. Argenta's customers can now use Cake's services without having to install the application.
- **Consortia.** Historically, Belgium has a long tradition of interbank collaboration. In the 70s and 80s, the Belgian banking sector was the European leader in electronic payments, thanks to extensive interbank cooperation and the merger of Bancontact and MisterCash. More recently, Belgian banks have coordinated to develop ItsMe, the Belgian reference for mobile identity and digital privacy. Digital partnerships among large banks and infrastructure sharing are much more pronounced in payment services than in most European markets. The best example of consortia remains the Bancontact payment scheme, owned by a consortium of the largest Belgian banks. It creates a domestic competitive advantage for the local merchants, which can benefit from lower transaction fees due to the lower supplier power domestic banks have compared to big international players. In 2019, 1.6 billion transactions were made using the Bancontact payment scheme, representing 81% of all transactions processed in Belgium. Moreover, many shops only accept Bancontact as a means of payment by card because it is cheaper than competing payment schemes: cards with only an international payment circuit are often not accepted. In 2018, Bancontact merged with the mobile payment provider Payconiq and had become a market leader in mobile payments in Belgium. Today, most Belgians use its solutions for everyday operations. The Payconiq application centralizes the user's bank cards, enables customers to use mobile phones for payment online or in stores, and allows users to pay back individuals

quickly. In the Deloitte Interbank Ecosystems in Europe (2021), Belgium is ranked third in the number of active interbank ecosystems, with a total of 14 initiatives in 6 areas:

- Financial Market & Securities: *CEC Belgium, Euroclear*
 - Payment & Cash: *Isabel, Europay, Jofico, Batopin, Bancontact, Swift*
 - Identity: *Belgian Mobile ID (Itsme)*
 - Compliance: *Kube*
 - Value-added services: *Joyn, Zoomit*
 - Mobile Payment: *Payconiq*
 - Other: *Febelfin*
- **Internal Development.** Mobile banking applications attract a lot of attention: banks are working hard to make their applications as customer friendly as possible. In the study conducted by the consultancy firm Sia Partners (2020), Belfius and KBC are ranked second and fourth, respectively, in the overall analysis of 79 applications from ten countries. The Belfius app is only surpassed by Revolut, an online bank and one of the largest FinTechs in the world. Both banks have worked hard on the quality of the user experience. For example, KBC customers can directly buy their train tickets or watch summaries of Jupiler Pro League matches on the app.

					
Headquarters	France	Belgium	Belgium	Netherlands	Belgium
Market Share	23.28%	18.65%	15.70%	14.31%	4.08%
Incubators/ Accelerators	Co-Station	Start it @ KBC	The Studio	ING Labs	n/a
VC	BNP Paribas Fortis Private Equity	KBC Start-it Fund	Belfius Investment Partners	ING Ventures	n/a
Ranking Top 100 CVC in European scaleups	4th	33th	77th	24th	>100th
Acquisitions (e.g.)	Birdee	n/a	n/a	Qustomer	n/a
Partnership (e.g.)	Tink	TreasurUp	The Glue	Payconiq	Cake
Consortia (e.g.)	Bancontact Payconiq	Bancontact Payconiq	Bancontact Payconiq	Bancontact Payconiq	Itsme

Figure 5. Top 5 banks in Belgium and their strategies regarding FinTech

3.6 FinTechs in the Belgian national recovery plan

Under the European Union's recovery and resilience plan, Belgium will receive 5,926 billion EUR for emerging stronger from the Covid pandemic. In total, Belgium is seeking EU funding

for 85 projects. Within the plan, there is no direct mention of FinTechs (Vandenreydt, 2021). However, one of the five thrusts of the recovery plan is “investment in digital” with a budget of EUR 756 million dedicated to digital transformations in three main areas: cybersecurity (~EUR 80 million), digitalization of public services (~ EUR 575 million) and the development of 5G and the fibre-optic network (~EUR 100 million). Regarding cybersecurity, Belgium wants to focus on cyber-crime, firstly to protect itself and secondly to develop a centre of expertise in this area (L’Echo, 2021).

For Belgian FinTechs, this announcement is important as cybersecurity has become a hot topic in financial technology (KPMG, 2019). With the emergence of APIs, Open Banking and their large amount of data, it is crucial for FinTechs and incumbents to know how to protect their data on the cloud or in transit. Moreover, companies offer nowadays highly personalized services and have to comply with KYC guidelines: those are also drivers for more cybersecurity.

Concretely, one of the objectives is to increase the cyber-resilience of Belgian SMEs via awareness campaigns, the provision of free software or grouped purchases, the exchange of experiences, the sharing of best practices, based on a cyber-scan to be carried out by the FPS Economy. This will help companies increase their resilience and strengthen their competitiveness and confidence in digital technology (Cabinet of the Secretary of State for Recovery and Strategic Investments, in charge of Scientific Policy, 2021).

Chapter 4: Comparison between Belgium, Israel, Sweden, and The Netherlands

In all the international FinTech rankings, the top places are dominated by major economic powers such as the United States and China (and their cities). To come up with relevant insights in our cross-country comparison, we have decided to select three countries relatively similar to Belgium in terms of population, economic power, environment and culture: Israel, Sweden and The Netherlands. In addition to being comparable with Belgium, those countries witness distinctive characteristics within the FinTech industry: this will enrich our cross-country comparison. This chapter is structured as follows:

- Short overview of the FinTech sector in Israel, Sweden and The Netherlands, as well as their rankings for the five FinTech indexes we have selected.
- Deep dive on each of the four key attributes building on the framework developed by EY in their report “*UK FinTech – On the cutting edge*” (2015): (i) Talent, (ii) Capital, (iii) Policy and (iv) Demand. Those are considered to be the four key factors for success for FinTech clusters. This framework has strong similarities with other academic models which discuss growth-oriented entrepreneurial ecosystems (Cavallo et al., 2019; Stam, 2015; Stam & Spigel, 2016) (D. Isenberg, 2011). Other institutions and consulting firms (e.g., Deloitte, 2017) have also used a similar model to analyse FinTech hubs.
- SWOT analysis of the FinTech sector in Belgium.

4.1 Ranking of FinTech sectors in Belgium, Israel, Sweden and The Netherlands

Before presenting the rankings, we give a short overview of the FinTech sectors in the three selected countries:

- **Israel.** With a population of around 8.5 million people, Israel is a global leader in innovation and one of the faster-growing hotspots for technology. The FinTech sector is no exception. The country boasts around 500 FinTechs, active in several segments,

including payments, trading & investing, lending and financing, anti-fraud and insurance. Large international banks (e.g., Barclays, Citibank) and leading players in the financial market (Inuit, PayPal, RSA and SunGard) are established in Israel with FinTech innovation labs and startup accelerators. With less than 500,000 people, Tel Aviv is an excellent example of “*small is beautiful when it comes to FinTech*” (Findexable, 2020).

- **The Netherlands.** The country has one of the richest FinTech ecosystems with more than 635 startups, incumbents and technology firms that collaborate to innovate. The Netherlands is the first European country in the *Global FinTech Adoption Index* ranking, with an adoption rate of 73%. Dutch consumers are embracing digitization and innovations in the financial sector. The most important FinTech segments are financial software, payments and lending for SMEs and large companies.
- **Sweden.** The country has developed a favourable ecosystem for FinTech with a strong focus on digital financial services. Cash payments have almost disappeared (~13% of all payments in 2017). The Central Bank is currently developing and testing its digital currency offering, i.e., the e-krona. The country also has a widely used electronic identification, BankID, for online and mobile banking. Government and public institutions offer a wide range of services through digital channels. Sweden has a robust startup ecosystem: many high-tech early adopters and multinationals often choose Stockholm as a test market to develop new products (European Commission, 2018). After the Silicon Valley and Beijing, the Stockholm area hosts the highest number of “unicorns” per capita than any other city! These large companies from different high-tech sectors such as gaming (e.g., Minecraft), ICT (e.g., Skype) or music (e.g., Spotify) create substantial knowledge spillover effects. In 2020, Klarna, a startup specialized in e-commerce payment, has become the largest FinTech unicorn in Europe (CNBC, 2020). In general, the Scandinavian countries are interesting reference cases for Belgium with characteristics such as highly competitive economies and locations where it is easy to do business (Findexable, 2020).

In the table below, we present Belgium and the three other countries’ rankings for the five indexes we introduced earlier in Section 1.2. We observe that Belgium has systematically lower scores. This frustrating and disappointing observation has triggered our interest to write our

master's thesis with the objective to come up with recommendations to improve this unfavourable situation (see Chapter 5).

Sets of Inputs		BE	IL	NL	SE
Findexable (Countries)	- Number of FinTechs and ecosystems developers - Quality factors (e.g., valuation) - Business Environment	26 th	3 rd	8 th	7 th
Findexable (Cities)	- Number of FinTechs and ecosystems developers - Quality factors (e.g., valuation) - Business Environment	64 th	5 th	12 th	14 th
The GFCI FinTech Index	- Instrumental Factors - Online Questionnaires	38 th	10 th	23 rd	31 st
GFHI	- FinTech Industry - FinTech Consumer Experience - FinTech Ecosystem	>40	33 rd	25 th	18 th
Fintech Index StartupGenome	- Performance - Funding - Talent & Experience - Focus - Legacy	>30	19 th	16 th	20 th

Figure 6. Rankings and their methodologies

4.2 Availability of talents

The ability to develop, attract and retain talents is key to the successful development of a cluster globally (Deloitte, 2017a). FinTechs, like any other Tech companies, need talents. This is an area where policymakers can play an important role to fulfil the needs of the sector (Larsson et al., 2018). Successful clusters do not emerge just anywhere; they need fertile soils and typically emerged in places that already had an established and highly regarded knowledge base (Mason & Brown, 2014; Porter, 1998). For FinTech clusters, critical talents come from three main areas:

- **Financial services talents**, i.e., people with the skills required to understand financial markets and regulations but also the pain points and opportunities with existing business models in financial services.
- **Technical talents**, i.e., ICT specialists and engineers to develop software and hardware required to turn ideas into digital solutions.

- ***Entrepreneurial talents***, i.e., people able and motivated to generate new ideas, identify new customer needs, build and grow new businesses models. This third category is less ‘tangible’ than financial and technical talents. However, the availability or not of those entrepreneurial talents can make the difference between successful hubs and less successful ones (Deloitte, 2017a).

In addition to these three categories of talent, there are ***peripheral talent pools*** such as sales and marketing, legal and public affairs. Their presence should not be overlooked because they typically understand the needs of entrepreneurs and they can assist them in avoiding stumbling blocks (Deloitte, 2017a; Mason & Brown, 2014). Some countries are also better at ***attracting and retaining foreign talents***. Finally, when discussing talents, it is also appropriate to consider the pipeline of talents, i.e., ***young people studying at K12 schools, high schools and universities***.

In the rest of this section, we will discuss those different categories of talents, comparing Belgium with the three other countries.

4.2.1 Financial Services Talents

The financial sector in Belgium is strong: 6.5% of Belgian GDP (highest percentage from the four countries in our sample) with employment > 100,000 people. There is no shortage of Financial Services talents in Belgium. On the contrary, Belgium has a good pool of finance-oriented talents even if young finance-oriented university graduates often prefer to work in larger financial centres, such as London, New York, Paris, or Luxembourg. In this respect, Brexit represents missed opportunities regarding the number of jobs attracted to Belgium (Van Houwe, 2021). Companies that have decided to move away from London have first chosen cities like Dublin, Luxembourg, Frankfurt, Paris, Amsterdam before Brussels (EY Financial Services Brexit Tracker, 2021). Very few companies have decided to relocate activities in Brussels: the insurer Lloyd’s of London (~40 jobs) and the payment specialists World Remit, Prepayments Solution, Transferwise (~150 jobs). This is low given that it is estimated that close to 7600 jobs have been relocated. With more ambition, Brussels could have attracted more financial services firms (Delens, 2021).

Brussels remains a second-tier financial centre: in *the Global Financial Centres Index*, the city is ranked 37th, behind Amsterdam (27th) and Stockholm (31th) but ahead of Tel Aviv (41st). Unlike other second-tier financial centres, the main asset of Brussels is the presence of key EU institutions and significant financial infrastructure providers (Swift, Euroclear, MasterCard). Fortunately, from our secondary research, it is worth mentioning that being a top financial centre is an asset but not a guarantee for a thriving FinTech hub. In the different rankings, we observe no direct correlations between the strength of traditional financial centres and the strength of their FinTech hub (Deloitte, 2017b; Findexable, 2019). Financial cities like Tokyo, Zurich, Frankfurt are not considered as major FinTech hubs. This trend was confirmed during our interviews: *“When hiring people, financial skills are a plus, but they are not the determining criteria. We look for people with a more general business background; we train them as much as possible the first weeks, and very quickly they acquire expertise in the business sector”* (FinTech entrepreneur). One interviewee mentioned that, although Belgium has a good pool of FS talents, she believes that we could soon witness a shortage of talents in the field of “FS compliance”.

4.2.2 Technical Talents

Unlike the three other countries, Belgium, with the lowest number of software developers, is struggling to develop its much-needed technical talents. The percentage of STEM (Science, Technology, Engineering and Math) students is 17% in Belgium. The Netherlands does slightly better with 17.5%, but Israel and Sweden are far ahead with 26.5% and 26.6% STEM graduates, respectively. Clearly, Belgium should do more to grow the number of its STEM students.

In three other countries that we have analysed, at least one successful high-tech company makes the rest of the ecosystem shine: Spotify in Sweden, Adyen in the Netherlands, and Waze in Israel. The fact that there is no Belgian high-tech success story is maybe one of the reasons to explain the lack of vocation for STEM and high-tech startups.

The Israeli FinTech industry (and the High-Tech industry in general) gets many of its talents from the army. During their mandatory military service, young people have the chance to develop their knowledge and expertise in the use of advanced technologies (cyber-security, computer vision, big data analytics). Military service, academic education and work experience breed multi-disciplinary technology experts with accumulated experience in fields that are

becoming more and more relevant to FinTech, including real-time analytics, big data, risk management, anti-fraud, and security (Deloitte, 2016a).

In Sweden, the presence of successful unicorn stories (e.g., Spotify, Skype, Mojang) has encouraged a virtuous cycle of attracting Tech talents from all over the world. Stockholm is a hotspot for technology talents, with unique access to high in-demand front-end technology skills from both the international and national workforce. The country has more user interface designers, software engineering management and strategic planning experts than any other European country.

International employees are eager to live and work in the Netherlands, particularly in Amsterdam. As a result, the city has a relatively large international community of software developers. Moreover, talents are attracted by success-stories companies such as Adyen or Mollie. However, for some years, the Netherlands has been experiencing a shortage of employees with enough digital skills.

4.2.3 Entrepreneurial Talents

Without entrepreneurs, the other two types of talents (Financial Services and Technical) have no real impact on FinTech cluster strength (Deloitte, 2017a). Most indicators show that Belgium is lagging in entrepreneurship, and the interviews confirm those indicators. In *the Global Competitiveness Report 2019* (World Economic Forum, 2019), Belgium is ranked 29th for its entrepreneurial culture, far behind the Netherlands (5th), Sweden (3rd) and Israel (1st).

Another negative aspect of Belgium compared to the other three countries is the lack of appetite for international expansion. All the countries in our sample have a small domestic market, but whereas in the Netherlands, Israel and Sweden, entrepreneurs have a global mindset, in Belgium, there is a lack of ambition to go international. *"In Belgium, we do not have this entrepreneurship culture present in other countries; maybe we are not proud enough of ourselves. The best example is the difference with our close neighbours, the Netherlands. It is a bit like the phenomenon of little Belgium vs the Hollandse stoere boeren"* (FinTech entrepreneur).

Another interviewee adds that it is difficult to transition from working for a well-established company to become a self-employed entrepreneur: *"When a senior manager works for a large*

incumbent, that person has a high salary and little incentive to take risks to create a startup. Moreover, it will be much more difficult to find a new job if the startup fails, compared to other large clusters, such as London". In Belgium, the percentage of young graduates who start their own company is extremely low compared to neighbouring countries. Young graduates prefer to work for well-established companies (e.g., management consultants) rather than startups. Compared to the other countries, entrepreneurs in Belgium are not necessarily highly regarded by society at large. In addition, it is not easy for startups to offer attractive salary packages, even if they try to offset this by offering stock options in the company (Van Kerckhoven, 2021).

As for technical talents, the lack of Belgian success-story could also explain the low level of entrepreneurship in Belgium. Studies have demonstrated that successful startups (even just one) can generate a virtuous circle to develop an entire ecosystem (e.g., Skype in Estonia). Highly visible successes help reduce the perception of entrepreneurial barriers and risks and highlights the tangible rewards (J. Isenberg, 2010). Success stories are vital narratives for an entrepreneurial community (Mason & Brown, 2014). There are currently no real Belgian FinTechs making headlines and popular in the collective mind (maybe Odoo could become one IT success story, at least in French-speaking Belgium). Unified Post was very successful in 2020, but its attraction power remains relatively low due to its business model (B2B) and not very exciting back-office activities (factoring). This could change in the coming years, with the emergence of FinTechs such as Qover, iBanFirst or SilverFin.

Unlike Belgium, Israel nicknamed the "startup nation", has a strong entrepreneurial tradition. The country has the highest rate of startups per capita, 1350 people per startup (versus 4739 in Belgium). In the Israelian culture, it is acceptable to create a startup and to fail. Some VC funds even check if project founders, or entrepreneurs have failed earlier in their professional careers (Ben Tovim, 2021). This criterion may seem surprising but statistically speaking, most entrepreneurs experience success on their second or third venture. *"Before, the Jewish mother wanted her son to be a doctor; now, she wants him to be a startup entrepreneur"* (Ben Tovim, 2021).

In Sweden, the country has a long and successful history in high-tech industries. Big success stories (e.g., Spotify, Supercell, Klarna) have made it very acceptable to be an entrepreneur as a profession: those stories have strengthened the positive culture towards entrepreneurship.

To be more precise in our comparisons, we have used the McKinsey's "entrepreneurship funnel" framework. The framework identifies the different steps an individual goes through before creating a business. All data used in the table come from the *Global Entrepreneurship Monitor*. The key takeaway for Belgium is that the percentage of the population interested in entrepreneurship is the lowest (31,9%) to be compared with Israel (37,7%), The Netherlands (43,6%) and Sweden (52,1%). Established business ownership is the lowest in Belgium (3,8%) compared with the other countries (between 4,2% and 7%). Several interviewees suggest that initiating a cultural change starting early in the education system might be the way to go. Of course, this would take time, but the long-term impact could be significant. *"During my business studies, I did not have a real introduction to entrepreneurship; it is necessary to develop this kind of project like the master CPME at UCLouvain".*

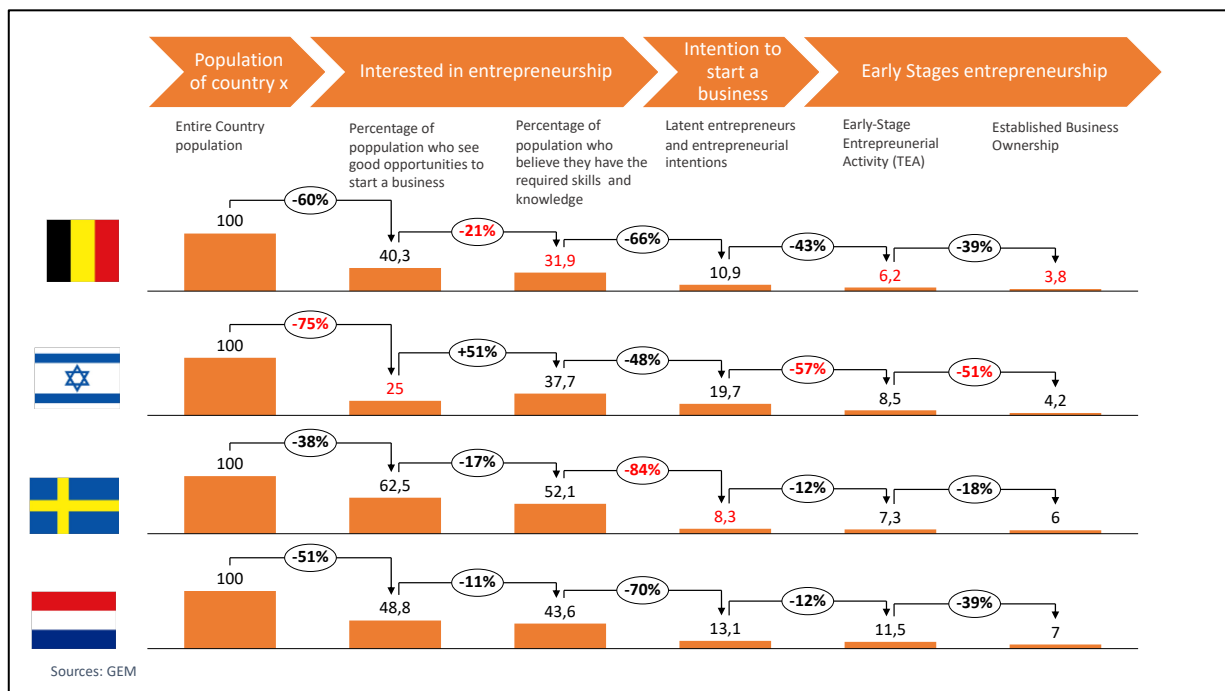


Figure 7. Entrepreneurship Funnel

4.2.4 Digital education

In the 2021 *GFCI Index*, our human capital is ranked ninth worldwide thanks to a multilingual workforce (Belgium is ranked 9th in the *EF English Proficiency Index*) and a relatively good quality education system. The 2018 PISA scores indicate that the K12 schools⁴ in the Vlaamse Gemeenschap are still doing well (although continuously declining over the last 15 years), and

⁴ K12 schools encompass primary and secondary schools

the K12 schools in the Fédération Wallonie-Bruxelles (FWB) have much lower results than all the neighbouring countries except the GD of Luxembourg. The *Pacte pour un Enseignement d'Excellence*, launched in 2017 with the support of all the key stakeholders in FWB, has the ambition to catch up with the PISA scores of the neighbouring countries.

In the context of our master's thesis, we have decided to deep dive into the use of ICT tools in the K12 schools. Indeed, we believe this is particularly relevant when discussing the talent pipeline in the context of the fourth industrial revolution and the multiplication of digital jobs, including jobs in the FinTech sector. Many countries now regard mastering digital skills and concepts of ICT as part of their core curriculum, alongside reading, writing and numeracy. The Netherlands, for example, has put in place an ambitious agenda in its K12 schools to foster the use of new technologies. The programme '*Pass IT on!*' (*Geef IT Door*) allows secondary schools to invite IT professionals to give a guest lecture. The government-funded centre of expertise *Mediawijzer.net* provides links to over 1 000 media literacy organisations to organise public campaigns, conduct research, and offer educational services. In the new national curriculum under preparation, four domains of digital literacy are addressed: information skills, media literacy, basic ICT skills and computational thinking.

In Belgium, the three governments in charge of education (i.e., Vlaamse Gemeenschap, Fédération Wallonie Bruxelles and Deutschsprachige Gemeinschaft) have put in place various initiatives to introduce and develop digital skills. However, the indicators do not yet show substantial improvements in this crucial area (EU, 2020). In the *World Economic Forum 2019* ranking, Belgium is 37th in terms of digital skills among the population. Overall, 17% of young people between 16 and 19 years consider they have low digital skills (EU average 15%), and Belgian teachers feel less well prepared to use ICT for teaching than the EU average. According to the European Commission (2020), infrastructure and equipment in Belgian schools are slightly better than the EU average, but there are substantial regional differences (European Commission, 2020). Secondary schools in the Brussels Capital Region have the lowest rate of equipment (13.4 devices/100 students in 2017), followed by Wallonia (16.5), Flanders (41). Schools in FWB have the lowest access to digital technology and internet among European countries. The following exhibit shows that the FWB teachers score the lowest among all the European countries when it comes to letting students use ICT for projects or classwork!

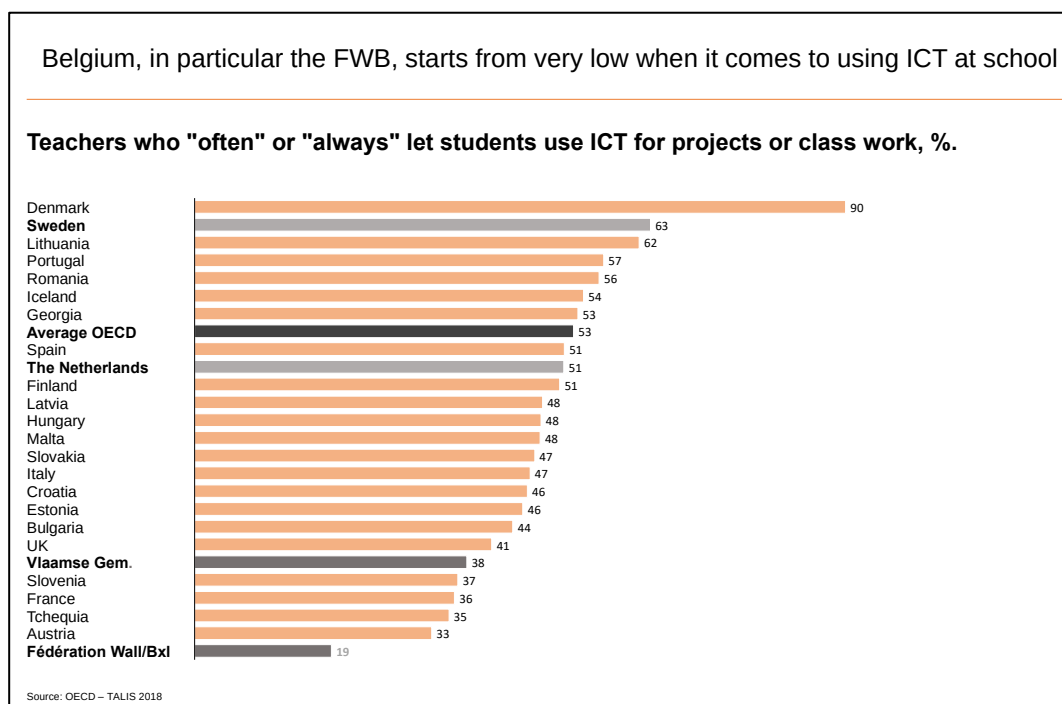


Figure 8. The use of ICT at school

4.2.5 Attraction and Retention of Foreign Talents

In high-tech industries, the attraction and retention of a skilled foreign workforce are key: importing talent from abroad is just as important as fostering local talents (Deloitte, 2017a). In the US, for example, 55% of America's billion-dollar startups have immigrant founders (Anderson, 2018). As the demand for this skillset overwhelmingly outweighs the supply, there is a real "war for Tech talents". In order to attract and retain talented workers, some countries adopt more favourable migration policies.

In the OECD Indicators of Talent Attractiveness, Belgium is ranked 24th for entrepreneurs, The Netherlands 12th, Sweden 4th and Israel 31st. The position is slightly better for highly educated workers: Belgium is ranked 22nd, while the Netherlands is 8th, Sweden 3rd and Israel 31st.

Belgium is an attractive country for highly skilled third-country nationals thanks to the speed, low cost, and accessible conditions for obtaining a work permit (Deloitte, 2016b). To evaluate the application of a highly skilled employee, it takes about two weeks in Belgium, well below the European average (e.g., three weeks for the Netherlands or Sweden). Work permits for

highly qualified employees are issued for one year and can be extended annually. Belgium also offers an investor visa in exchange for investing in a Belgian company and creating jobs.

However, unlike Israel or the Netherlands, there are no tailor-made programs for startups or Tech entrepreneurs. To attract innovative foreign entrepreneurs, Israel has launched the programme “Innovation Visas for foreign entrepreneurs”. Entrepreneurs are allowed to stay in the country for 24 months, and they receive support from professionals to develop their innovative ideas. If their projects turn into real companies, experts can obtain an extension of their visas for five years. The Dutch startup visa is a residence permit for people from outside the European Union (EU) looking to start an innovative business. The startup visa is valid for a maximum of one year, and an experienced facilitator must supervise foreign entrepreneurs.

Beyond conditions for migration, many other factors play a role. For example, the quality of life in Belgium (26th position in Numbeo’s quality of life ranking) is relatively low compared to the Netherlands (3rd) and Sweden (13th). However, Belgium has some relevant advantages, particularly for housing, which remains cheaper than in Amsterdam and Stockholm: both cities face housing shortages and high renting costs.

4.3 Availability of capital

In order to develop and implement great ideas, talent needs access to seed- and scale-up capital. Therefore, capital, whether it comes from private investors, governments or corporates, is a key attribute to develop FinTech activity.

4.3.1 Venture Capital

From the interviews, it appears that Belgian entrepreneurs have difficulties raising funds, especially for later funding rounds (i.e., scale-up funds). For some, there would be a shortage of VC compared to other countries (cf. the “deep pocket” requirement of Duruflé). It goes in line with the *Global Competitiveness Report* of the WEF. Based on respondents’ answers, the WEF ranked Belgium 31st regarding VC capital availability⁵, while Israel is 2nd, Sweden 15th and the Netherlands 14th. These views are partly confirmed by other secondary data’s: there is proportionally less VC investment spending in Belgium. In 2018, our country spent 0.033% of

⁵ The ranking is based on the answers to a scale question: “In your country, how easy is it for startup entrepreneurs with innovative but risky projects to obtain equity funding?” {1= extremely difficult; 7=extremely easy}

GDP on VC capital investment, eleven times less than Israel (0.378%). As for the distinction between VC Seed and VC Later Stage, the split is relatively equal, respectively 0.015% and 0.018%. Among the four countries analysed, Belgium is the country that spends the lowest share of its GDP on VC Seed and VC Later-stage venture (OECD, 2018b).

However, these lower VC investments need to be put into perspective, especially if used to justify the lower entrepreneurial activity in Belgium. The relation between VC and entrepreneurship can go either way, as one interviewee demonstrated by comparing the current funding of Belgian startups to a “chicken-and-egg problem”: *“Is it the VCs that generate successful startups or is it the successful startups that attract VCs?”*. The Global Entrepreneurship Monitor gave Belgium a score of 3.17⁶ for the “Financing for entrepreneur” indicator (the indicator being on a scale of 1= highly insufficient to 5= Highly Sufficient). The index looks at the availability of financial resources (equity and debt) for small and medium enterprises (SMEs) (including grants and subsidies). The other countries scores are 3.17 for Israel, 3.12 for Sweden and 3.61 for the Netherlands. Based on experts’ work, this indicator would put Belgium in the sample average regarding financing. The feeling of funding shortage can be viewed as a ubiquitous phenomenon, more related to the generic process of entrepreneurship rather than a real lack in the ecosystem (Deloitte, 2016). Overall, there is a general tendency to overstate the importance of VC in entrepreneurial ecosystems (Mason & Brown, 2014).

Moreover, other interviewees pointed out that this perceived lack of VC is not necessarily an obstacle: *“A good idea will always find funding”*. They insist that Belgian FinTechs must have the international dimension in their DNA from the start because the Belgian market is too tiny for sustainable growth. Having a foreign VC is, therefore, an excellent incentive to go international and open new opportunities in terms of networking: *“Capital markets are ultra-international. Thanks to my foreign VC, I can quickly get in touch now with successful entrepreneurs in the Silicon Valley”*. For others, if work is to be done on scale-up funding, it must not be done at the Belgian level, but rather at the European level: *“Cross-border collaborations between European VCs must be improved, the market is still too fragmented”*.

⁶ Belgium's score is for the year 2015, while the others are for the year 2020. We preferred to take the latest available results for each country, as the position of the countries with this indicator is the same in 2015

Apart from the size of the funding, some interviewees criticized the attitude of some Belgian VCs: *“They do not have the right reflexes, they do not understand entrepreneurs, and they want a big share of the startup directly”*. These remarks refer to two key requirements for scale-up investors from Duruflé: “smart money” and “patient money”.

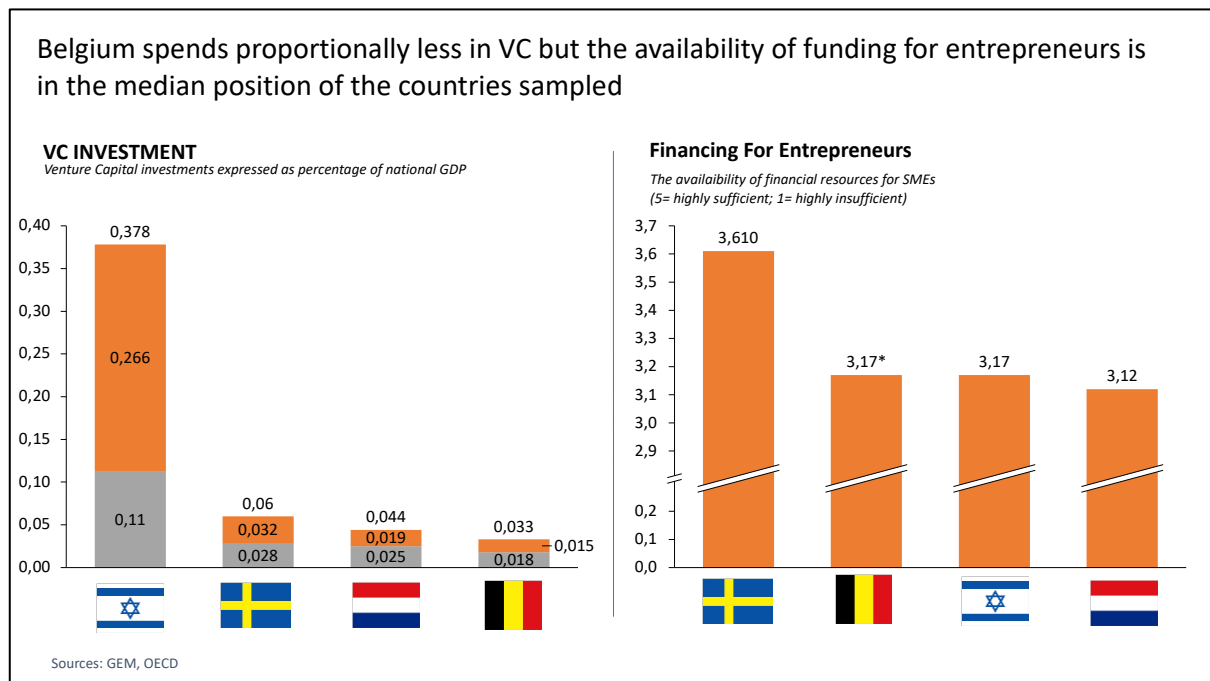


Figure 9. VC Fundings

4.3.2 Government funding and tax shelters

For most of our interviewees, Belgian governments spend too much on subsidies for the very early stages of financing: *“Everyone knows that it is not good for the health of a business to have easy money from a government. In Belgium, some entrepreneurs spend more time looking for subsidies than working on their core activities”*. Some authors are also sceptical regarding grants and subsidies as they may distort entrepreneurial behaviour (Mason & Brown, 2014). According to the interviewees, it would be better to reduce subsidies/grants and redirect the amounts saved to lower taxation or financing at a later stage.

Belgian public authorities have three main ways to provide investment funds for startups and scale-ups:

- Investing directly in startups via government VCs or development banks.
- Investing with other entities into a VC fund.
- Investing in a fund of funds that will invest in VCs.

The SFPI-FPIM uses all three approaches and focuses its funding on two main FinTech segments: InsurTech and Cybersecurity (Feys, 2021). Recently, the organisation acquired a 20% stake in the company *Itsme* directly with a contribution of EUR 14.5 million. The SFPI-FPIM also invests in external VC funds (e.g., Smartfin Venture, Fortino Capital Partners) and in the Belgian Growth Fund (BGF) (fund of funds). The BGF was launched in 2019 to expand the Belgian VC sector. The EUR 200 million come from three large banks, i.e., BNP Paribas Fortis, KBC and Belfius, two insurance companies Ethias and Ageas, and the public investment companies PMV and SFPI-FPIM (De Tijd, 2019). BGF's portfolio includes two VC funds very active in FinTechs in Belgium: Fortino Capital II Growth NV and Smartfin Capital II Comm. V (the VC fund of Jurgen Ingels).

In addition to SFPI-FPIM, other regional entities do equity co-investing, the most significant ones being: ParticipatieMaatschappij Vlaanderen (PMV), Société Régionale d'Investissement de Wallonie (SRIW) and Brussels Regional Investment Company (finance&invest.brussels).

Among the countries in our sample, two also have a fund of funds: the Netherlands (RVO) and Sweden (*Saminvest*). The RVO Seed Capital Facility provides interest-free loans to investment funds. This fund of funds aims to invest only in young Dutch startups and is worth EUR 20 million (Dealroom, 2021). Saminvest AB is a state-owned funds-of-funds that invests together with private capital in VC funds for a total amount of EUR 410 million (Dealroom, 2021).

Within the EU, it is also worth mentioning the European Investment Bank (EIB) role in supporting growing companies through the European Investment Fund (EIF). In Belgium, the EIF and SFPI-FPIM have signed an agreement under the EIF-NPI Fund Underwriting Programme. As part of the programme, EIF will transfer part of its investments into VC funds to SFPI-FPIM when these funds invest onward into Belgian-based growth-focused companies, matching SFPI-FPIM's investment strategy for supporting growth finance across Belgium (EIF, 2019).

Public authorities can also encourage investment through attractive tax schemes. This approach is perhaps more appropriate than funding, i.e., it is not up to the government to decide which startup or scale-up to fund. However, there exists a risk of abuse: some crooked investors could take advantage of the system (Duruflé et al., 2016). In order to encourage investments into

startups, the Belgian government has created the Tax Shelter mechanism in 2015, which grants tax reductions for individuals who invest in startups (up to 25%, 30% or 45% of the amount of their investment, depending on the size of the company). In 2017, the mechanism was extended to crowdfunding platforms and then to scale-ups. The Tax Shelter can benefit the investor up to EUR 100,000 and EUR 250,000 for startups and scale-ups. Most interviewees (experts and entrepreneurs) welcome the initiative but recommend increasing the threshold for the maximum amount.

4.4 Government policies, rules, and regulations

Favourable policies and regulations are essential to improve the attractiveness of a cluster (Kuzmanova, 2020). Some cities (e.g., London or Singapore) have made extensive use of policies and regulations to become global FinTech hubs. Overall, regulatory authorities have to find the right balance between encouraging innovations, protecting consumers and ensuring the system's stability. In addition, EU countries have to respect the treaties and directives of the European Union, which can put them sometimes in a less advantageous position compared to other non-EU countries.

4.4.1 Financial Supervisory Architecture

There are two main regulatory authorities in Belgium: the National Bank of Belgium (NBB) and the Financial Services and Markets Authority (FSMA). The NBB is responsible for the macro-and micro-prudential supervisions of the financial institutions, in particular the financial soundness of institutions (solvency, liquidity and profitability). The FSMA is responsible for the supervision of the financial markets and the control of the financial information provided by companies.

There is no FinTech-specific regulatory regime in Belgium; the business model of a startup determines its regulatory regime (e.g., credit institution, stock exchange companies, financial management company). When it comes to FinTech monitoring, the FSMA is responsible for the Lending and Crowdfunding platforms as well as the Investment and InsurTech activities, while the NBB takes care of the Payment segment. Although FinTech companies operate in the financial sector, they do not all require a banking or insurance license from the regulator. In fact, many FinTechs, given the services they provide (e.g., software development, data

analyses), do not need a license. In addition, regulators are primarily interested in companies that provide services to retail customers (i.e., the B2C segment), whereas the vast majority of Belgian FinTechs operate in the B2B segment (Majois, 2021). With PSD2, there has been a significant increase in startups offering services through APIs. Instead of applying for a license, some of those FinTechs decide to work with licensed third parties (like API aggregator).

As in Belgium, the Dutch financial authorities operate in a twin-peak agencies system with the DNB and the AFM. Those agencies are responsible for the prudential oversight and business conduct of all the financial institutions. In Israel, financial regulations are organized by sector, whereas in Sweden, there is only one government agency responsible for financial regulation: *Finansinspektionen* (Bank for International Settlements, 2018).

4.4.2 Relationships with regulatory authorities

During our interviews, most FinTech entrepreneurs acknowledged the positive evolution of the Belgian regulatory authorities, which, according to them, are more open to help FinTechs than a few years ago. For new FinTechs, establishing first contacts with the regulatory authorities remains complicated. There are also some complaints about the lack of feedback when the regulators reject FinTech proposals. This statement is confirmed by the regulatory authorities themselves (here the FSMA): *“It is just not our role to provide additional information to FinTechs. They need to go to companies that offer support services to set up a project, like law firms”* (Majois, 2021). In general, interviewees would welcome more flexibility from the regulator, and some also deplore the passivity of the NBB and FSMA when it comes to encouraging financial innovations. The Financial Conduct Authority (FCA), i.e., the UK regulator, is often mentioned as a source of inspiration: some interviewees even recommend expanding the mandates of the NBB/FSMA to include the promotion of innovation in the financial sector.

From our research, it appears that these complaints are not specific to Belgium. Sweden and the Netherlands are also facing the same challenges. Although Israel has a relatively supportive regulatory environment, financial institutions are subject to a rather complicated regulation structure which can delay some innovative FinTech projects.

4.4.3 FinTech contact point and regulatory sandbox

Unlike many other countries, Belgium does not have a regulatory sandbox for FinTechs, nor are there, to our knowledge, plans to introduce a sandbox in the near future. Nevertheless, FinTechs have been identified as an essential supervisory point of attention by the NBB and the FSMA. For that reason, they have jointly set up a single Contact Point dedicated to FinTechs. The first Contact Point was established in 2016 by the FSMA and then evolved in April 2017 into a joint portal with the NBB (Baker McKenzie, 2020). FinTech entrepreneurs are relatively satisfied with the FinTech Contact Point and, more broadly, with the attitude of regulatory authorities: *“In our interactions with them, the regulatory authorities have been helpful, they try to do their best”*. The FinTech contact point enables cross-sectoral issues to be more efficiently monitored, and it facilitates the effective monitoring of the regulatory perimeter (ESMA, 2018).

Regarding the need to implement regulatory sandboxes, opinions are more mixed. Some people claim that Belgium should have one like in other leading FinTech clusters (e.g., Singapore and the UK). Other FinTech stakeholders are more sceptical about their relevance, insisting that there is no evidence that sandboxes are truly effective. In addition, some entrepreneurs question the role of the regulator as a promoter of innovation *“Is it really the role of the FinTech regulator to attract FinTechs? I do not think so; their role is primarily to protect the consumer and to ensure financial stability !”*. Finally, one interviewee pointed out that the Belgian regulatory authorities cannot do everything they want: they have *“to respect the strict constraints of the EU”*.

In the Netherlands, the supervisory authorities, i.e., AFM (conduct) and DNB (prudential), have established an Innovation Hub and a joint regulatory sandbox. The Innovation Hub is similar to the Belgian FinTech Contact Point, i.e., a joint initiative between two agencies to support all queries from FinTechs. About the regulatory sandbox, the mechanism is open *“to all innovations that contribute positively to a stable financial sector, efficiently operating financial markets and sustainable financial well-being of consumers and investors”* (AFM, 2021). With the regulatory sandbox, Dutch supervisors focus on the real purpose of policies, rules and regulations when assessing innovative solutions. Unlike other countries, the Dutch authorities interpret the regulations generously but still apply them through the sandbox. The sandbox’s scope is not limited to specific sectors, but the Dutch regulator requires the

applicants to demonstrate that: (i) the innovative solution goes in line with at least one of the objectives of the financial supervisory laws: solidity/stability of FS firms and systems, clear and transparent relationship between operators and careful treatment of customers, (ii) the proposed innovative solution faces an unnecessary legal barrier which cannot be overcome, and (iii) the applicant has put in place the appropriate corporate processes to ensure the viability of the firm, and that protect the interests of its customers and other stakeholders.

In 2017, the Israeli regulator announced the preparation of regulatory sandboxes to lower the barriers to entry in the financial sector but, it took more than four years to set up these sandboxes (Ben Tovim, 2021). A new law will soon enable FinTech companies to operate in a ‘special purpose’ environment to test and implement innovative FinTech developments (Plato-Shinar, 2021).

At the request of the Swedish government, the Swedish Financial Supervisory Authority has studied the appropriateness of establishing a regulatory sandbox and concluded that it was not needed. *Innovation is strong in Sweden, and FA assesses no real negative effects from deciding at this point not to establish a regulatory sandbox. This means there is also no need at this point to consider any regulatory changes* (Finansinspektionen, 2017). The Swedish case highlights that regulatory sandbox is not a prerequisite to developing a thriving FinTech cluster. Similarly, other countries hosting important financial centres have decided not to introduce such regulatory sandboxes, including the US, Germany, and Luxembourg (European Parliament, 2021).

4.4.4 Open Banking and PSD2

For FinTechs, Open Banking is a “sleeping giant”: digital technologies offer vast opportunities in terms of new solutions, business creation and employment (Smit, 2020). Although the first Open Banking initiatives were launched in the UK, the EU has become the real cradle of Open Banking with its Payments Services Directive 2 (PSD2) directive (Deloitte; 2020), inspiring many other non-EU countries.

The EU Directive 2015/2366 of 25 November 2015 (“PSD2”) has been transposed in Belgian Law on 11 March 2018 (“PSD2 law”). As “gold-plating”⁷ was not allowed by the EU directive, the Belgian government did not have much leeway to transpose the EU directive. This PSD2 law addresses different items such as (i) status and supervision of payment institutions and electronic money institutions, (ii) access to the activity of payment service provider and to the activity of issuing electronic money, and (iii) access to payment systems. The new law replaces the Law of 21 December 2009 on the status of payment institutions, access to the activity of payment service providers and access to payment systems (“PSD1 Act”). The PSD2 law introduces two new payment services compared to PSD1: payment initiation and account information. Another important piece of legislation in relation to PSD2 is the Regulated Technical Standards (RTS) 2018/389 of 27 November 2017 on Strong Customer Authentication (SCA), and Common and Secure Communications (CSC) adopted by the European Banking Authority. These RTS contains the concrete rules regarding the opening of banking infrastructure. *“Most of the time, the RTS and other European guidelines have been directly copy-pasted into Belgian laws and regulations, which is good news for international players as they are not surprised when they start operating in Belgium”* (Joan Carette, 2021).

The first PSD2 licenses were issued in February 2019 for *Accountable*, *33Reasons* and *Cake*. Most of our interviewees were very satisfied with the principles and objectives of PSD2; some players would even like the directive to go further: *“Today, in our digital world, everything is structured around APIs. As InsurTech, we would appreciate if PSD2 could be extended to other FinTech sectors and not only payment, maybe a PSD3?”*. The deadline for implementing the RTS applying to PSD2 access interfaces was 14 September 2019. Still, Belgium is facing compliance issues with the PSD2. Some major incumbent banks are not yet playing truly the game, creating problems for FinTechs using bank APIs through the PSD2 directive, preventing these FinTechs from providing proper services to Belgian (Carroll, 2021). In February 2021, the European Banking Authority (EBA) issued an opinion to national regulators to finalise the implementation of Open Banking in member states. In case of non-compliance to regulations, the EBA calls for sanctions: *“the EBA expects these NCAs to take more effective supervisory measures to ensure compliance with the applicable law, including but not limited to the*

⁷ The term “gold-plating” refers to the practice of national bodies exceeding the terms of EU directives when implementing them into national law.

revocation of the exemptions from the contingency mechanism⁸ under Article 33(6) of the RTS on SCA & CSC already granted to ASPSPs and/or the imposition of fines”(European Banking Authority, 2021, p.2).

In Belgium, there are 26 banks and account providers, 14 third-party providers, 69 API banks and 19 API aggregators, which revolves around Open Banking. These figures are comparable to the situation in The Netherlands or Sweden. Israel is lagging behind the EU but is trying to catch up with an Open Banking reform project (The Jerusalem Post, 2021).

4.4.5 Public Private Accelerator programs

To develop a thriving FinTech sector, public authorities can contribute to developing incubators, accelerator programs and innovations labs, including through public-private initiatives. Indeed, successful hubs have recognised the importance of such programs to support FinTech entrepreneurs through mentoring, funding, training, networking and events (conferences, workshops, exhibitions). Incumbents can also be invited to participate in those programs but under strict conditions.

For a short period (2016-2019), Belgium had an ambitious government-backed platform, *B-Hive*, whose objective was « *to put Brussels on the map as the smart gateway to Europe and leverage on the digital transformation opportunities for the financial services industry* » (B-Hive, 2018). Within its structure, B-hive had partnerships with the four major banks in Belgium, a few consulting and law firms (i.a., McKinsey, Baker McKenzie), VC fund (Smartfin Capital) and other companies (i.a, Allianz, Oracle). During that period, the organisation opens offices in leading FinTech cities (London, New York and Tel-Aviv). B-Hive also signed memorandums of understanding (MoU) with other FinTech hubs, such as the UK, Luxembourg, and the Netherlands (Hendrikse et al., 2020). Nearly all our interviewees hailed B-Hive as an ambitious and innovative initiative, quite unique in Belgium. However, some people thought B-Hive had too much of a *Tech4Fin* vision, oriented mainly to complement the offering of the large incumbent banks. Others pointed out that it was almost “mission impossible” to get such a diverse set of actors with conflicting interests to work

⁸ If the dedicated API does not work properly, banks are required to offer a fallback solution, also known as the “contingency mechanism”. This safety net is very demanding for banks, providing third parties with “direct access” to financial data, using the same online or mobile interface that customers use.

together under the B-Hive's banner. The incumbents already had their own FinTech accelerators and were very careful in their interactions with the FinTechs in B-Hive. They naturally wanted to keep their dominant positions and avoid being disrupted by new players at all costs (Hendrikse et al., 2020). *“In this kind of project, attention must be paid to the position of the incumbents. In the case of B-Hive, the project was cannibalised from the inside by the banks, which refused to reinject capital”* (one interviewee).

Today, there is one main organisation representing the Belgian FinTech sector, FinTech Belgium. Created in 2015, it is the first and most significant community of “*FinTechers*” in Belgium, gathering financial professionals, startup entrepreneurs, and investors interested in discovering and discussing disruptive business models and new technology for the financial services industry (FinTech Belgium, 2021). FinTech Belgium has three primary missions: (i) to be a platform for dialogue with regulators and other parties, (ii) to actively and tangibly promote the FinTech sector in Belgium and Belgian FinTechs abroad and, (iii) to share the experience within and outside the community. Regarding FinTech Belgium, the interviewees' opinions were mixed. On the one hand, interviewees praised their goodwill and efforts for creating a FinTech community despite the financial constraints. The organisation is a private project; they do not receive subsidies from public authorities and are financed solely through the participation of their members. On the other hand, some had less positive opinions: *“FinTech Belgium is a nice project, but it remains a representative non-profit association with limited impact, with all due respect, they do not have the means to drive the change and to strengthen the attractiveness of the Belgian FinTech ecosystem significantly”*.

4.5 Demand for FinTech services

Overall, Belgium regularly shows up at the top of global digital technology adoption rankings, comparing favourably with most European peers. Our country ranks 9th in the Digital Economy and Society Index (DESI) 2020, which covers the 28 EU Member States, behind Sweden (2nd) and the Netherlands (4th). Nevertheless, the Digital Economy and Society Index shows for Belgium some mixed results in several digital fields. For example, regarding connectivity, our country performs well in the deployment of fast and high-capacity fixed networks but lags behind in preparing for 5G (we score 0% on the 5G readiness indicator).

Like in many other industries, demand drives supply in the FinTech field. For the adoption of FinTech services, demand can come from five primary sources:

- Consumer (B2C)
- Corporate (B2B)
- Financial Services incumbents
- Public services
- Financial supervisors.

4.5.1 Consumer (B2C)

From a digital use perspective, Belgium belongs to the top tier countries but below the Northern European countries (i.e., Scandinavia and The Netherlands). According to the OECD, 90% of the Belgian population use the internet: this percentage is slightly behind Sweden (94%) and the Netherlands (93%) but ahead of Israel (87%). The smartphone penetration rate is 70% in Belgium, while it is 71% in the Netherlands and 74% in Sweden.

Our interviewees mentioned that the Belgian consumer is tech-savvy and that the slight delay with Northern European countries is not a critical weakness in the FinTech race. However, within Belgium, they notice the digital divide between Flanders and Wallonia: Flanders is well-advanced, whereas Wallonia lags with percentages more similar to other Southern European countries.

Regarding FinTech consumer preferences, the adoption rate is barely 42% in Belgium, while it is 64% for Sweden or 73% for Netherlands (EY, 2019)⁹. Yet, this ratio has strongly increased over the years: the adoption rate was only 13% in 2017. The use of FinTech services is relatively broad and diversified. In its *FinTech Adoption Index*, EY (2019) estimated the following percentages of the Belgian population using FinTech services: money transfer (68%), insurance (17%), savings and investments (17%), financial planning (13%) and borrowing (10%). A recent survey from CBC Bank shows that online banking is widely adopted in the country: it is the second-most common activity online (65%), after reading and writing emails (76%), but before social media activities (62%). Nevertheless, despite being a tech-savvy and frequent digital banking user, the average Belgian customer still prefers going

⁹ Israel is not included within the sample of countries listed in the EY Global Adoption Index

to physical branches for more “important” services. Although they are keen on digital banking, they remain very loyal to their traditional banks and insurers. In that context and also to reduce the costs associated with their physical branches, Belgian banks have actively supported the development of their mobile and online channels through the regular addition of new functionalities.

4.5.2 Corporate (B2B)

From our research, it appears that there are no particular indicators that measure the propensity of companies to use FinTech solutions (as it is the case for Consumer demand). Instead, the factor that can be measured is the use of digital by SMEs. In this field, Belgium performs well and is above the EU average. In the Digital Economy and Society Index 2020, Belgium ranks 3rd for the integration of digital technologies; the Netherlands ranks 4th and Sweden 6th. In terms of electronic information exchange, Belgium continues to be the best performing EU Member State. This attraction to digital and indirectly to FinTech by entrepreneurs was confirmed in the interviews: *“At this level, we are not far from the Nordics. Belgian entrepreneurs are keen on new tech solutions for accounting, invoicing and other day-to-day activities”*. Another interviewee adds: *“If we look at the most promising FinTechs today for Belgium, they are almost all in B2B, especially in supporting SMEs”*.

4.5.3 Financial Services Incumbents

Incumbent banks in Belgium have understood the value of working together to retain market share, reduce costs, and avoid disruption. There is a high degree of collaboration between banks in Belgium. In total, our country has 14 interbank collaborations, the Netherlands 11 and Sweden 6. Among large banks in Belgium, digital partnerships and infrastructure sharing are much more pronounced in payment services than in most European markets, except for the Northern European countries.

As already explained in Chapter 3, the Belgian banking landscape is dominated by an oligopoly of four banks, which control 85% of the market. This oligopolistic situation is not unique to Belgium. In the Netherlands, the five big banks have a market share of 85%, while in Israel, the five largest incumbents control 90% of the total banking assets. In Sweden, the four largest banks still account for 70% of the market.

The main difference between Belgium and the three other countries is that two of the major incumbents in Belgium have now their headquarters abroad: BNP in France and ING in the Netherlands. In the literature, several authors highlight that companies with local decision-making centres are more effective in stimulating local FinTech ecosystems than companies that are just subsidiaries of large international groups: some major shareholders are likely to be local, there will be a significant number of senior management jobs, and the business is likely to be embedded, with a strong commitment to the local area (Mason, 2014). In our analysis, we could not establish that BNP and ING were significantly less involved in the Belgian FinTech ecosystem than KBC or Belfius. On the contrary, both BNP and ING have recently invested or partnered with Belgian FinTechs. For example, a few years ago, ING has signed a partnership with Smartfin, Jurgen Ingels' VC and the largest investor for Belgian FinTechs.

4.5.4 Public services

Regarding digital public services, Belgium is lagging behind in the different indexes and reports. According to the World Economic Forum, Belgium ranks 58th for the e-participation index, which *measures the use of online services to facilitate the provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation") and engagement in decision-making processes ("e-decision making")*.

In the same index, Israel ranks 42nd, Sweden 19th, and the Netherlands 4th. This ranking is confirmed by the EU DESI index, which ranks Belgium 15th, behind Sweden 10th and the Netherlands 7th for digital public services. In the DESI index, Belgium scores close to the EU average for (population) digital public services indicators such as "open data" and "scope of online services". For (business) digital public services, Belgium scores slightly (5 percentage points) above the EU average. Despite these average results, we observe an upward trend (plus 12 percentage points), especially in e-government services for businesses.

However, the percentage of e-government users remains very low and well below the EU average. Interviewees sometimes pointed out that Belgian public services have been improving over the years (e.g., the possibility of logging in via Itsme), but that more efforts remain to be made: *"I am still shocked by the difference between private and public from a digital perspective. To give you an example, I had to request a new PIN for my ID card from my local city authority. It took two weeks for the code to arrive at the post office. Nowadays, it is not acceptable to have such long delays"*.

4.5.5 Financial supervisors

Supervisory authorities are experiencing a profound shift towards data-driven supervision enabled by the new wave of technology and data solutions (Lopes et al., 2021). Supervisory technology (SupTech) is the use of innovative technology by supervisory agencies to improve compliance outcomes, enhance risk management capabilities and generate new insights into the business for improved decision-making (UNSGSA FinTech Working Group & CCAF, 2019). When it comes to SupTech, there is no real KPI to benchmark countries, but we can at least review some of the most recent initiatives taken in each of our four countries:

- **Belgium.** Supervisory authorities (FSMA-NBB) are starting to recruit people with a more "data analytics and SupTech background" (Majois, 2021).
- **The Netherlands.** The DNB uses various underlying technologies to supervise companies (Cloud Computing, Big Data, AI, Machine learning), while the AFM developed a multiyear, 3-phase SupTech transformation program (Broeders & Prenio, 2018; Lopes et al., 2021).
- **Sweden.** Supervisory authorities have signed a partnership with *BearingPoint RegTech* (a FinTech company) to improve and streamline their data collection processes, validation, monitoring and analysis (Bock, 2020).
- **Israel.** The central bank has established dedicated data and analytics teams (Olivier Wyman, 2019).

4.6 SWOT analysis of Belgian FinTech sector

The findings of the cross-country comparison allow us to identify the strengths and weaknesses of Belgium regarding FinTechs. Then, the threats and opportunities that lie within Belgium or are imposed by external forces can also be identified.

4.6.1 Strengths

Although Belgium is not among the top-tier FinTech countries, we would like to highlight three strengths:

- **Know-how and legacy in financial innovation.** Belgium has a strong heritage in financial innovation. During the second wave of FinTech (from 1965 to 2008), our country was a leader in the payment transactions field. Moreover, several innovations have been tested in Belgium before being deployed abroad (e.g., Payconiq, Proton). At that time, many

financial institutions decided to set up their European headquarters in Belgium, creating knowledge spill-overs. The finance sector (banking and insurance) is relatively important in Belgium, and the local financial expertise is recognized internationally (our country is ranked 9th for FS human capital in *The Global Financial Centers Index* 29).

- *Proximity to key decision centers.* Brussels is an important decision centre worldwide: the city is considered as the ‘unofficial’ capital of the European Union. Many institutions and interest groups have decided to move to Brussels to be close to the decision-making centres. In addition to the main EU institutions (the Commission, the European Council and the Parliament), a series of watchdogs and regulators set up offices in Brussels (Single Resolution Boards, European Money Markets Institute) as well as professional interest groups (European Banking Federation, European Fund and Asset Management Association and Invest Europe – The voice of Private Capital).
- *A small-size urban centre: “Small is Beautiful”.* From our secondary research, it appears that it is not necessary to be a large city to have a thriving FinTech hub: a small cluster can prosper if policymakers adopt relevant industrial policies. During the interviews, we noticed that the Belgian FinTech scene appears to be a small microcosm which enables a close proximity among the different stakeholders. The size of the ecosystem appears to be a good trade-off between being big enough to find various actors but small enough to allow reasonable proximity between the different FinTech stakeholders. If Belgium implements additional initiatives, this proximity could represent a competitive advantage. The costs of living and housing are affordable in Brussels, compared to other capital cities with a similar quality of life.

4.6.2 Weaknesses

At the same time, several weaknesses hinder the successful development of FinTechs in Belgium. For the most part, they are systemic and go beyond the strict FinTech scope:

- *Low entrepreneurial culture.* Our primary and secondary research pointed out to a lack of ambition in Belgium regarding entrepreneurship and business overall. For several interviewees, this lack of ambition would be linked to cultural or historical factors. As discussed earlier, Belgium has one of the lowest proportion of university graduates that launch their startups directly after their studies.

- *Lack of technical Talents.* Belgian employees are generally sufficiently skilled in Financial Services expertise, but technical talents are missing. This was confirmed by our interviewees and through the secondary research. The root cause of this problem is certainly upstream, in the *talent pipelines*. Even though tertiary education attainment is high in Belgium, too few students choose STEM careers. Digital education is also lagging behind in our K12 schools; teachers feel less well prepared to use ICT for teaching than the EU average.
- *Slow governmental progress with digital initiatives.* The government's demand for digital is a significant driver for the development of Tech startups, including FinTechs. Again, in this area, Belgium is lagging behind. According to primary and secondary research, public services in Belgium do not yet offer enough effective and efficient digital solutions compared to similar countries.

4.6.3 Opportunities

Several trends within the FinTech industry could be exploited by our country to gain some competitive advantage:

- *The Use of SupTech.* SupTech enhances the capabilities of financial authorities to meet the challenges posed by digitisation and globalisation of the marketplace and the expansion of their mandates. In its Final Report to the European Commission, the ROFIEG (2019) recommended the Commission to develop and implement a comprehensive and ambitious plan to support the adoption of advanced RegTech and SupTech by the financial sector.
- *From Open Banking to Open Finance.* Since the first initiatives in the UK and then PSD2 in the EU, Open Banking has been considered a “*sleeping giant*”. Through an API, banks must share data with a third party with the consent of the customers. Customers can already benefit from a multitude of more efficient and personalized services. Following the success of Open Banking, some people are already talking about moving towards Open Finance.
- *A small domestic market: “Go big or go home”.* Belgian startups cannot rely on a large domestic demand, with a market of only 11 million inhabitants. To attain critical size, good turnover and additional capital inflow, Belgian entrepreneurs must adopt a global mindset

from the start. Our country has the assets (multilingual workforce, central location) to facilitate international expansions: Belgian startups are well-suited for international growth (B-Hive, 2018).

4.6.4 Threats

Finally, we identify three major items which have the potential to harm the attractiveness of the Belgian FinTech ecosystem. If poorly managed, there is a risk that these threats will become weaknesses for Belgium in the medium- and long-term future:

- *Law uncertainty and non-compliance.* Having an adequate legal framework can help develop a cluster. In contrast, legal uncertainties are obstacles. To be attractive, a country must put in place attractive laws for new business models but also ensure that existing laws are respected. Contrary to certain common beliefs, more regulations does not mean more obstacles to competition. The implementation of the GDPR is, for example, a powerful driver for FinTechs, as they are more flexible, agile than the traditional incumbents (Don, n.d.).
- *Interference to innovation by incumbents.* Currently, four banks dominate the Belgian market; among them, two have their headquarters abroad: ING (Netherlands), BNP Paribas Fortis (France). During the B-Hive initiative, some players accuse the big banks of being responsible for the project's failure. They were accused of cannibalizing the project from within and not collaborating enough (Hendrikse et al., 2020). The deadline for implementing the technical, regulatory standards applying to PSD2 access interfaces was September 2019. However, some banks still do not play the game and put obstacles for third-party providers (Caroll, 2021).
- *Being focused on a too narrow perimeter.* As we have discussed, the FinTech wording can refer to a whole range of segments: Payments, Infrastructure, Banking, Mobile Sales & E-Commerce, Crowdfunding, RegTech, Security, Wealth Management, Insurance, Cryptocurrencies, AccounTech... Therefore when reflecting on how to develop a FinTech ecosystem, policy makers should remain open-minded and flexible: unexpected embryonic ecosystems could emerge.

Chapter 5: Recommendations to strengthen the FinTech sector in Belgium

"By failing to prepare, you are preparing to fail." — Benjamin Franklin

From our interviews and our secondary research, it appears that there is a lack of vision, strategy and overall positioning of Belgium regarding the FinTech sector. For that reason, we would recommend decision-makers to develop an ambitious strategic plan to strengthen the FinTech sector in Belgium. To that end, Chapter 5 is structured as follows: (1) overall recommended approach, (2) portfolio of improvement initiatives and (3) proposed roadmap going forward.

5.1 Overall recommended approach

This section will leverage some frameworks used by change management consultants in other similar contexts. We want to be as action-oriented as possible. The exhibit below sketches a 3-step approach to strengthening the FinTech sector in our country: (i) triggering event, (ii) vision and roadmap going forward, and (iii) mobilisation and implementation of the roadmap.

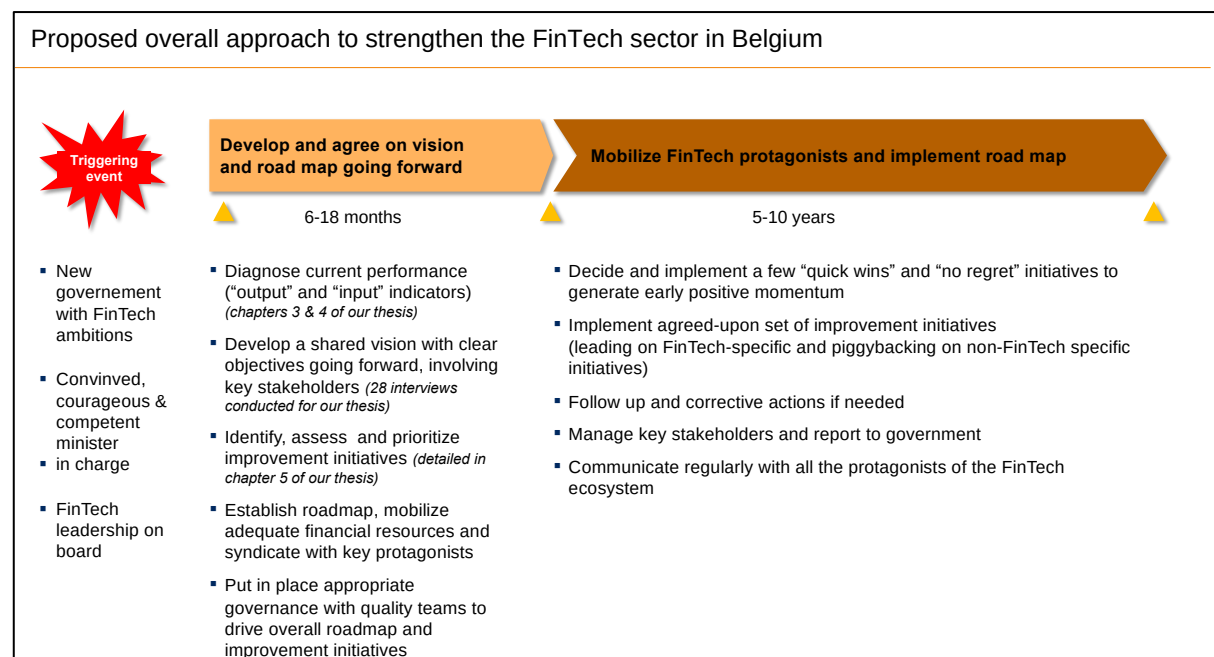


Figure 10. Approach to strengthen the FinTech sector in Belgium

5.1.1 Triggering event

Researches indicate that the role of leadership is a crucial factor for success to launch such an ambitious and comprehensive effort. This could mean appointing a new, energetic and visionary political or FinTech leader. Moreover, leadership continuity will be essential given the time it takes to implement such a reform.

The leadership and the governance to be put in place to launch such an initiative requires careful considerations given that several governments should be involved at different levels (federal, regional and community) often with different agenda and conflicting points of view. Similarly, incumbents, new FinTech companies and regulators may also have very different perspectives. Clearly, finding the ‘rare bird’ to lead such an initiative will not be easy!

5.1.2 Vision and roadmap going forward

Research in change management practices indicate that several tasks must be completed in order to increase the likelihood of success of such reforms:

- ***Start by establishing a robust diagnostic of the current performance of the FinTech sector.*** The diagnostic should be focused not only on the “output” indicators (e.g., international rankings; numbers of FinTech companies, their revenues, profitability, and employment levels) but also on the “input” indicators or attributes (e.g., talents, policies, capital, demand). In the previous chapters of our thesis, we have established a first diagnostic on which to build the set of recommendations.
- ***Develop a shared vision with clear objectives going forward, involving key stakeholders.*** Belgium cannot afford to disperse its efforts and to be present in all FinTech activities. Instead, we must choose a specific positioning, building on our sources of distinctiveness and our competitive advantages. In this context, we strongly recommend the different stakeholders to collaborate and harmonize their messages, campaigns, and missions to promote the Brussels metropolitan area as an important financial centre and FinTech hub. FinTech hubs and hotspots are an urban phenomenon: other areas cannot concentrate on the resources that FinTechs need to grow and notably talent, funding, and technologies (Deloitte & Directorate-General for Communications Networks, 2018). To develop a shared vision, it is also of the utmost importance to involve in a meaningful way a large number of relevant stakeholders. From the literature, it appears that initiatives must be both top-down and bottom-up to develop an entrepreneurial ecosystem (Mason & Brown, 2014).

To that end, the 28 interviews we have already conducted should be seen as a first step in that direction. They have allowed us to get a first glance at the perspectives and opinions of a diversified group of stakeholders. More should be done if political leaders and governments want to embark on such a journey.

- ***Identify, assess and prioritize improvement initiatives*** (discussed in Section 5.2).
- ***Establish roadmap, mobilize adequate financial resources and syndicate with key protagonists*** (discussed in Section 5.3).
- ***Put in place appropriate governance with quality teams to drive the overall roadmap and improvement initiatives*** (discussed in Section 5.3).

5.1.3 Mobilisation and implementation of roadmap

Regarding the third step, i.e., “*Mobilisation and implementation of roadmap*”, this goes beyond the scope of our thesis. The change management consultants whom we have interviewed insisted on the importance of implementing a few “quick wins” as well as launching a few “no regret” initiatives to generate early positive momentum. Although the government has the mandates to intervene directly and trigger a FinTech cluster, it does not always have the legitimacy or the necessary competencies. Therefore, we recommend creating a new platform, sometimes called the Program Management Office (PMO) or a Delivery Unit (DU), to foster the change and ensure the successful implementation of the agreed-upon set of initiatives. The organisation can either be a new entity or an existing one (e.g., FinTech Belgium) with the following features (D. Isenberg, 2011): (i) structured as a SWAT team, (ii) public mandates, (iii) independent from any organisations (incumbents, governments) and (iv) responsible for achieving pre-determined outcomes. Being independent will be critical for that platform to avoid the problems that have arisen with the B-Hive project. In this project, incumbent banks had a controlling interest and therefore could block several initiatives not directly aligned with their own interests.

Finally, the platform will have to communicate regularly with all the protagonists (including FinTechs, regulators, incumbents...) of the FinTech ecosystem to maintain the course of actions and ensure long-term adherence to the agreed-upon roadmap.

5.2 Portfolio of improvement initiatives

Based on our previous chapters, in particular the key takeaways from our cross-country comparisons on several attributes such as talent, capital, policy and demand, we have now a

solid base on which to build a portfolio of improvement initiatives. We have complemented those analyses with a comprehensive literature review focused on cluster analyses, entrepreneurial ecosystems and regional policies (D. Isenberg, 2011; Mason & Brown, 2014; Porter, 1998; Stam, 2015; Stam & Spigel, 2016; Wilson & Silva, 2013). For example, Wilson & Silva (2013) identify three types of government interventions to support the development of an entrepreneurial cluster: (i) *Demand-side* (e.g., human capital development, education systems), (ii) *Supply-side* (e.g., grants, tax incentives) and (iii) *Regulatory and administrative barriers* (e.g., licenses to operate, GDPR).

To develop our portfolio of initiatives, we have proceeded in three successive steps: (i) generation of a first list of improvement ideas, (ii) multi-criteria assessment of each proposed idea and (iii) selection and description of the most attractive initiatives.

5.2.1 Generation of a first list of improvement initiatives

Taking into account our cross-country comparisons, our 28 interview notes and the broader literature about cluster analyses, entrepreneurial ecosystems and regional policies clusters, we have generated a preliminary list of 19 ideas to strengthen the Belgian FinTech ecosystem. We have regrouped them along our four attributes: talent (11 ideas), capital (1 idea), policy (5 ideas) and demand (2 ideas).

Before sharing the list of ideas, we want to insist that we have decided to propose recommendations directly linked with our researches as presented in Chapters 3 and 4 of our thesis. We have voluntarily left aside generic recommendations such as improving the economic climate in Belgium, cutting the red tape and simplifying the administrative burden to create new companies, or reducing taxes on labour (both for the self-employed entrepreneurs and for his or her employees).

5.2.1.1 Talent

- Encourage a greater number of students to choose a STEM pathway (increasing from 17% to 23,5%, i.e., the average of the three sample countries)
- Launch a new master's degree combining financial, technical/digital and entrepreneurial skills (i.e., three required talents for FinTech)

- Create a "fast-track startup visa" for foreigners who want to launch a high-tech startup in Belgium
- Accelerate the adoption and use of digital tools by teachers and students in K12 schools
- Organise programming courses in K12 schools, in particular, some dedicated options in vocational tracks
- Join and support initiatives that promote and develop entrepreneurial skills and attitudes among students in K12 schools and tertiary education (high schools and universities)
- Organise media campaigns and programs to promote and celebrate entrepreneurs (e.g., à la Top Chef/The Voice)
- Select and promote a group of innovative and high potential startups with an attractive label (e.g., the NextBel20 companies)
- Strengthen relationships (the Israeli way) between the Belgian Defence Forces, universities and startups on deep tech issues (e.g., AI, cybersecurity)
- Fund university research chairs focused on FinTech related topics
- Leverage the proximity with EU institutions to implement a RegTech centre of expertise in the Brussels metropolitan area.

5.2.1.2 Capital

- Increase the startup tax shelter threshold from €250.000 to €1 million

5.2.1.3 Policy

- Create regulatory sandboxes to promote FinTech innovations
- Expand the mandate of the NBB/FSMA to make them responsible for fostering innovation in the FinTech sector
- Ensure that non-banks can become direct members of the payment infrastructure without having to rely on traditional banks
- Ensure PSD2 ("Open Banking" directive) compliance by incumbents to prevent them from slowing down the development of new third-party services
- Position Belgium as a first-mover to adopt and implement the upcoming Open Finance directive (currently being discussed at EU level)

5.2.1.4 Demand

- Limit the use of cash transactions (e.g., cash allowed up to a certain amount) to increase FinTech demand among the Belgian population

- Make B2B digital invoices compulsory.

5.2.2 Multi-criteria assessment of each proposed ideas

Building on this first list, we have conducted a first-cut assessment of each of the 19 ideas based on seven criteria regrouped around two dimensions: (1) impact and (2) feasibility. For each of those seven criteria, we have defined three levels: Low, Medium, High.

5.2.2.1 Impact

- Expected impact of the idea on the key attribute under consideration. What is the intensity of impact on the attribute?
- Consensus about the expected impact of the idea. Among the stakeholders and researchers, what is the degree of consensus regarding the impact of the idea? When there is no consensus about the impact of a specific idea, we lower the ‘synthetic’ score of that idea.
- To calculate a ‘synthetic’ impact score, we use a double-entry grid, with the expected impact variable on the horizontal axis and the degree of consensus on the vertical axis. The synthetic impact score ranges from 1 to 5.

5.2.2.2 Feasibility

- Technical and legal issues. What is the complexity of the technical/legal obstacles linked with the idea?
- Existing proof of concept abroad. To what extent has the idea been tested successfully elsewhere? If yes, our assessment of the feasibility will be more positive.
- Coordination required with multiple actors. What is the degree of coordination required between different actors to agree on and to implement the idea? If there are many actors who have a say or who may have different opinions about the attractiveness of the idea, then our assessment of the feasibility will be less positive. This will be the case if different governments (Federal versus regional) must agree among themselves before implementing a specific recommendation.
- Complexity of change management. To what extent is it difficult to fully implement the recommendation? For example, if tens of thousands of people need to change their ways of doing things, then the feasibility will be rated lower.
- Cost and/or investment required to implement the idea. We estimate that if an idea is more costly to implement, the feasibility is lower.

- To calculate a ‘synthetic’ feasibility score, we aggregate the different criteria using the following methodology: Each criterion is assessed on a three-level scale, giving a maximum of 0, 1 or 2 points. Only for the first criterion “*Technical and legal issues*”, we use a slightly different method, the scores range from 1 to -1, as we consider that a low level in this field could potentially have a significant negative impact for the total feasibility. All scores are then added together to obtain the synthetic feasibility score.

5.2.2.3 Combining expected impact with feasibility

When we plot the scores for each idea on a matrix with the feasibility on the horizontal axis and the expected impact on the vertical axis, we have a first cut qualitative estimate of each proposed idea's overall attractiveness. A detailed table is available in Appendix 3. This matrix will serve as input for our next section about selecting and prioritising a portfolio of initiatives.

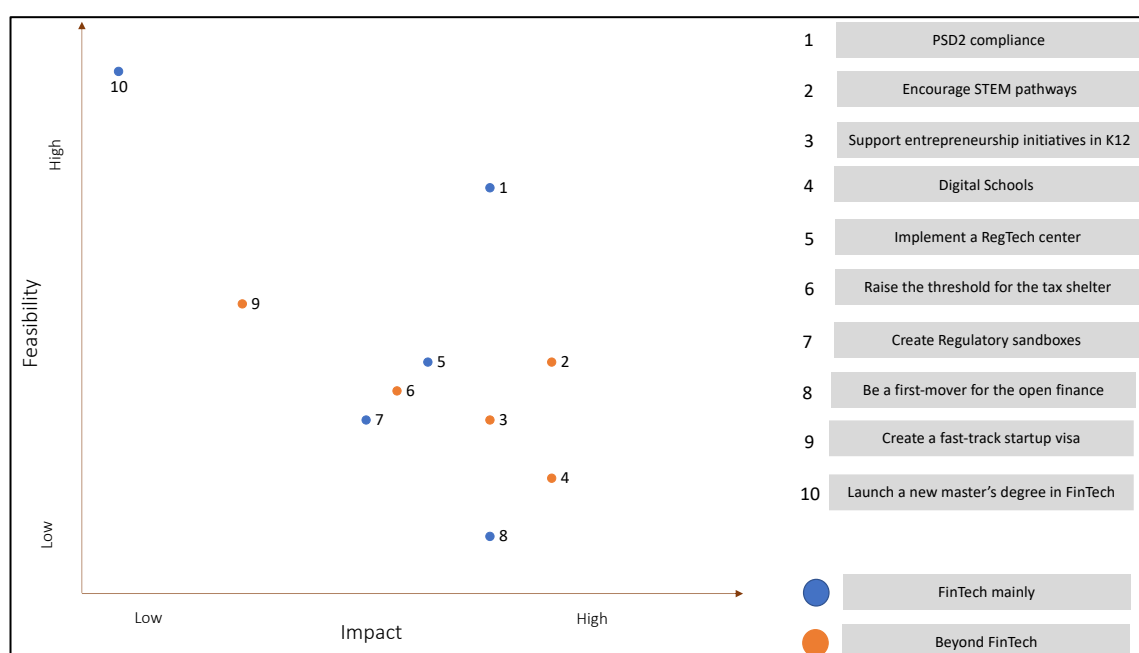


Figure 11. Impact- Feasibility Matrix

5.2.3 Selection and description of the most attractive initiatives

Based on the scores calculated in the previous section, we have decided to select ten ideas with the highest "Impact / Feasibility" scores. The other nine ideas have been abandoned because of too low scores. In the rest of this section, we give some more details about each of the ten selected ideas: this should give the reader a better grasp of what it would take to transform those rough ideas into more concrete improvement initiatives. For each of the ideas, we also

give a first indication about which public authorities (Federal, regional and community levels) should take the lead to ensure the implementation of those initiatives.

5.2.3.1. *Encourage a larger number of people to choose a STEM pathway*

The shortage of engineers and technological profiles has been identified as a major weakness for the development of the FinTech industry in Belgium. Therefore, we recommend to work proactively on a better orientation of young people, job seekers and workers from all socio-economic backgrounds, and in particular young girls and (future) workers, to choose STEM fields, in all types of education, with a view to (re)orienting themselves towards a professional career in these STEM fields. This is a priority not only in the context of the FinTech industry but also in the broader context of economic recovery and job creation in Belgium. The final objective would be to bring Belgium closer to the European average in terms of the number of graduates and professionals in these STEM sectors.

Regional (Flanders, Wallonia and RBC) and community (FWB, VG and DG) governments together with some key protagonists (K12 schools, high schools and universities, employers and employers' associations such as FEB, VOKA, UWE, BECI, Agoria, Fondation pour l'Enseignement) should lead the effort. The focus should be on career guidance, education, training, awareness-raising and mentoring in the STEM fields. One specific point of attention is the gender disparity in STEM fields: girls are underrepresented in these education pathways. To get more girls into STEM, we refer to an OECD report which recommends an enhanced promotion of the societal contribution of companies employing STEM jobs. The report also highlighted the need to show the collective dimension and cooperation present in these jobs, which would help to accelerate the change in perception.

The creation of the *STEAM committee*¹⁰ in FWB, whose aim is to raise interest and vocations in technical subjects, is a step in the right direction. Some other bottom-up initiatives through public private partnerships (such as Molengeek, the Digital Campus at BeCentral, Microsoft Innovation Center) clearly demonstrate that it is possible to move the needle and to make progress relatively fast. Finally, the programme "STEM Professionals Go Back To School" supported by the EU to engage company professionals (technicians, engineers, researchers,

¹⁰ More information's about the *STEAM committee*: <https://www.lalibre.be/belgique/enseignement/le-manque-d-attractivite-des-etudes-scientifiques-et-techniques-se-joue-en-grande-partie-a-l-ecole-selon-olivier-remels-60d0dbd7d8ad581ce1dd03ef>

employment managers, etc.) to visit schools and participate in collaborative pedagogical activities embedded in STEM classes is another good example of initiatives to develop.

5.2.3.2. Support initiatives to promote entrepreneurship and to develop entrepreneurial skills and attitudes among young people

The low level of entrepreneurial dynamism – mainly due to cultural factors – has also been identified as one major weakness for the development of the FinTech industry in Belgium. To develop a large cluster of FinTech startups, we must improve the image of entrepreneurship in our society and nurture a new generation of ambitious entrepreneurs. Indeed, ambitious entrepreneurs are more likely to achieve substantial firm growth, innovation or internationalisation than the ‘average’ entrepreneur (Stam & Spiegel, 2016). Governments at federal, regional and community level will have a role to play. To move from a low to a high-entrepreneurial culture, we recommend leveraging a range of different techniques:

- **Focus on the narrative.** Several studies draw attention to cultural artefacts’ role, including narratives, in the functioning of entrepreneurial ecosystems (Roundy & Bayer, 2019)
- **Stimulate the entrepreneurial mindset as early as possible.** We recommend deploying the following initiatives on a large scale in all the secondary schools: (i) teaching courses with project-based learning, (ii) carrying out interdisciplinary projects and (iii) raising entrepreneurship awareness through extra-curricular initiatives (e.g., *Young enterprises*, *100.000 entrepreneurs*, *Youthstart*, *Young Entrepreneurs of Tomorrow*, *Story-me*). The aim is not to run entrepreneurship courses per se, where young people have to start their businesses, but rather develop skills that will develop the right entrepreneurial mindsets. Teachers should not be forgotten as well: special programs should be dedicated to them such as deployment of collaborative practices, development and implementation of improvement projects in schools (e.g., *Entr’Apprendre*).
- **Take care of a selected group of high potentials.** Our research and our interviewees suggest that distributing subsidies and supporting too many projects in parallel does not make sense. Indeed, wealth creation, power to inspire other startups and reputational value are much greater by favouring high-potential successful ventures. When looking at the Belgian FinTech landscape: 89% of the total VC funding has been allocated to only 5 FinTech companies.
- **(Over-)celebrate success.** In Belgium, and particularly in French-speaking Belgium, successful entrepreneurs are not widely celebrated. Media could have an important role to play in that context. We should aim at a cultural shift. For example, we could envision that

10 years from now, as in Israel, “*the Walloon mother aspires her children to become startup entrepreneurs !*”

5.2.3.3. Accelerate the use of digital tools by teachers and students in K12 schools

We have also insisted on the importance of developing the use of ICT tools in the K12 schools. Indeed, we believe this is particularly relevant to fill in the talent pipeline and more broadly to accelerate the adoption of new digital services. Therefore, we recommend that the Community Governments (FWB, VG and DG) ensure that mastering digital skills and concepts of ICT become part of their core curriculum of their education systems, alongside reading, writing and numeracy.

In addition, digital technologies offer new and largely untapped possibilities for better quality education: it is at the very heart of the classroom that digital must find its place. Children must be taught from an early age that digital is not only about games and pure entertainment. It should also be used to develop their skills (i.e., problem-solving, developing creativity). The Belgian and regional authorities have taken various initiatives (e.g., Digital Belgium, Digital Wallonia). Yet, Belgium is still very far away from being a front runner when it comes to digital. We believe that one of the root cause for these disappointing results are to be found in our K12 school systems. A significant wake-up call is needed to help teachers and students embrace the full benefits of leveraging the pedagogical opportunities offered by a better use of digital tools. For a real appropriation of digital education, we recommend to roll-out on a large scale (i.e., 80% of the secondary schools in Belgium within five years) intensive coaching programs within schools to address in a comprehensive way the five dimensions needed for a successful digital transformation. To that end, the Community Governments should put ICT change agents at the disposal of the school networks which in turn will support their schools. Those ICT change agents should work on the five dimensions which are required:

- **Culture and appetite:** School directors, teachers, students, parents must all be convinced of the importance and relevance of digital education with a clear understanding of their relevant uses at schools but also at home.
- **Vision and governance.** School directors must be in the lead with a clear vision and roadmap for the digital transformation of their schools, including hiring staff for IT support (maintenance, installation and cybersecurity).

- **Skills and human resources.** More than 80% of teachers and students should be trained and coached to acquire the necessary digital skills. There should be at least one digital expert in each school to act as a contact reference point. To have digital schools, it is not enough to have digital equipment; teachers must be able to use these innovative practices (TALIS Volume I, 2018). There is currently limited support available for teachers in Belgium to enable them to implement innovative pedagogical practices leveraging digital tools. This is particularly important given that the role of the teachers will evolve towards more personalized teaching and coaching.
- **Connectivity and equipment.** Access to a professional Wi-Fi connection for all and equipment necessary for the daily use of digital technology in learning (including equipment for each student) must be foreseen. In order to meet this challenge, investment plans should be accelerated, and financial incentives should be put in place to generate a digital shift in all schools.
- **Digital tools and platforms.** In addition to connectivity and hardware, teachers and students should access a database of digital tools and platforms for daily use.

Such a comprehensive programme will not be easy to roll-out but there are already successful experiences in FWB: SeGEC / FeSEC (60% of the secondary schools in FWB) and *EducIT* are quite active to roll-out such programs.

5.2.3.4 Create a “fast-track startup visa” for foreigners who want to launch a high-tech startup in Belgium

The Federal government could take at least two actions regarding its visa policies.

First, Belgium does not offer a dedicated visa for foreign entrepreneurs, but rather an investor visa or the classic procedure for self-employment. Our country should take as a source of inspiration measures applied in Israel or the Netherlands on this aspect. In these countries, entrepreneurs can obtain a visa for a medium period and material support and coaching. If the project proves to be promising, the visa is extended.

Second, Belgium is well-positioned when it comes to visas for high-skilled employees. However, this interesting visa scheme seems to be hardly known. For example, through searches on the internet, it is complicated to obtain precise information. Therefore, we recommend a rebranding effort and a well-orchestrated marketing campaign on social media.

5.2.3.5 Launch a new master's degree combining financial, digital and entrepreneurial skills

Belgian universities could join forces to organize a dedicated master's degree offering courses covering the three fields of expertise required by FinTech (financial services, digital technologies and entrepreneurship). Students graduating with this dedicated master's degree would be prime candidates to join FinTech companies or start their own FinTech company. Some internationally renowned universities have already set up such a degree, including the National University of Singapore (NUS) and Milan Polytechnic University (MIP).

To be even more explicit, we could imagine a 2-year degree, taught in English with faculty from the Business and Engineering Schools. In the case of UCLouvain, this new master's degree could also be integrated for some parts with its innovative CPME program, which is focusing on entrepreneurship. Partnering with existing financial services companies with strong presence in Belgium (banks, insurance companies, FinTechs, transactions' companies such as SWIFT, Euroclear...) could also raise the attractiveness of such a degree, including for networking purposes. Finally, setting up a dual degree together with a leading Flemish university (e.g., KULeuven) could also add some positive momentum.

5.2.3.6 Raise threshold for the startup tax shelter

In 2015, the Belgian government created the Tax-Shelter for startups and scale-ups. In 2017, the mechanism was extended to crowdfunding platforms and then to scale-ups. The Tax Shelter can benefit the investor up to EUR 100.000, and EUR 250.000 for startups and scale-ups. Since 2015, the tax shelter has generated EUR 40 million in investments. Some political parties (e.g., MR) have proposed to raise the threshold and increase the deductibility of investments. Several of our interviewees were enthusiastic about this proposal but would especially recommend extending the threshold (up to EUR 1 million). Belgians are among the biggest savers: ~ EUR 300 billions are sitting idle on their savings accounts. Extending the tax shelter could generate significant investment flows during the first stages, the so-called *Friends, Family and Fools* (3Fs) rounds.

However, while such a proposal is often popular with politicians, it is not without flaws. For example, how do we avoid windfall effects? Moreover, rather than favouring the investors,

should we offer more direct tangible benefits to FinTech entrepreneurs? Those are issues which should be further debated.

5.2.3.7 Ensure PSD2 ("Open Banking" directive) compliance by incumbents to prevent them slowing down the development of new third-party services

Even though the deadline for implementing the technical and regulatory standards applying to PSD2 access interfaces was September 14, 2019, Belgian TPPs still suffer from non-resolved issues with the Application Programming Interface (API). Those issues hinder them from providing their new services to Belgian clients. To resolve these issues, the supervisory authority (the NBB in this case) need to enforce that all parties, in particular large incumbent banks, comply with the requirements foreseen by PSD2.

More specifically, the NBB should act as an active intermediary between FinTechs and incumbents, relaying the obstacles faced by the TTP to the incumbent banks, and assess the progress of the removal of obstacles carried out. This is necessary for Open Banking to work and to unlock the development of more TPP FinTech companies in Belgium. In this context, we recommend that the NBB follows the EBA guidelines in its opinion paper of February 2021. In case of non-compliance after a specified deadline, the NBB could take more effective supervisory measures as indicated by the EBA, e.g., revoking exemptions from the contingency mechanism and/or by imposing fines.

5.2.3.8 Leverage the proximity with EU institutions to set up and develop a RegTech centre of expertise in Brussels

The ever-increasing volume of financial regulations issued by the EU institutions is a strong driver for RegTechs in Continental Europe. Major regulatory initiatives increase the demand for RegTech solutions. For example, we can mention: *the Revised Markets in Financial Instruments Directive (MiFID II)*, *the Markets in Financial Instruments Regulation (MIFIR)*, *the General Data Protection Regulation (GDPR)*, *the revised Payment Services Directive (PSD2)*, or *the Securities Financing Transaction Regulation (SFTR)*. In 2019, *the Expert Group on regulatory Obstacles to Financial Innovation (ROFIEG)* recommended that the EU develops and implements a comprehensive and ambitious agenda for the establishment of advanced RegTech and SupTech capabilities in coordination with relevant authorities in and beyond the EU and international standard setters.

Belgium under the leadership of the Federal government could decide to proactively set up and develop a RegTech Centre of Expertise, leveraging its proximity with main EU instances (DG-Fisma, DG-Connect, DG-Competition) and the European Digital Finance Association (EDFA). Of course, the specific location for such a Centre of Expertise in Belgium will be debated between the three Belgian regions: an obvious choice would be to locate this RegTech Centre in the Brussels Region. But, the other regions might have different points of view...

5.2.3.9 Create regulatory sandboxes to promote FinTech innovations

A significant difficulty of running a financial company is the ever-growing complexity of the compliance processes required by the regulators. This trend will likely continue in the future. To safely accelerate and test innovations in financial services, one solution is to set up regulatory sandboxes. Although some of the outcomes of regulatory sandboxes are debatable, they can often contribute to raise the international attractiveness of a country for FinTech.

As for the Dutch sandboxes, we would recommend the Federal government and its regulatory authorities to set up regulatory sandboxes (and to proactively communicate about them) using the available levers to achieve proportionality under EU financial services law. Sandboxes should be set up in such a way that customers are protected, e.g., the NBB could require participating sandboxes to compensate customers in case of loss. During the testing period, the focus should be on communication and collaboration between NBB and sandboxes participants.

5.2.3.10 Position Belgium as a first mover to adopt and implement the upcoming Open Finance directive (currently being discussed at EU level)

Following the success of PSD2, the European Commission is planning a new Open Finance strategy by mid-2022. The goal is to deepen further the progress made with the landmark revision of the Payment Services Directive (PSD2), which forced banks to share part of their clients' data with new digital firms operating in the finance sector (FinTech). For innovative entrepreneurs, this PSD3 project could offer great opportunities. The PSD2 directive led to the creation of hundreds of startups and apps offering innovative payment services.

For that reason, we recommend that the Federal government together with the regulatory authorities (NBB and FSMA) proactively ensure a fast transposition of this upcoming PSD3 in Belgian Law to benefit from a first-mover advantage compared to other EU countries.

5.3 Proposed roadmap going forward

Referring to the recommended approach described in Section 5.1, we want to share some recommendations on how to develop the roadmap going forward and to sketch what would be the appropriate governance to drive a successful implementation of the roadmap. To transform our list of 10 initiatives into a meaningful roadmap, we must take into account the following:

- What is the time horizon associated with each of the proposed initiatives? Some initiatives could be implemented in less than three years; others would take much longer. In preparing the plan, it is essential to propose a balanced sequence in terms of implementation timing: a good mix of short, medium and long-term actions.
- For each initiative, it is important to clarify who will be responsible for the implementation, the required budget (investment costs and HR resources), and the key milestones and end-products to be delivered.
- We also observe that our portfolio of initiatives can be split into two groups: (1) FinTech-specific initiatives for which FinTech protagonists should be in the lead, and (2) non-FinTech-specific initiatives for which the FinTech will have to piggyback on initiatives led by other sectors. Again, it is important to have a good mix and to adapt the leadership posture accordingly.

Taking into account what we just described, we can draft a first work plan to be syndicated later on with the key protagonists. This will also require iterating with them to take into account their remarks and suggestions (note: this clearly goes beyond the scope of our thesis). To be more efficient, we recommend strong coordination between the different initiatives, “*policy implications have to be holistic*” (Mason & Brown, 2014). From those discussions, a final road map should emerge and be agreed upon between the different stakeholders. This process may take some time, depending on the initial degree of alignment between them. Our final recommendation related to the roadmap’s definition consists of putting in place appropriate governance, i.e., decision bodies and quality teams, to drive the overall roadmap and improvement initiatives. A key factor for success seems to be the set up of a platform, sometimes called Program Management Office (PMO), or a Delivery Unit (DU), staffed with quality people focused on the implementation tasks.

Conclusion

The development of new digital technologies combined with their widespread dissemination and adoption by companies, public institutions and the population at large has caused significant disruptions in the economy all around the world. In the financial sector, this technological revolution has been associated with the emergence of FinTech companies. They bring significant innovations, and they challenge the incumbents of the financial services industry. To ensure the future prosperity of Belgium, it is of the utmost importance not to miss the boat of digital transformations, in particular in the financial sector.

Despite substantial existing assets located in Belgium (e.g., global players in the field of interbank communications, payments, post-trade clearing and settlement and custodian services; EU institutions, regulators and professional groups of the financial industry; know-how legacy in payment innovations), we would have thought that Belgium would have been one of the leaders in the FinTech sector. In fact, this is not the case: Belgium is lagging. We have found five international indexes which systematically confirm this.

The objective of our thesis was to research why Belgium does not come up at the top in the global or European rankings and what could be done to transform Belgium into a leading cluster for FinTechs. To that end, we have followed a three-step approach, leveraging primary (including 28 interviews), secondary research and a set of change management practices.

First (Chapters 2 and 3), we have developed a better perspective about the FinTech sector - in general, and also specifically for Belgium - including some historical perspectives on its development, its many (sub-)segments and the different schemes available to fund FinTech companies. In addition, three critical challenges must be considered when discussing the future of this sector: its regulatory environment, the strategies followed by the incumbents and the ambitions of the global Tech platforms.

Second (Chapter 4), we have compared the situation of the FinTech sector in Belgium with three other countries (The Netherlands, Sweden and Israel) along with four significant attributes which are considered to be the key factors for success: the availability of the required talents and of the capital needed to fund the FinTech sector, the right government policies, rules

and regulations, and finally, strong demand for FinTech services from the different segments (B2C, B2B, FS incumbents, public services and financial supervisors).

Building on our extensive research (mainly secondary) and interviews, we could develop a SWOT analysis for the FinTech sector in Belgium. The strengths of Belgium lie mostly with its know-how and legacy with financial innovations in particular in payments and its proximity with important, relevant decision centres. The human size of Belgium and Brussels (versus the big megalopolises) can also be an advantage. However, we have identified three weaknesses: low entrepreneurial culture leading to too few startups and scale-ups, limited supply of the required digital talents to work for FinTech and the low digitalization of public services. Going forward, there are opportunities around the developments of SupTech and Open Banking. Belgium is also a small domestic market for its FinTech, thereby forcing them to think about expansion strategies abroad quickly. There are some threats: law uncertainty, limited compliance enforcement, interference and oligopolistic behaviours by incumbents.

Third (Chapter 5), based on the cross-country comparison and our SWOT analysis, we have identified and assessed nineteen improvement ideas. We have prioritized them and selected the ten most attractive initiatives with the objective to develop a comprehensive action plan going forward, i.e., a roadmap to transform the Belgian FinTech sector into a leading cluster, building on its unique existing assets while also addressing the weaknesses identified in our cross-country comparison. The recommended initiatives can be regrouped into two main buckets:

- *Provide supportive policies and regulatory frameworks.* Public authorities have a role to play by providing an enabling environment for startups and scale-ups. Concrete recommendations would include enforcing compliance with PSD2, establishing regulatory sandboxes, position Belgium as a first-mover on the upcoming PSD3, raising threshold for startup tax-shelter, creating a fast-track visa for FinTech entrepreneurs, setting up a RegTech Centre of Expertise in Belgium... These measures could represent “*quick wins*”, as they are not too difficult to implement including short term for some of them.
- *Create a larger pool of digital and entrepreneurial talents.* Recommendations include increasing student enrolment in STEM faculties, develop the use of ICT tools and entrepreneurial culture in schools, colleges and universities. Those talent-related recommendations will be more complex and take more time to be implemented. However, we believe that these measures are essential to sustain the growth of a successful Belgian FinTech ecosystem.

Our research indicates that the role of leadership is a key factor for success to launch such an ambitious and comprehensive effort. This could mean appointing an energetic and visionary FinTech leader in charge of a platform to enable change. Moreover, leadership continuity will be essential given the time it takes to implement such a reform.

We are aware that it would be of the utmost importance to involve right from the beginning key stakeholders to generate enough buy-in and commitment for such an action plan to succeed. This clearly goes beyond the scope of our master's thesis. For that reason, the end-product of our thesis, i.e., our proposed portfolio of initiatives, should be seen as a first draft to engage meaningful conversations with interested protagonists of the FinTech sector in Belgium.

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Appendices

Appendix 1: Key takeaways from the rankings

	Belgium	Israel	Netherlands	Sweden
Findexable	- Two cities in the top 200 FinTech cities ranking (Brussels, Antwerp)	- Lower in the FinTech index than in the Global Startup Rank -Global leader for innovation and disruption	- Strengths in digital payments, alternative lending and investment - Utrecht as one of the Next 20 Fintech's emerging hubs	- Flagship of the Nordic and Baltic fintech landscape - One of the most successful hub at producing unicorns
GFCI	- Top cluster for FS human capital	- Tel-Aviv as a local diversified Financial centre	- Renowned business environment - Well developed infrastructure (financial, digital)	- Stockholm as an established local financial centre
GFHI	- Good FinTech ecosystem - Need to build super funds, and adopt public financial incentives	- Good FinTech regulatory capabilities - FS as a powerful driver for digital transformation	- Third position for market capitalization of FinTechs - High level of mobile banking popularization -Excellent digital infrastructure	- Named as the most innovative city in Europe - Highly capitalised unlisted FinTech companies - Governmental promotion of FinTechs
Startup Genome	NA	- Top cluster for funding - Large pool of Talents - Strengths in AI, Big Data and Cybersecurity	- +200 multinationals EU HQ in Amsterdam -High salary for Tech talents	- Presence of international startups - Strong FinTech ecosystem Performance -High Pool of Tech Talents

Appendix 2: Ecosystem attributes, factors and benchmark drivers

Sources		BE	IL	SE	NL
TALENT					
AVAILABILITY					
Number of Software Developers	Nexten.io	108626	270000	175794	310048
Employer Cost for Software Developer	Nexten.io	49700€	71300€	63.100 €	52400€
City Attractiveness for Developers	Nexten.io	25th	4th	11th	23th
Digital Skills among Population	World Economic Forum	37th	6th	3th	4th
English Proficiency	Education First	9th	n/a	4th	1th
FS Services Employment	OECD	107200	120800	96000	206000
Global Finance Hub Index	GFHI	37th	41th	31th	28th
FS Strength of Human Capital	GHFI	9th	>15th	>15th	>15th
Entrepreneurial Culture	World Economic Forum	29th	1th	3th	5th
PIPELINE					
Percentage of STEM graduates	World Bank	17%	26.5%	26.6%	17.5%
PISA Mathematics	OECD	15th	41th	17th	9th
PISA Science	OECD	19th	42th	19th	15th
Teachers who felts prepared for using ICT	OECD	27.9%	n/a	37%	29.3%
Ranking university-industry collaboration	World Bank	9th	3th	10th	5th
Minimum salary for highly skilled worker regimes (€)	Deloitte	39824	n/a	16814	50268
Visa processing time for highly skilled workers (weeks)	Deloitte	6	n/a	5	6
Startup Visa	Deloitte	No	Yes	No	Yes
Attractiveness for foreign entrepreneurs	OECD	24th	31th	4th	12th
Attractiveness for foreign highly skilled worker	OECD	22TH	31th	3th	8th
Quality of life Ranking	Numbeo	26th	32th	13th	3th
CAPITAL					
FUNDING					
VC investment per city capita (\$)	Dealroom	55*	688	633	303
Financing For Entrepreneurs	Global Entrepreneurship Monitor	3.17	3.17	3.12	3.61
VC Capital Availability - Ranking	World Economic Forum	31th	2th	15th	14th
VC Capital Invesment (% of GDP)	OECD	0.033	0.378	0.06	0.044
VC Seed /Early Stage (% of GDP)	OECD	0.015	0.266	0.032	0.019
VC Later Stage Venture (% of GDP)	OECD	0.018	0.112	0.028	0.025
Number of FinTech Unicorns	Dealroom	0	1	3	3
Fund of funds	Dealroom	BGF	No	Saminvest	RVO
Investor Tax relief & Fiscal Incentives	Dealroom	Tax Shelter	No	Investerara.	No
POLICY					
REGULATORY					
Structure of the Financial Authorities (BIS)	BIS	Twin Peaks	Sectoral	Integrated	Twin Peaks
Sandbox (ESMA)	ESMA	No	Yes	No	Yes
Innovation Hub (ESMA)	ESMA	Yes	Yes	Yes	Yes
Legal adaptability to digital business models	World Economic Forum	54th	12th	7th	10th
OPEN BANKING					
Regulation	Open Banking Tracker	PSD2	n/a	PSD2	PSD2
Third-Party Providers	Open Banking Tracker	14	0	36	24
Bank APIs	Open Banking Tracker	69	0	44	52
API aggregators	Open Banking Tracker	20	0	21	21

	Sources	BE	IL	SE	NL
ENVIRONMENT					
Doing Business Ranking	World Bank	46th	35th	10th	42th
Ease of Starting Business Ranking	World Bank	48th	28th	39th	24th
Public Sector Performance	World Economic Forum	53th	35th	18th	5th
Global Competitiveness Index 4.0	World Economic Forum	22th	20th	8th	4th
R&D (% of GDP)	OECD	2.9%	4.9%	3.4%	2.2%
Bloomberg Most Innovative Economies 2021	Bloomberg	14th	7th	5th	9th
Corporate Income Tax	OECD	25%	23%	20,60%	25%
Tax Wedges	OECD	51.4%	22%	42.67%	36,42%
DEMAND					
CONSUMER					
Consumer adoption of FinTech	EY	42%	n/a	64%	73%
Internet Penetration	World Bank	90%	87%	94%	93%
Use of Smartphone	Statista	77%	74%**	79%	79%
Digital Economy and Society Index 2020	EU Commission	9	/	2	4
Mobile cellular subscriptions (per 100 people)	World Bank	100	137	129	127
CORPORATE					
Integration of technologies into business activities - DESI 2020	EU Commission	3th	/	6th	4th
E-commerce index	Eurostat	4th	/	5th	7th
Cloud computing services within enterprises	Eurostat	6th	/	2th	3th
Enterprises analysing big data from any data source	Eurostat	3th	/	19th	2th
INCUMBENT					
Finance and insurance Services sector (% of the total GDP)	Statista	6.46%	n/a	3.88%	6.4%
Competitiveness - Global Financial Centres Index	GFCI	37th	41th	31th	28th
Domestic credit to private sector (% of GDP)	World Bank	70.15%	65.43%	132.68%	100.03%
Commercial bank branches (per 100,000 adults)	Statista	41	16.8	15	8
Share of five biggest banks in the banking industry		85%	90%	56.3%	84.7%
Number of foreign banks (among the five largest)		2	0	1	0
Interbanking ecosystem collaborations	Deloitte	14	n/a	6	11
GOVERNMENT & REGULATOR					
Digital public services - DESI 2020	EU	15th	/	10th	7th
E-Participation	World Economic Forum	58th	42th	19th	4th

Appendix 3: Multi-criteria assessment of each proposed ideas

RECOMMENDATIONS	IMPACT		FEASIBILITY					TIME HORIZON	SCOPE	
	Impact on key attributes	Consensus on expected impact	Technical and legal issues	Existing proof of concept abroad	Coordination required with multiple actors	Complexity of change management	Cost/Investment required	Short, Medium, Long Term	FinTech mainly	FinTech and beyond
Encourage a greater number of students to choose a STEM pathway (from 17% to 23,5%, i.e. the average of the three sample countries)										
Launch a new master's degree combining financial, technical/digital and entrepreneurial skills (i.e. 3 required talents for FinTechs)										
Create a "fast-track startup visa" for foreigners who want to launch a high tech startup in Belgium										
Accelerate the use of digital tools by teachers and students in K12 schools										
Organise programming courses in K12 schools, in particular, some dedicated options in vocational tracks										
Join and support initiatives that promote and develop entrepreneurial skills and attitudes among students in secondary and tertiary education										
Organise media campaigns and programs to promote and celebrate entrepreneurs (e.g. à la Top Chef/The Voice)										
Select and promote a group of innovative and high potential startups with an attractive label (e.g. the NextBel20 companies)										
Strengthen relationships between the Belgian Defence Forces, universities and startups on deeptech issues (e.g. AI, cybersecurity)										
Fund university research chairs focused on FinTech related topics										
Leverage the proximity with EU institutions to implement a RegTech centre of expertise in Brussels										
Raise threshold for the start-up tax shelter										
Create regulatory sandboxes to promote FinTech innovation										
Expand the mandate of the NBB/FSMA to make them responsible for fostering innovation in the FinTech sector										
Ensure that non-banks can become direct members of the payment infrastructure without having to rely on traditional banks										
Ensure PSD2 compliance by incumbents to prevent them slowing down the development of new third-party services										
Position Belgium as a first-mover to adopt and implement the upcoming open finance directive (currently being discussed at EU level)										
Limit the use of cash transactions (e.g. up to a certain amount) to increase FinTech demand among the Belgian population										
Make B2B digital invoices compulsory										

Appendix 4: Interviews Guide

Introduction

- Current function? Level of exposure to the FinTech sector? In what context?
- Perspective on the current strengths and weaknesses of the FinTech sector in Belgium?
- What is your opinion on the current Belgian FinTech cluster? What are the most developed FinTech sub-segments in Belgium?
- Could you assess the current Belgian FinTech scene? How come Belgium is not top of the list in the FinTech Ranking? What is hindering further progress?
- What do you see as the strengths of the Belgian FinTech cluster?
- What do you see as the weaknesses of the Belgian FinTech cluster?
- Have you seen an evolution over the last years? Positive or negative?
- What are the assets which Belgium needs to develop to become a leading FinTech cluster? What are the key factors? Other “nice to have”?

FinTech Ecosystem Attributes

Regarding FinTech Hubs, what is your opinion on the different attributes/drivers, i.e., talent, capital, policy, demand?

1. Talent

- In Belgium, is there a shortage or not for specific categories of profile (technical skills, financial expertise or entrepreneurial)?
- What about the cost of labor: about right, too high?
- Are the various talent pipelines effective enough to supply needed talents for FinTech (e.g., schools, high-schools and universities, coding boot camps)?
- Others considerations: University-Industry Collaboration, immigration rules, gender gap...

2. Capital

- Do FinTech companies have access to the necessary funding during their various development stages: Seed, Growth and Listed Capital?
- Are there any differences between those different stages?
- Are there enough incubators/accelerators initiatives for FinTechs?

3. Policy

- Are regulatory authorities an obstacle or not to the development of FinTechs?

- How would you rate the clarity and efficiency of the regulations in Belgium?
- Are there any initiatives in place to facilitate contact between regulatory authorities and FinTech startups? Which ones?
- Presence and operation of FinTech Development Facilitators (e.g. regulatory sandbox)?
- Other governmental initiatives to develop a FinTech cluster (tax incentives, subsidies)?

4. Demand

- Is consumer demand for FinTech solutions strong enough to sustain the FinTech growth?
- Is there a strong enough demand from SMEs for FinTechs?
- What about the relationship between FinTechs and financial incumbents?

Wrap-up questions

- What would be your recommendations if you were in charge of developing the FinTech sector in Belgium?
- Imagine you were a policymaker. What would you implement if you had no constraints to make the Belgian FinTech cluster more attractive?
- We are at the end of our interview. Is there a topic that you feel we did not cover? Is there anything you would like to add or to emphasize?
- Finally, would you know other people that operate within the FinTech industry and whom you believe I should interview? Could you introduce me to them?

