FinTech and ESG: A Happy Union?

Chapter 9

FinTech and ESG: A happy union?

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Abstract

This chapter provides the reader with an overview of the emergent Environmental, Social and Governance (ESG) FinTech landscape detailing the extent to which ESG factors are beginning to become important considerations for the FinTech sector. Despite global interest in these important issues, very little attention has been paid on the potential of FinTech. Utilising an ESG framework, this chapter discusses the huge, untapped potential of FinTech to exert a major impact, inter alia through use of sophisticated and large datasets, and the application of cutting-edge statistical techniques, such as artificial intelligence (AI) and innovative uses of blockchain technologies. This chapter explores the extent of current links between ESG and FinTech, and it outlines potential future directions in which FinTech can play a leading role on helping practitioners, firms, policymakers and wider stakeholders in working to achieve a sustainable, climate-friendly and well-governed future.

Keywords: FinTech; Environment; Social; Governance; Innovation.

1. Introduction

This chapter provides the reader with an overview of the emergent Environmental, Social and Governance (ESG) FinTech landscape detailing the extent to which ESG factors are beginning to become important considerations for the FinTech sector. The chapter begins with an overview of some of the recent academic literature that generally highlights a growing importance in ESG. The chapter then proceeds to review key recent developments in FinTech that relate to treatment of ESG factors - organised according to two dedicated sections: *FinTech: the climate and the environment* which discusses how FinTech can address major challenges relating to climate change, and *RegTech and ESG*, which discusses how RegTech can be used successfully in the future to help firms identify, report and comply with increasing disclosure requirements around ESG. Finally, the chapter concludes.

2. Why should we care about ESG? Evidence from academic literature

A growing body of academic literature focuses on whether and how ESG and CSR activities can impact a firm's performance. First, a number of studies question whether ESG/CSR impacts various risks relevant to the firm. For example, Bozos, King, and Koutmos (2022) analyse non-binding shareholder proposals in U.S. firms to investigate how the extent of voting support from shareholders on corporate, social, responsibility (CSR) issues are associated with changes in firms' underlying systematic risks. The main finding from this paper is that there is a non-linear effect of voting support whereby proposals that attract low voting support result in increasing risk, while those with high support reduce risk. Additionally, the authors demonstrate that the effect of voting support on risks varies according to whether firms operate in consumer-sensitive or non-consumer sensitive industries. Moreover, at least several other papers also look at the how ESG/CSR influences systematic risk (e.g., El Ghoul, Guedhami, Wang, and Kwok, 2016; Oikonomou, Brooks, and Pavelin, 2012; Albuquerque,

Koskinen, and Zhang, 2019), firm-specific risk (e.g., Becchetti, Ciciretti and Hasan, 2015; Humphrey, Lee and Shen, 2012) or the cost of equity- (El Ghoul, Guedhami, Kwok, Mishra, 2011; Hong and Kacperczyk, 2009; Chava, 2014; Ng and Rezaee, 2015) or debt capital (e.g., Goss and Roberts, 2011; Chava, 2014; Zerbib, 2019). Findings are largely mixed with respect to risk. For instance, while Becchetti et al. (2015) report that ESG and CSR are associated with increased firm specific risk, Humphrey et al. (2012) show no significant differences for low or high CSR firms. However, the existing literature typically supports the finding that firms have access to lower cost of capital when they have stronger environmental profiles – implying that ESG focus can benefit firms in terms of access to both debt and equity capital.

A larger strand of the literature looks at the impact of the ESG and CSR on firm value and measures of traditional firm performance. Much of this literature reports a positive relationship between ESG/CSR and firm performance. For instance, at least several studies report a clear positive link between firm ESG/CSR performance and firm value (e.g., Fatemi, Fooladi and Tehranian, 2015; Albuquerque, Koskinen, and Zhang, 2019), as well as other performance outcomes such as, profitability (Lins et al., 2017; Liang and Renneboog, 2017; Borghesi et al., 2014) and short- and long-run returns (e.g., Masulis and Reza, 2015; Deng, Kang and Low, 2013; Edmans, 2011; Flammer, 2015, 2021). Conversely, some other studies suggest, for example, that relevant news about a firm's CSR can be met with negative market reactions irrespective of whether firm CSR events are positive or negative (Krüger, 2015), or that the impact on firm value can be positive or negative depending on firm characteristics, including the level of a firm's customer awareness (Servaes and Tamayo, 2013).

Relatedly, a small number of recent research papers study spillover effects from firms' ESG activities. Cao, Lian and Zhan (2019) find that there are positive spillover effects to peer firms from the adoption of close-call shareholder proposals on ESG/CSR issues, with peer group firms adopting comparable ESG/CSR practices. Similarly, Dai, Liang and Ng (2021)

demonstrate that there are unilateral spillover effects of CSR from customers to suppliers. Rind, Akbar, Boubaker, Lajili-Jarjir and Mollah (2022) focus on firms' employee welfare policies and find that peer group firms mimic one another's employee welfare decisions, which can have positive implications for firm value and innovation in focal firms'.

Another stand of the extant literature on ESG, links the characteristics of firm managers with the ESG and CSR performance of companies. As highlighted by Gillan, Koch and Starks (2021) one of the key questions to arise from this research stream, is whether firms' ESG and CSR performance and activities stem directly from the intentions of managers to act in a certain way, or, alternatively, whether they are the product of prevailing governance frameworks within firms. For instance, several papers show that managerial gender matters for firms' ESG/CSR. Borghesi et al. (2014) find that Female CEOs are more likely to invest in CSR. Cronqvist and Yu (2017) present evidence of a female socialization effect, whereby daughters of (male) CEOs transmit their stronger natural preferences for ESG and CSR concerns, which manifests as significantly higher ESG/CSR scores at the firm-level. However, in a recent study Aabo and Giorici (2022) caution that the apparent effect of female CEOs on a firm's ESG performance depends on the specific ESG scores being used – with the effect varying from either a strong and significant positive relationship, to not association at all, depending on data provider. More recently, King, Nica, Oberoi and Srivastav (2023) show that female led firms are associated with better workplace conditions, and that this effect is strongest when firms operate in more competitive industries and in environments where agency costs facing firms are lower.

Finally, a very small recent literature considers whether firms' ESG and CSR performance can be used to forecast firm financial distress. Li, Crook, Andreeva and Tang (2021) show that corporate governance factors, including firm ownership structure and the composition of the corporate board, have explanatory power in predicting firm financial

distress, while Citterio and King (2023) demonstrate for the first time that ESG factors can have significant explanatory power in models designed to predict bank financial distress.

3. FinTech: the climate and the environment

One of the biggest global grand challenges relates to climate change. Illuminating the gravity of this issue, Oxfam (2022) reports that the number of climate-related disasters have increased threefold over the past thirty years, and that in the ten years between 2006 and 2016 global sea-levels rose at a rate 2.5 times greater than virtually all of the 20th century. Although clearly the impacts of climate change are already being felt – as the previous examples illustrate, worryingly the impacts of climate change are predicted to become even more severe in the future. Research by Woods Hole Research Centre and McKinsey Global Institute Analysis predicts that from 2020 to 2050 global average temperatures will increase between 1.5° and 5°c, while a report from the United Nations Convention to Combat Desertification (2022) estimates that by 2050 as much as three-quarters of the world's population will be affected by droughts, water scarcity, rising sea levels, which, combined with other factors including overpopulation, extreme temperatures and declining crop productivity, could lead to as many as 216 million people being displaced.

Although the entire planet will experience the effects of climate change, the most severe impacts are expected to be felt more strongly by some of the poorest nations given that many such countries are geographically located close to higher natural risks, as well as lacking relative development, infrastructure and capital compared to developed nations to address and to adapt to increasing threats. This is highlighted by the Financial Stability Oversight Council (FSOC, 2021) who warn that the "*adverse effects of climate change are likely to be disproportionately borne by financially vulnerable communities, including low-income*

communities, communities of colour, and Native-American communities.[10] *These communities may also have fewer resources to recover from, or adapt to, adverse impacts*" (p. 4).

Increasingly companies in many jurisdictions are required to provide more meaningful disclosure around risks relating to the climate, which are commonly referred to as climate change risk (CCR). Such enhanced disclosure is designed to provide investors and wider stakeholders with more accurate and increased information regarding the extent of a firms' operations and specifically how these are impacted by CCR. Salient examples include violations of environmental regulations, such as those relating to the emissions of harmful chemicals, to more positive actions taken by firms, including investments in renewable energy.

3.1. How can FinTech help address such address fundamental climate change challenges?

FinTech innovations that are environmental and climate focused are often labelled as 'Green FinTech'. These are often focused on providing innovative solutions to address key United Nations' Sustainable Development Goals (SDGs), such as: 7 (Affordable and Clean Energy), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 13 (Climate Action), 14 (Life Below Water), 15 (Life on Land), and 17 (Partnerships for the Goals).

An important way that Green FinTech can help address these goals is through ensuring that the financial sector supports the financing of sustainable and green investments, through the allocation of private finance to support governmental spending. This is outlined under the Paris Agreement which calls for countries to ensure that "*finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development*" (Paris Agreement Article 2.1(c)). Private finance is expected to be particularly valuable in helping channel funds towards green investments given restrictions on governmental expenditures, which also impact tax-payers and can lead to underinvestment in certain areas. Yet, analysis of

recent data suggests that the private sector finance is growing at approximately half the rate of the public sector - 4.8% compared to 9.1% according to a report by the Climate Policy Initiative (2022). More alarmingly the same report reveals that there is still considerable support for fossil fuel in many countries, with total fossil fuel subsidies in just 51 major countries over 40% greater than levels of total investment in climate finance between 2011 and 2020.

A positive development, as a side to FinTech, is that there is now considerable commitment from the banking sector under initiatives such as the Principal for Responsible Banking, which seeks to ensure banks take measurable action towards addressing UN SDGs, as well as key multilateral financial institutions such as the European Investment bank who, since 2021, no longer fund any fossil fuel energy projects. Additionally, the 2022 Climate Change Conference (COP 27) outlined out a new pooled fund to help countries who have suffered substantial loss and damage from events relating to climate change – which, as previously noted, are often the poorest countries. However, at the time of writing the sources of funding, size of the fund and the triggers for payout are key issues yet to be resolved. In sum, although there is growing commitment within the banking sector there is still a considerable way to go as inferable from a 2022 blog post by Frank Elderson, (a member of the European Central Bank (ECB)), on the ECB's blog who argues that "*banks must adapt the way they do business to account for climate-related and environmental risks… simply put, the glass is filling up slowly but it is not yet even half full. Yes, climate change has made it to the top levels within banks and some first steps have been taken. But there is a difference between talking about steps and beginning to act; and there is an even bigger difference in doing what is needed.*"

Within the taxonomy of Green FinTech, there are also more specific terms including, 'Climate FinTech', which relates to innovations in the financial sector that help manage climate change risks, support investments in climate friendly actions that reduce output of harmful

emissions, and improve the resilience of firms and countries to climate change. Encouragingly, Climate FinTech is already helping meeting in addressing the aforementioned as well as SDGs in several notable areas.

Assessment of climate risk: This is an important area of development for at least three principle reasons:

First, because of the increasing value relevance and importance of climate risks to investors; research by International Data Corporation (who specialise in the provision of market intelligence to the information technology, telecommunications, and consumer technology markets) estimates that physical assets worth in excess of $2.5 trillion US dollars are at risk due to climate change, with this figure set to reach $23 trillion by 2050 (International Data Corporation, 2022). Furthermore, climate risk represents a particularly important challenge for the financial sector. A 2021 article published in the ECB's Macroprudential Bulletin highlights this issue: "*The unique and complex features of climate risks, with their potential tipping points and non-linearities, represent a major challenge in terms of accurately capturing the impact of climate risks on the financial system*" (Baranović, Busies, Coussens, Grill and Hempell, 2021).

Second, given observations by regulators and policy makers that current tools in use within the financial sector are largely inadequate for the provision of accurate and timely assessment of climate related risks. For instance, this is a point stressed in a 2021 report by the FSOC who consider that "*current data, measurement tools, and expertise are not sufficient to fully assess these* [climate] *risks*" (p.10), and advocates the "*critical importance of taking prompt action to improve the availability of data and measurement tools, enhance assessments of climate-related financial risks and vulnerabilities, and incorporate climate-related risks into*

risk management practices and supervisory expectations for regulated entities, where appropriate" (p.3).

Third, because of increased threat from litigation for banks (and other firms) who do not accurately disclose ESG risks. As highlighted in a 2022 keynote address by by Anneli Tuominen, a member of the Supervisory Board of the ECB, at the 9th Conference on the Banking Union: "*If banks* [and non-financial firms] *do not meet the targets they have announced or follow the climate strategy they have communicated, they expose themselves to litigation and reputational risks…and there has been a clear increase in climate-related cases being filed around the world in recent years, and this trend is likely to continue*. Despite this, as highlighted in Anneli Tuominen's speech, over the last couple of years the ECB has highlighted that although there have been improvements in climate risk disclosure by banks since 2020, there are still many banks who still fail to report whether climate and environmental risks have a material impact on their risk profile even if many consider themselves exposed to these risks.

So how can FinTech help? Innovative new tools such as an AI driven climate intelligence platform and recent flagship product called EarthScan by UK company Cervest, as well as GIS Connect developed by Aquaoso Technologies in 2021 (See: https://aquaoso.com/press-release/aquaoso-launches-groundbreaking-gis-connect-part-of-data-acclimation-platform/) are already helping firms better identify and manage their climate-related risk. For example, Cervest's EarthScan applies data modelling and machine learning on climate data to provide firms, governments and non-government agencies (NGO) tailored and real-time assessment of the predicted effects of climate risks (including the impact of multiple severe hazards including heatwaves, flooding and precipitation, wind, drought and wildfire) on clients' physical risk and allows sophisticated forecasting across entire portfolios. Users can then choose from both detailed views as well as a simplified risk rating scores

ranging from A to F, where a rating of A represents “very Low climate-related risk’, and F an ’extremely high climate-related risk’.

Insurance companies worldwide are also increasingly turning to FinTech solutions to address climate change risks. One example is the People’s Insurance Company of China Property and Casualty (PICC P&C), a major Chinese insurance company. The company has developed a new platform called the Remote Damage Assessment and Claim Settlement Platform to help manage such risks that threaten the area around the city of Ningbo – a city on the coastal plain on the Yong River in the Eastern province of Zhejiang. The platform makes use of big data and geospatial data, including data on building plans, to provide fast mapping of areas hit by water sourced disaster and to produce automated assessments of the likely number of insurance claims, as well as an anticipated value for these claims, meaning that insurance claims can be settled quickly and efficiently.

Reallocation of capital towards sustainable investments

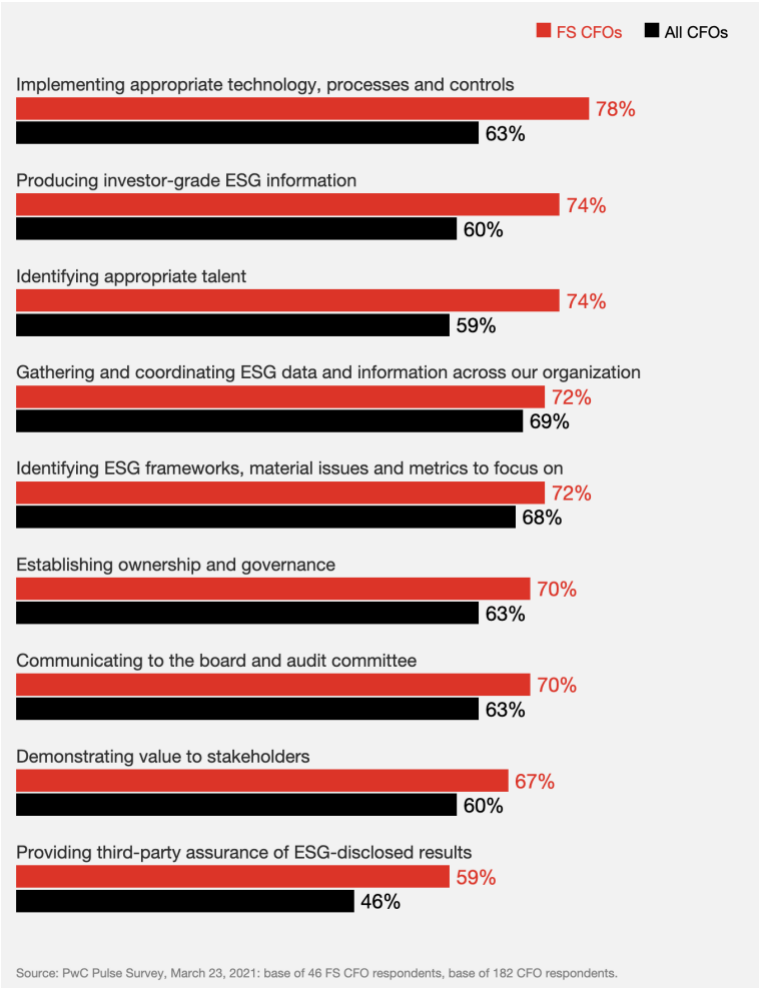
Sophisticated uses of non-standard datasets combined with distributed ledger technology (DLT), and big-data analytics, including AI and machine learning techniques, are only just starting to become more common in helping to draw out complex insights from ESG data to better inform investors and wider stakeholders. This is an important development, especially when considering a growing regulatory push towards enhanced disclosure of ESG risk and performance in many regions – with increasing adoption of international frameworks including the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD) and the Carbon Disclosure Project (CDP). For example, in Europe the March 2021 introduction of the Sustainable Finance Disclosure Regulation (SFDR) mandates that all asset managers selling financial products into the EU detail how they incorporate sustainability into their investment

choices, as well as disclose any potentially negative impacts their investments could have on social or environmental objectives.

There are at least several key areas in which FinTech can help. With such initiatives and regulatory changes, there is great potential in this area to increase the transparency of firms' ESG activities, – especially given difficulties in considering ESG holistically across divergent business units and in firms that operate across sectors for instance. FinTech solutions can play a role here in helping increasing transparency – with potentially positive implications for fund flows as well as filter down benefits that should help firms' and industries improve ESG performance. Despite this, there remains "*no globally mandatory standard for ESG reporting, nor is there a single process for collecting and calculating results*" (KPMG and the Monetary Policy of Singapore, 2022, p.26).

Clearly there is a need for improvement in ESG reporting and disclosure. Here FinTech is expected to play a key role in providing automated and integrated ESG reporting that can provide real-time insights. Current systems in a majority of firms are slow and cumbersome and do not support quick and accurate dissemination of relevant information. The March 2021 Pulse Survey by PwC of company CFOs infers that this is a particular priority for the financial industry with 74% (60%) of (non) financial sector CFOs stating that "*Producing investor-grade ESG information*" is a prime concern with respect to ESG reporting. Figure 1, from the same report, provides the wider results of this survey, which highlights a need for more robust ESG data gathering, analysis and reporting from the perspectives of both financial- and non-financial sector CFOs.

Figure 1: CFO priorities with respect to ESG reporting



Some notable examples of innovations in this area currently referred to as ‘ESGTech’, include a Singapore based company also called ‘ESGTech’, which offers a global platform for financial and non-financial firms as well as regulators from which they can gather, verify and disclose ESG data in standardized and transparent reporting formats. Another example, is t U.S. located ‘Clarity AI’, which combines big data with machine learning to help investors make informed investment decisions that consider ESG - helping channel investments towards firms with the greatest (positive) social and environmental impact.

There is also the wider adoption of new digital technologies. Notably, the Covid-19 pandemic has helped in accelerating demand for digital technologies to provide new solutions to existing problems facing societies. So-called ‘Social FinTechs’, are already having a significant impact worldwide –and particularly so in developing economies, where their

potential for impact is typically greatest. Latin America has witnessed particularly impressive growth in recent years, with 36 percent of FinTech startups in the region offering products aimed at the unbanked or individuals partially excluded from the financial system, according to research by venture development firm Finnovista. This is particularly germaine given that the World Bank reports that 65 percent of Mexican adults to not have a bank account of any kind. Against this backdrop, there have been some major FinTech success stories for helping address financial inclusion. One example is the firm Kueski whose app Kueski Pay allows customers to make payments across thousands of retailers and stores in Mexico, while also allowing for flexible payment options including periods of interest free payments. One of the key drivers of this regional success is the high rates of technology adoption in Latin America – for example, the World bank reports that half of the unbanked population of Mexico owns a smartphone and has internet access, while approximately 62 percent of the population have a smartphone.

Another area of development is the growth in connected and integrated platforms, which can help firms understand ESG across the entire supply chain. This is an increasingly salient issue, not only because of increased demand by end consumers and investors to know the extent of firms' ESG commitment and wider performance, but also because of a rapidly developing regulatory environment that pushes firms to improve their practices. For example, in Germany the introduction of the Supply Chain Due Diligence Act (SDDA) of 2021 requires firms to reduce the human rights and environmental risks in their supply chains or face financial penalties as high as 2 percent of annual turnover. Here supply chain finance can provide financial incentives for firms within a supply chain (buyers and suppliers) to commit to, and/or improve, ESG performance. One important idea, given the above regulatory as well as growing stakeholder pressure, is that supply chain finance can reduce the associated with ESG for smaller firms as larger firms are increasingly incentivised to commit resources to help them

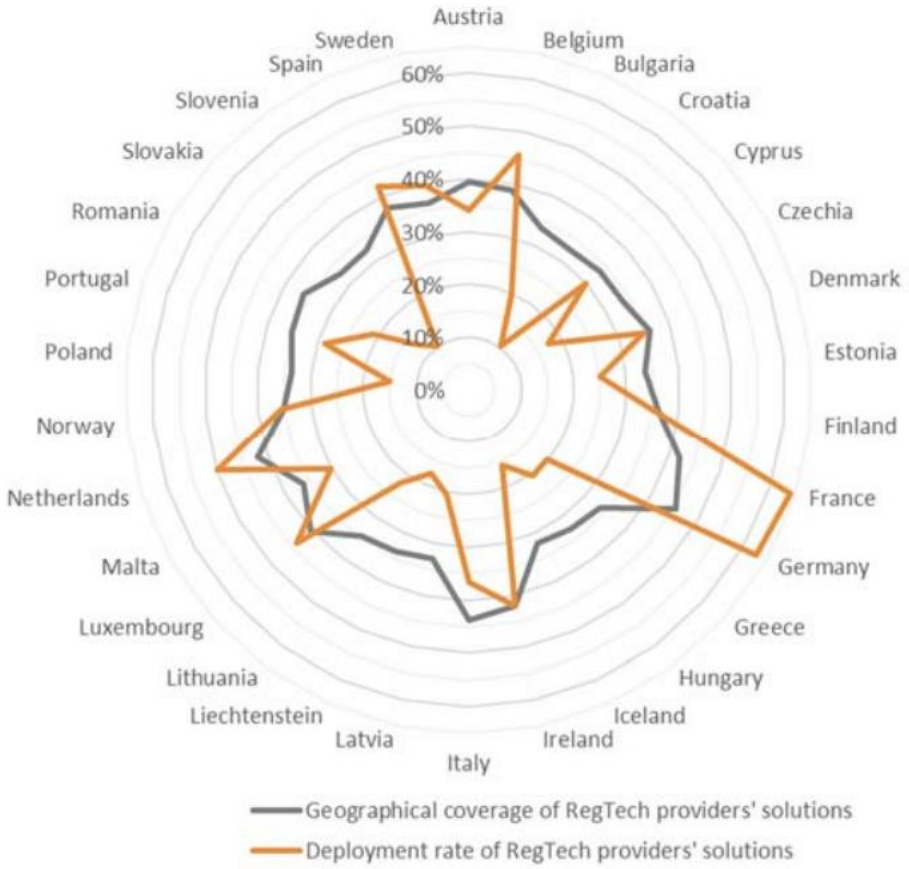
improve their practices. FinTechs in this area generally specialise in helping firms obtain the best funding solutions based on their detailed networks of banks and other providers of capital. Arguably to be most effective, these platforms need to be integrated or closely connected to platforms such as the Coriolis ESG platform, that offers ESG scoring for firms of all sizes measured against SDGs.

4. RegTech and ESG

Regulatory technology, commonly referred to as "RegTech", is an important area of FinTech, which can be classified under reporting and analytics – and more specifically risk management (Bowden, King, Koutmos, Loncan, Lopes, 2021). The first, and most accepted definition is by the UK's Financial Conduct Authority (FCA) (2016 p.3) who, define RegTech as "*a subset of fintech that focuses on technologies that may facilitate the delivery of regulatory requirements more efficiently and effectively than existing capabilities*". More granularly, RegTech assists firms in meeting compliance requirements by leveraging innovative technologies such as blockchain, cloud computing, machine learning, artificial intelligence, big data, Application Program Interface (API), and Analytics, and Voice and Text Recognition. Going forward, RegTech is expected to play a key role in helping firms meet the increasing and evolving compliance requirements relating to ESG. However, RegTech is still in its infancy – especially so in relation to compliance around ESG.

As might be expected, the adoption of RegTech differs across countries and regions. To take the example of the banking sector within the European Union, and not limited to the use of RegTech for ESG, Figure 2 taken from a 2021 report by the European Banking Authority, shows some significant differences in both the geographical coverage and deployment rate of RegTech providers solutions.

Figure 2: Geographical coverage and deployment rate of RegTech providers solutions



As can be seen from Figure 2, France and Germany have significantly higher deployment rates combined with leading rates of geographical coverage, whereas Eastern European countries within the EU tend to have both much lower deployment rates and geographical spread.

Figure 3: How RegTech providers perceive their advantages over traditional solutions

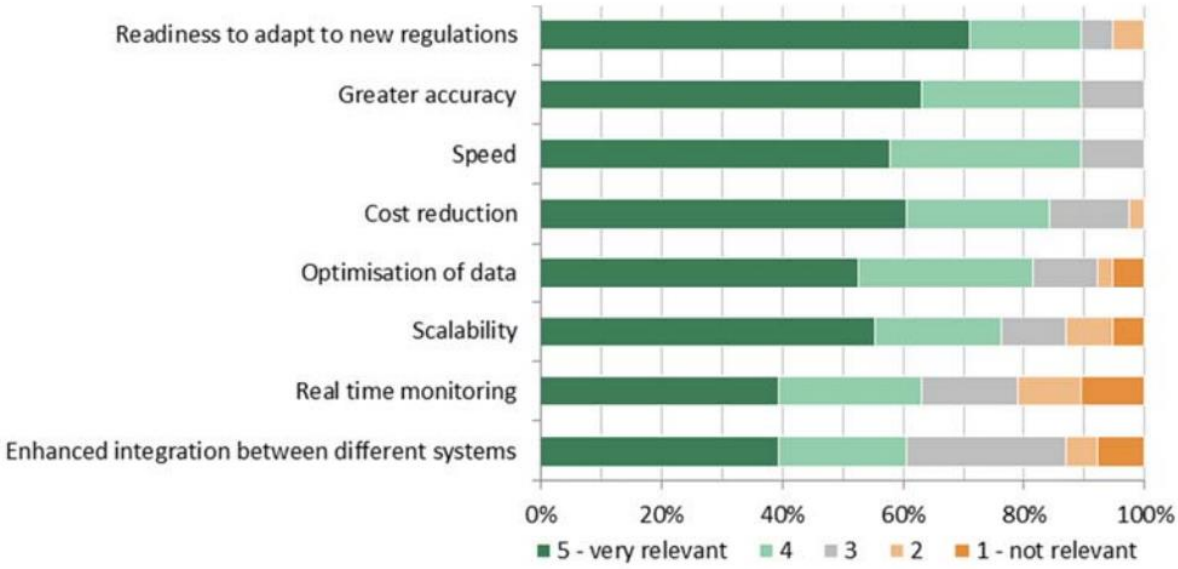


Figure 3, taken from the same 2021 report by the European Banking Authority, highlights key areas in which RegTech providers perceive advantages over traditional solutions. Adaptability to new regulatory requirements, accuracy, increased speed, cost reduction and scalability are all thought to be "very relevant".

Although figures 2 and 3 focus on the banking sector, which may be thought apt given that RegTech was originally largely confined to the financial sector, it is important to note that regulatory compliance is not just limited to financial sector firms. Instead it also increasingly important in many other sectors. In this vein, RegTech can now be seen as existing outside of the confines of a standard FinTech definition, which relates to the innovative use of technology specifically within the financial sector. Indeed, RegTech is predicted to play an increasingly important role in helping all firms meet evolving regulatory ESG requirements.

An important way that RegTech solutions can help firms operating in environments faced with onerous compliance requirements is in meeting real-time compliance without having to invest in expensive and extensive compliance and operations infrastructure - such benefits are particularly germane to smaller companies (Larsen and Gilani, 2017). More specifically, RegTech can help assist firms in, not only, meeting evolving compliance

requirements, but could also help small and medium sized firms to more easily enter into new business areas (characterised by higher compliance requirements), with benefits felt by individual firms as well as potential benefits for competition and consumer choice. A good example, relates to companies selling vaping products who are required to comply with various regulations surrounding the sale of tobacco and vaping products. In the U.S. such companies are subject to increasingly onerous tobacco regulations at the federal level, from the United States Food and Drug Administration (FDA), as well as additional regulations at a state level which vary according to state. For small and medium sized companies especially, which vaping companies tend to be, RegTech is providing firms with an important means to ensure efficient compliance with requirements such as verification of a customer's age, and identity. This is not a straightforward process given key differences across U.S. states: for instance, the age at which tobacco products can be purchased varies between 18 to 23 years; similarly, some states regulate vaping products the same as tobacco products whereas others have regulations for the vaping juice; finally, some states require that only a customer's age be verified, whereas others also require an identity document such as a driver licence be shown. Consequently, in the absence of real-time RegTech solutions, regulatory compliance would typically involve considerable human labour at a considerable cost to firms; furthermore, the additional time required to verify customers may also have led to lost repeat business.

A further example specific to the banking sector, is the company 'Regnology', who, through its Abacus360 Banking product, is helping national and international European banks to comply with evolving reporting requirements from different regulators and authorities, such as banks with securities traded on a regulated market of any EU member state who from 2022 have had to comply with the European Banking Authority (EBA) ESG risks disclosure

reporting Implementing Technical Standards (ITS)1. This enhanced disclosure around ESG risks represents a binding part of Pillar 3 disclosures on Environmental, Social and Governance (ESG) risks. Another related example is the Singapore firm 'Regtank' who utilise blockchain technology as well as machine learning and AI to assist financial institutions, venture capital and crowdfunding firms in managing their compliance and regulatory requirements more effectively.

5. Concluding Remarks

This chapter focused on the intersection between ESG and FinTech. First it discussed the growing importance placed on ESG both in terms of value relevance and risk. Second, across two main sections it provides the reader with an overview of the extent to which FinTech can help in addressing key challenges facing the world and its people today and in the future. One important conclusion to come from this chapter is that although the FinTech sector has grown tremendously in recent years, the potential for FinTech to help address important issues such as climate change remains largely untapped. It is very much hoped that FinTech can evolve with the growing latent demand for technological driven solutions to issues such as ESG reporting and compliance, with positive implications for addressing SDG.

[1] To find out more please refer to the detailed information from the European Banking Authority's website: https://www.eba.europa.eu/implementing-technical-standards-its-prudential-disclosures-esg-risks-accordance-article-449a-crr

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