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## Imaginary failure: RegTech in finance

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### ABSTRACT

The notion of 'RegTech' has become a buzzword for applications of emergent technologies to regulatory activities. This paper contextualises and interrogates the novelty of the RegTech phenomenon as expounded in recent years by industry practitioners, regulators and a growing chorus of scholars. Harnessing the notion of 'imaginary' from Science and Technology Studies, we identify a particular solutionist vision materialising across public documents from national and international financial regulators, industry organisations, as well as RegTech and consulting firms. We identify two failures of an emerging RegTech imaginary. First, is a dynamism failure in the way RegTech materialises static visions of regulation. Second, is a systems failure as the solutionist RegTech imaginary focuses on narrower, individual problems in finance at the expense of wider changes occurring since the 2007–8 global financial crisis. RegTech, we conclude, reflects continuities with a pre-crisis era and fails to tackle key market and regulatory changes occurring since. Our analysis holds implications for the turn to technological solutions in addressing persistent issues of instability in global financial governance. We point to the need for developing wider imaginaries of technological possibilities for regulation in an increasingly digital world.



### KEYWORDS

financial regulation;  
imaginary; innovation; new  
technology; risk and failure

## Introduction

Political economy is increasingly scrutinising digitisation and the evolving regulation of specific groups of digital technologies (Jain and Gabor 2020, Shibata 2021). That technologies themselves contribute varying forms of ordering has become accepted in growing scholarship on financial technologies (FinTech) (Bernards 2019, Brown and Piroška 2021, Langley and Leyshon 2021, Macartney *et al.* 2022). Less attention, however, has been granted to the ordering roles of technology firms, products and services that are explicitly positioned as regulatory.

So-called regulatory technologies ('RegTech') are increasingly promoted by firms, states and non-governmental actors in core financial centres. After the United Kingdom's Financial Conduct Authority published a call for input in a document entitled *Supporting the development and adoption of RegTech* (FCA 2015) interest in RegTech took off.<sup>1</sup> A flurry of products and services mixing together distinct regulatory activities was developed. Each was sold as the next big thing (Deloitte 2017), promising improved regulatory compliance without stamping out, and indeed while supporting, the expansion of financial innovation. RegTechs were developed for the industry to 'answer immediate business needs, drive operational efficiencies and reduce costs in regulatory compliance and risk

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management' (KPMG 2017). RegTechs were also developed as supervisory technologies (SupTech) for regulators themselves coping with the flurry of new FinTech products based on novel technologies like blockchains.

This article contextualises and interrogates the rise of RegTech post-2015. We examine the specific visions materialising as part of a wider 'turn to technology' wherein individual meanings have been merged into a shared understanding of what RegTech can(not) do in finance. Our analysis makes a three-fold contribution. First, we bridge the growing political economy of FinTech with RegTech analysis undertaken thus far largely by practitioners, as well as some legal and information systems scholars (e.g. Arner *et al.* 2017, Butler and O'Brien 2019, Omarova 2020). Second, we further ongoing engagements between political economy and Science and Technology Studies (STS) (Merz and Williams 2018, MacKenzie *et al.* 2021). We draw on the notion of 'socio-technical imaginary' (Jasanoff 2015) to document a highly solutionist vision underpinning the materialisation of RegTech. Third, we expand on the growing political economy of failure (Froud *et al.* 2010, Germain and Schwartz 2014, Best 2021) to highlight two failures of the RegTech imaginary. On the one hand, there is a *dynamism failure* in the way RegTech materialises static visions of regulation. Contrary to marketing claims, RegTech fails to offer novelty in how financial regulation is either conceived or practiced at a time of increased digitisation. On the other hand, is a *systems failure*. The solutionist RegTech imaginary, we argue, focuses on individual problems in global finance. Little attempt is made to envision and materialise solutions to myriad interconnected issues afflicting this sector that have historically led to crises in ways that either advance the post-2008 macroprudential turn (Baker 2013, 2018) or to respond to deeper transformations in financial markets since, from assetization to de-risking. RegTech instead strives to codify, digitalise as well as automate practices and behaviours that dominated global finance and its regulation *prior* to the 2007–8 crisis. Contrary to existing analyses of RegTech in finance (Currie *et al.* 2017), we characterise *RegTech as a regression*, one that enables continuities rather than changes from the pre-2008 age.

Together, the failures of the RegTech imaginary point to the underwhelming contributions of digital technologies in addressing on-going changes in a crisis-prone global financial system. That RegTech in finance falls short of achieving marketing promises of 'disruption' and 'innovation' is ultimately less surprising than the specific *ways* in which it fails. Our analysis stresses the value added for political economy of scrutinising *how* the visions and materialisation of technology fail. Specifically, we show imaginary failure in materialisations of very constrained visions of what regulation entails, as well as *what* regulatory technology can and should do. These limits are important for political economy studies of finance to consider the roles of RegTech in shaping the volatilities that periodically afflict this crucial sector of the global economy.

We proceed in five steps. First, we elaborate a view of imaginaries as broadly socio-technical phenomena. Second, we outline documentation consulted from four sites of what political economists have long characterised as hybrid authority in global finance in order to situate how visions of what regulation is and can be remain conditioned by actors diffused across porous public and private divides at multiple levels of activity (Sinclair 2000, Germain 2010). Third, we identify the RegTech imaginary emerging in post-2015 finance as 'solutionist' in the understanding popularised by Evgeny Morozov (2013). Fourth, we highlight two failures of the solutionist RegTech imaginary and how these point to significant continuities in the visions materialised following the global financial crisis of 2007–8. Finally, we conclude by summarising and offering suggestions for further research.

## RegTech in finance: a view from socio-technical imaginaries

Jasanoff and Kim (2009) characterise socio-technical imaginaries as 'collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects'. In so doing, they remind us that imaginaries are material products emanating from interpersonal processes of envisioning: necessarily social *and* material. This draws in, but is

distinct from, discourses by stressing the specific materialisation of visions in technologies or other technical artefacts. 'Collective' is crucial here: otherwise, individual visions of the world remain just that – representations in one's mind. The sharing of such visions not only occurs in conversations but also through physical documents, digital pictures or via other media, which are materially embedded. The central argument is that both collectiveness and concreteness are crucial to imaginaries that, as opposed to dreams, are real in the extent that they can be identified in technical objects that themselves have a degree of materiality and further diffuse what would otherwise remain individual visions.

Socio-technical imaginaries are creative developments core to what is typically referred to as 'innovation' yet that focus attention on both the forward, as well as the potentially backward-looking nature of such 'innovations'. A central argument emphasised by Jasanoff and Kim, as well as in STS more generally (McNeil *et al.* 2017) is that socio-technical imaginaries are not necessarily progressive: while they can open up new possibilities, they can as well foreclose them. This is because imaginaries are structured by both the social and technical settings into which they are envisioned and materialised. To the extent that they are 'innovative' socio-technical imaginaries stem from the kind of piecemeal processes identified in social studies of finance (SSF) as involving 'the creative, ad hoc re-use of existing resources (ideas and other cultural resources as well as artefacts)' (MacKenzie and Pardo-Guerra 2014, p. 157). In short, socio-technical imaginaries are structured by the social and technical, ideational and material settings through which they emerge and are taken up. They are also, as Jasanoff (2015, p. 19) stresses, 'temporally situated and culturally particular'.

We identify and interrogate the RegTech imaginary emerging in global finance for two reasons. First and as noted above, the term 'RegTech' initially appeared in an institutional document supporting the development of such technologies (FCA 2015). This particular context is important as finance is where many of the most contentious changes in regulation and technology originated over the centuries (de Goede 2005). The specific temporal context in which visions of RegTech have materialised is equally important. Finance post-2015 was recovering from a 'decade of financial crises' (Tooze 2018) that began with the 2007–8 global financial crisis (GFC) and whose shockwaves surfaced in the 2010 Eurozone crisis and the emerging markets crisis that followed. RegTech must be understood as a delayed response to the 2007–8 crisis but also, as stressed further below, a potential contributor to future volatilities in finance due to its blindness to post-2008 trends. For the moment, the central argument to emphasise is how RegTech is part of wider re-regulatory efforts since 2008 that political economists have stressed, must be 'tied to the socially disruptive consequences [of] the GFC as well as the stricter regulatory regimes that emerged in its aftermath' (Brown and Piroška 2021, p. 25).

Our second reason for locating the emergence of a RegTech imaginary in global finance stems from the oversight of technology and regulation in a small but expanding interdisciplinary literature on financial imaginaries (e.g. Haiven 2010, Komporozos-Athanasiou and Fotaki 2020). The SSF have usefully identified the 'moral and political imaginaries of financial regulation' as being connected with notions of 'efficient markets', 'risk' and 'value', thereby creating a conceptual space where solving mathematical problems or finding solutions to complex equations is key (Ortiz 2021). The vision of global finance shared amongst regulators and market participants alike has long been one of hyper-competition. Regulation is then typically envisaged as either obstructionist or as a limited tool for solving market imperfections and/or vulnerabilities, whether resulting from conjunctural misbehaviours or more structural inefficiencies. While useful in identifying imaginaries dominating this sector, existing studies have granted less consideration to the roles of technologies in regulation, generally, and RegTech in particular. If Brown and Piroška (2021, p. 30) note that 'regtech [are] developing as fast as fintech', political economy analysis of the former has yet to emerge alongside growing studies of the latter. Our analysis begins to fill this gap by identifying the RegTech imaginary in a context of global financial governance long characterised by overlapping public-private authority (Sinclair 2000, Germain 2010).

The hybridity of regulatory authority in financial governance informs our approach to identifying the collective vision of RegTech materialising across global finance. We draw on documentation collected from four sites of analysis. First, is the *firm-level* site, where individual visions of RegTech materialise in start-up firms or market-based organisations offering technology services for regulation. Second, is the *industry-level* site where visions of individual firms materialise in documents produced by national and transnational associations. Third, is the *professional-level* site. Here, the RegTech visions of accountants, consultants and lawyers materialise in shared documentation by professional services firms. Fourth, is the *regulatory-level* site, where visions of RegTech shared across industry bodies materialise into formal public and quasi-public documents by central banks and the Bank for International Settlements (BIS).

In identifying the RegTech imaginary emerging in finance, we adopted a top-down approach. We began at the more institutional levels of regulatory activity, searching first the websites of public and private regulators, along with professional services firms, then selecting all documents containing keywords ‘regtech’ and ‘regulatory technolog\*’. Firms highlighted as leading examples of RegTech producers across these documents were then examined in more depth.<sup>2</sup> Specifically, we consulted white papers as foundational documents marketing corporate visions through often lengthy discussions of broader philosophical influences and how these have been translated into their technological products. We collected a total of 135 white papers and original reports, press releases and other advertising. We discarded 42 documents deemed not relevant due to their mentioning of RegTech in passing rather than a central topic of interest. In sum, a total of 93 relevant documents were collected (see Table 1). The qualitative data analysis software MAXQDA was then employed to identify prominent notions and themes that we interpreted as a solutionist RegTech imaginary emerging in global finance.

## The solutionist RegTech imaginary

In this section, we link elements of the RegTech imaginary emerging in global finance to three features of techno-solutionism synthesised in the work of Evgeny Morozov (2013).

### Focusing on solutions rather than problems

At its essence, an imaginary is solutionist when it ‘presumes rather than investigates the problems that it is trying to solve’ (Morozov 2013, p. 6). In foregrounding solutions, however, problems tend to be naturalised. RegTech documents consistently stress solutions to problems whose roots are infrequently elaborated. At industry-level, RegTech is envisioned as materialising a wide range of

**Table 1.** Overview of the RegTech imaginary.

	Solutions vs. problems	‘Fit’ within existing structures and practices	Universality of applicability in time and space
Firm-Level	Automated ‘responsive solutions’ to regulatory issues (Droit’s ADEPT website)	‘Forensic tools’, for ‘real-time predictive risk scoring’ (CipherTrace website)	‘Real-time registry’ (Arachnys 2020); Analysis and detection in real time (Compliance.ai 2020)
Industry-Level	‘To solve regulatory and compliance requirements’ (IIF 2016)	Better quality of data to inform existing forms of risk analysis (IIF 2016)	‘A permanent audit trail’ and ‘near real-time view’ of the market (IIF 2016)
Professional-Level	‘New solutions to help financial authorities upgrade the speed and capabilities of their systems’ (BFA Global 2018)	Controlling costs, complying with rules and regulations and innovating to differentiate from competition (KPMG 2017)	‘Artificial intelligence analyzes global trading, accounting, controls and risk management in real time’ (KPMG 2017)
Regulatory-Level	‘RegTech as SupTech’: ‘third-generation data collection solutions and fourth-generation data analytics solutions’ (BIS 2019)	‘A risk-based approach to supervision; striving for ‘data completeness’ (BIS 2018)	Supporting policyholders anytime, anywhere (BaFin 2018); providing ‘operational audit at any time’ (FSB 2020)

solutions to the legal needs of firms: based on its response to the 2015 UK FCA’s *Call for input*, a leading global industry association defined RegTech as ‘the use of new technologies to solve regulatory and compliance requirements more effectively and efficiently’ (IIF 2016, p. 2). At the regulatory-level, RegTech is also positioned as SupTech, as BIS (2019, p. 6) illustrates in the chart reproduced below, ‘third-generation data collection solutions and fourth-generation data analytics solutions are considered supotech’ (see Figure 1).

At the firm level, a RegTech imaginary focusing on solutions rather than problems is revealed by several start-ups. For example, New York and London-based start-up Droit’s ADEPT platform promotes its addition of a layer of regulatory compliance on top of trading systems. The stated objective is to help market operators navigate a volatile regulatory environment in which a host of new rules and regulations are being developed through ‘computational law and automated real-time decision-making’. The vision materialising in ADEPT is of RegTech as a tool that

automates the intelligence behind decisions that guide transactions [...] through the thousands of rules and regulations necessary for compliance. [...] The platform is engineered to analyse the intricate rules behind transactions as they happen, incorporating digitised legal texts, machine-readable regulations and machine-executable implementation.<sup>3</sup>

Designed as a ‘responsive solution’, ADEPT materialises a vision of RegTech that responds to a problem: regulation itself. There is little questioning of the very source of problems and changing regulation – for instance, the volatile nature of finance.

This first characteristic of the solutionist imaginary is also found at professional firm level. For instance, BFA Global, a Boston- and Nairobi-based ‘research, advisory, data analytics and product innovation firm focused on the intersection of finance, data and technology’ selling advisory services to regulators, explains how ‘[n]ew solutions are emerging to help financial authorities upgrade the speed and capabilities of their systems and allow them to turn the data tide in their favor’ (BFA Global 2018, p. 1). In the case of Anti-Money Laundering and Counter-Terrorism Financing (AML/CTF), BFA Global underlines how ‘existing applications of ML [Machine Learning] to AML/CTF have already demonstrated their effectiveness in lowering the incidence of false negatives and false positives’ (*ibid*, p. 26). Here, regulation is conceived of as an activity amounting to the mere identification

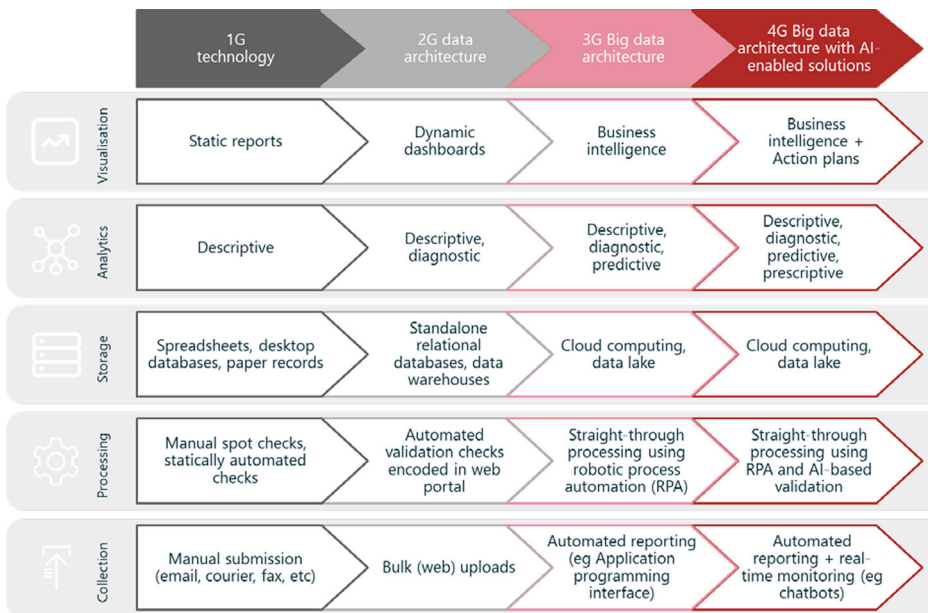


Figure 1. The development of SupTech. Source: BIS (2019, p. 6).



of money flows: there is no consideration of problems stemming from the socio-economic and socio-cultural contexts in which money-laundering and/or terrorism financing occur. This problem just happens and can be resolved through RegTech understood as merely a solution rather than any more fundamental question of the deeper roots of such problems.

### ***Solutions that ‘fit’ within existing structures and practices***

Solutionist imaginaries advance ‘integrative’ solutions for perceived problems, instead of ‘out of the box’ attempts to reframe problems. They involve a ‘failure to “problematise the norm”’ (Williams 2013, p. 556). Our set of documents reveals a vision of RegTech in finance materialising solutions that extend existing solutions while shying away from offering new ones. Despite being referred to as enabling a ‘paradigm shift’ in financial regulation (CGAP 2016), the RegTech imaginary is one in which technologies support and ‘fit’ within longstanding efforts to address problems in finance rather than propose any fundamental ‘rethink’ of existing approaches. This characteristic emerges at all the sites of financial activity that we examined. It is made particularly clear in documents procured at the regulatory level: the BIS (2018, p. 1) notes that RegTech is extending a ‘risk-based approach to supervision’. Far from novel, such approaches are longstanding to regulation both internally, within financial corporations (e.g. Power 2004, Lockwood 2015), and for financial regulators themselves (e.g. de Koker 2009). One can say that the very *modus operandi* of finance – the calculation of uncertainties to make investment decisions – is a risk-based approach (de Goede 2005). Yet, despite the wrapping of novelty and ‘innovation’, the central vision informing RegTech extends rather than re-visits risk-based approaches to regulation.

What is *not* envisioned is fundamental change to the long-existing regulatory perspectives in global financial governance. This is despite major problems with risk-based approaches having been widely exposed following the volatilities of 2007–8. Systemic risks that had remained largely unnoticed became regarded as problematically siloed (Tett 2009), and major blind spots (Haldane 2012). In spite of recognising the need for further unaccounted risks, alternative visions to the pre-existing risk-based approach have not materialised in RegTech. The IIF (2016, p. 3–4), for example, advanced RegTech as overcoming ‘inefficient parallel “silos” of information in financial groups’ through better ‘gathering and aggregation of high-quality structured data from across the financial group’. This stress here is on *improving* the data underlying a risk-based approach rather than shifting away from this approach. The *status quo* vision materialising into the RegTech imaginary is echoed in the BIS’ view of RegTech, narrowed to SupTech, as enabling ‘[d]ata standardisation, data quality and data completeness’ (BIS 2018, p. 3). Positioning RegTech as improving rather than overcoming risk-based approaches to financial regulation is an imaginary of progressive tinkering with what exists already. Simply acknowledging, as the BIS does, that the improvements offered by RegTech are ‘likely to come with relevant challenges’ does not provide novel solutions to either these or earlier well-recognised challenges.

The firm-level also illustrates the far from ‘out of the box’ visions materialising with RegTech. For instance, California-based CipherTrace develops ‘forensic tools’, for ‘real-time predictive risk scoring’ of activities on the ‘distributed ledger technology’ (DLT) otherwise known as blockchain that arose in the aftermath of the 2007–8 financial crisis. This RegTech solution to illicit activity enabled through the initial application of DLT to cryptocurrencies like Bitcoin extends the longstanding risk-based approach in attempting to identify, sort and alert clients of non-compliant or illegal transactions. There is a degree of novelty here in the pre-emptive nature of such services that attempt to target illicit transactions before they happen, by freezing accounts that have been flagged as ‘high risk’.<sup>4</sup> The products provided by CipherTrace and other ‘blockchain intelligence services’ firms envision progressive improvement of the *status quo*, specifically to fix ‘weak or porous KYC [Know Your Customer] processes’. What this RegTech does not provide, however, is alternative imaginaries of financial identification practices. The vision materialising here simply extends existing KYC practices, that of data collection and analysis to flag



potentially illicit users in an area of activity that had initially sought to re-envision financial governance (Swartz 2017).

The solutionist imaginary of RegTech can be further found in the documentation of professional services firms. Big Four consultancies like KPMG (2017, p. 15) envision RegTech as being ‘uniquely positioned to assist companies to not only control costs and manage regulatory requirements, but also to address other critical areas that can help improve customer service, develop new offerings and achieve greater competitive differentiation’. This is a vision of RegTech that once again does not depart from many of the traditional strategies used by financial and non-financial companies to control costs, comply with rules and regulations, and provide customers with new products and services. The solutions provided by RegTech materialise in ways that extend existing practices rather than revolutionise them.

### ***Solutions that are universal and timeless***

In harnessing quantified facts as key metrics of success, RegTech solutions are ‘seen as eternal’, they seem to be ‘timeless and never expire’ (Morozov 2013, p. 260). The universality of techno-solutions understood as applicable across time materialises in RegTech imaginaries at the firm-level. Companies such as London-based Archnys (2020, p. 12) position their tools as accelerating the ‘onboarding and monitoring’ in the context of KYC and AML/CTF compliance anywhere, anytime. Variations in the applicability of RegTechs across time are downplayed and solutions are conjured as ‘timeless’ and always applicable. The ‘straight-through processing’, and ‘real-time registry’ offered by Archnys answers to visions by firms like Silicon-valley start-up Compliance.ai (2020, p. 24) delivering ‘trustworthy insights, analysis, summarisation and obligation detection in real time, setting it vastly apart in speed and cost from other products that rely on manual analysis’.

Some nuanced universality does appear in imaginaries of RegTech solutions across levels. Global consultancy firms such as KPMG (2017, p. 7) envision RegTech as materialising future regulation in which ‘artificial intelligence analyses global trading, accounting, controls and risk management in real time’. Such a proposal for overcoming regulatory variation is further echoed at the industry-level. The IIF (2016, p. 12) for example envisions RegTech as offering the ‘mechanism to give regulators direct, instant and full transparency of information’ in financial institutions. The IIF (2016) foregrounds the supposedly immutable and distributed ledger technology that blockchain is meant to embody as offering the ‘permanent audit trail’ that exists beyond time and space for a ‘near real-time view of all transactions would enable regulators to better analyse systemic risk’. Yet, whether or not such nuanced universalism is appropriate *all* the time, particularly in times of volatility and crisis, is a question that is not addressed in visions of the benefits that RegTech materialises.

The RegTech imaginary, like all imaginaries, remains tentative and malleable to change. Our findings nevertheless note a particular vision materialising across a range of documents published in the half decade between 2015 and 2020. These reveal a consistently solutionist imaginary across four levels of analysis and activity summarised in Table 1.

### **Two failures of the RegTech imaginary**

The characteristics of the solutionist imaginary identified above are closely related to one another, as well as with broader trends in pre- and post-2015 global finance. As the previous section emphasised, RegTech emerges out of and is conditioned by a long-existing diffusion of regulatory authority in which drivers of financial regulation stem from both public and private sectors. The ‘solutions’ provided by RegTech firms for public regulators overlap with the ‘riskwashing’ identified by Brown and Piroška (2021, p. 20) as emerging from so-called regulatory ‘sandboxes’ first developed in the UK in 2016. These formal parameters facilitate the wider development and adoption of Fintech but as ‘superficial or narrow [...] attempts to assess and reduce risk’ (*ibid.*). What Brown and Piroška

(2021) argue are ‘socially problematic and destabilising’ features of the ‘sandbox as a technique of regulation’ extend and overlap to two failures of the RegTech elaborated upon in this section.

Bringing both STS conceptions of imaginaries and Morozov’s critiques of technological solutionism into conversation with political economy literatures on fintech and financial governance, we identify an imaginary failure in RegTech’s materialisation of two visions: (1) ahistorical and static views of regulation, as well as (2) oversimplified solutions for problems in individual sectors of global finance. In identifying and elaborating failures of specific visions materialising in RegTech, we extend to political economy studies of finance existing critiques of RegTech. Such critiques have ranged from scholarly studies of post-2008 applications of technologies in specific areas of financial regulation (Williams 2013) to the wider ‘Tower of Babel problem’ of semantic issues that Butler and O’Brien (2019, p. 87) argue pose ‘a huge challenge and a significant obstacle for RegTech’. Critiques have been raised by regulators themselves at both the organisational and individual levels (ESRB 2020, Haldane 2012). The most extensive and complementary to our own critique is that of legal scholar Saule Omarova (2020, p. 50), who has notably viewed attempts of RegTech to replace ‘normatively grounded, and holistic judgment with an algorithmic matching of standardised micro-level data to specific machine-readable rules’ as an issue which, ‘ironically, may drastically decrease both the contextual “proportionality” and practical efficacy of financial regulation and supervision’. We build on Omarova’s critique, linking and contextualising it in the wider political economy of post-2015 financial governance.

### **Dynamism failure**

A central limit to solutionist imaginaries is their ahistorical stasis. Morozov’s key criticism of technological solutionism is its setting aside of contingency, situatedness and particular contexts: this is problematic insofar as ‘most present practices, norms, and commitments are *not* timeless’ (Morozov 2013, p. 261, emphasis added). Morozov distinguishes a numeric imaginary underlying solutionism from a ‘narrative imagination’ developing in processes structured by hermeneutic practices of interpretation and displaying a far greater awareness of the observer in accounting for the world. These critiques chime with historiographies of economic and financial reason reminding us how financial crises and other market volatilities are ‘events contained within a narrative’ that ‘find their historical meaning in relation to one another’ (Samman 2014, p. 319; see also Samman 2016). In short, limits to solutionist imaginaries still re-make the world in ways that ‘fit’ with existing realities. Despite limited creativity and narrowness, numerical imaginaries are pervasive in both financial and regulatory imaginaries of technologies.

The RegTech imaginary fails in materialising an overly simplified vision of regulation as a *static process* that can be meaningfully translated into binary bits. Understanding regulation as an activity that merely recognises and acts on problems is at odds with a more dynamic, context-dependent view of regulation as a creative activity spelling out material cases (Lenglet 2021). In the latter, regulation is less an activity limited to monitoring transactions, whether after the fact or in ‘real-time’, than acts of defining possibilities for activities in contexts of radical uncertainty that define particularly well financial activities (Riles 2004). It is exposed predominantly during periods of volatility such as during the 2007–8 financial crisis. At the height of market volatility in September 2008, short-selling bans that forbade speculation on specific stocks were enforced in order to prevent a wider market crash, after the collapse of the US bank Lehman Brothers. Market intermediaries turned to regulatory technologies to automate monitoring tasks. In many cases, however, compliance officers on trading floors still had to clear and authorise transactions. Regulation here was not simply a form of monitoring to be coded into algorithmic procedures; rather it was a set of active interpretations of rules that themselves evolved in particular geographical and temporal context. Fundamentally, regulation is a relational activity (Thompson 2011) involving dynamic processes of interpretation that are by nature prone to finitism (Hatherly *et al.* 2008). In its wishful envisioning,

the solutionist RegTech imaginary fails to confront this dynamism by materialising more static visions of regulation lifted from a particular moment in financial time.

The specific historical vision of financial regulation RegTech has materialised fails to consider much in the way of market or regulatory developments occurring since 2007. Instead, it harks back to a moment before the 2007–8 global financial crisis provided a major challenge to the *form* of risk-based analysis prevalent in finance. Widely acknowledged as a major source of risk oversights that led to the most severe crisis since the Great Depression, *microprudential* stress on regulating risks was widespread but far from universal pre-2008. This approach was contrasted by a *macroprudential* stress on risks stemming from interplay *between* firms and in complex, evolving relations between sectors including prior to 2007 in some peripheries of global finance (Piroska *et al.* 2021). Underlying our argument about the more dynamic nature of regulation is the way macroprudentialism seeks to prevent, rather than merely respond to, the build-up of risks developing across this key sector of the global economy (Haldane and May 2011). Macroprudentialism proposed a real innovation to post-crisis regulation – that of generating and acting on cross-sectoral knowledge about systemic risks – one that RegTech has served to counter in harking back to pre-2008 stress on microprudentialism.

Materialising the ‘ideational shift’ (Baker 2013) of macroprudentialism post-2008 required not only the injection of what political economists have called ‘fresh thinking’ but concrete ‘change and innovation [...] to make it a reality’ (Underhill and Blom 2013, p. 131). Andrew Baker (2018) for instance argues that ‘an active process of intellectual translation in which a principled systemic vision is articulated [...] requires the exercise of substantial, analytical and normative imagination and creativity’. To Baker’s (2018) stress on ‘heavy intellectual lifting to interrogate what the normative and ethical implications of a given macro-ontology’ we add an emphasis on materiality that an STS-influenced stress on imaginaries provides. The materialisation of more dynamic macroprudential regulatory vision was reliant upon technological developments. This process began subtly as early emphasis on qualitative parameters of uncertainty gave way to a stress on quantifiable uncertainty, or risk (Nesvetailova and Palan 2010). Yet, reliance on what Baker (2014, p. 36) calls ‘mathematised control technologies’ became understood as necessary for ‘the technical capacity of regulators to reach such calculations and judgements and the data sets and data collection techniques they have to hand’. Kranke and Yarrow (2019, p. 817) describe how ‘macroprudential *ideas* have been tamed by the microprudential risk measurement *practices*’. The fallback on such pre-crisis practices can in part be understood due to wider ‘turn to technology’ of which RegTech has remained an underexplored component. For instance, Brown and Piroska’s (2021, p. 24) position the regulatory sandbox as ‘an outlier to the post-GFC “macroprudential turn”’, arguing that it ‘belongs to the pre-GFC high liberal regulatory approach: it promotes a hands-off or *laissez-faire* approach of regulation, and it focuses on individual fintech operation in the financial market and thus lacks a systemic supervisory component’.

The pre-crisis microprudentialism that RegTech harks back to is a failure since only *portions* of financial regulation can effectively be changed to bits. As Philip Mirowski (2007, p. 239) noted prior to the GFC, ‘markets have attained a higher degree of computational complexity throughout time, even though most individual markomata might still operate at a relatively rudimentary level’. RegTech spurred the materialisation of a particularly persistent vision of regulation doubling-down on the pre-2008 microprudential view of regulation as a monotonous activity. While the macroprudential ideational shift recognised the need to interpret complex, systemic risk, RegTech represents material continuities in how the ebb and flow of regulation as a hermeneutic practice cannot be reduced to pre-ordered calculations in any kind of productive way.

In sum, by materialising a pre-2008 microprudential vision of global finance, quite literally, ‘into bits’, RegTech fails to sediment and advance the more dynamic vision of regulation as a set of hermeneutic practices that evolved during and in the immediate aftermath of the global financial crisis. Instead of facilitating financial regulation that navigates and negotiates attempts to interpret uncertainty *as it happens*, RegTechs materialise a static, ahistorical vision of regulation. This solutionist

RegTech imaginary offers, paradoxically, little in the way of solutions to key question of how regulation can try to make sense of what happens and react to ‘the event of the market that is always *what happens next*’ (Ayache 2010, p. 26). As we turn to address next, quite a bit has changed in financial markets since 2008 that RegTech remains blind to.

### Systems failure

A second and related failure of the solutionist RegTech imaginary lies in simplifications that conceal important complexities of a diverse sociomaterial world. Morozov (2013, pp. 260–1) stresses how solutionism and the numeric imaginaries are ‘very bad at describing complex systems, let alone imagining how those systems can be rearranged’. This is since such imaginary ‘enables us to think in numbers’, yet it ‘never challenges us to think of how a *different* set of numbers might be generated’ (*ibid.*, p. 262, emphasis added). The problem here is the inability to materialise alternative visions (or in Morozov’s words, a ‘different set of numbers’) in ways that do not merely recreate flawed existing systems (e.g. microprudential focused regulation) and reduce complex systemic problems like global financial crisis to overly narrow, individual solutions.

The imaginary of RegTech persistently foregrounds *individual*-level firm and sectoral issues such as misconduct, insider trading, AML/CTF, fraud, and others typically emphasised in microprudential regulation. Meanwhile, *systemic*-level interconnections of the type stressed in macroprudential regulation are infrequently represented in RegTech in the empirical materials we gathered. This analysis is confirmed by an FSB survey (2020, p. 26 italics added; see also Figure 2 below), which found that until 2016 SupTech applications were mostly explored ‘in areas such as regulatory reporting, data management and market surveillance. However, since then, *use cases have modestly reduced in these disciplines towards greater use cases in micro prudential and misconduct analysis*’. Similarly, the FSB concludes that ‘the primary use cases of RegTech tools among regulated institutions are in fraud detection, reporting, risk management and AML/CTF, with an upward trend in the field of KYC and identity verification’.

The central point here is not that there is no systems-level imaginary provided by RegTechs. Rather it is that across the levels of regulatory activity, RegTech does not materialise any new vision for addressing the host of systemic issues arising in global finance. As the Expert Group on Regulatory Obstacles to Financial Innovation detailed in a 2019 report to the European Commission:

The adoption of standards-based common RegTech and SupTech solutions would assist firms (e.g. in day-to-day regulatory reporting), supervisors (e.g. in analysing suspicious transaction reports, reported data and data-

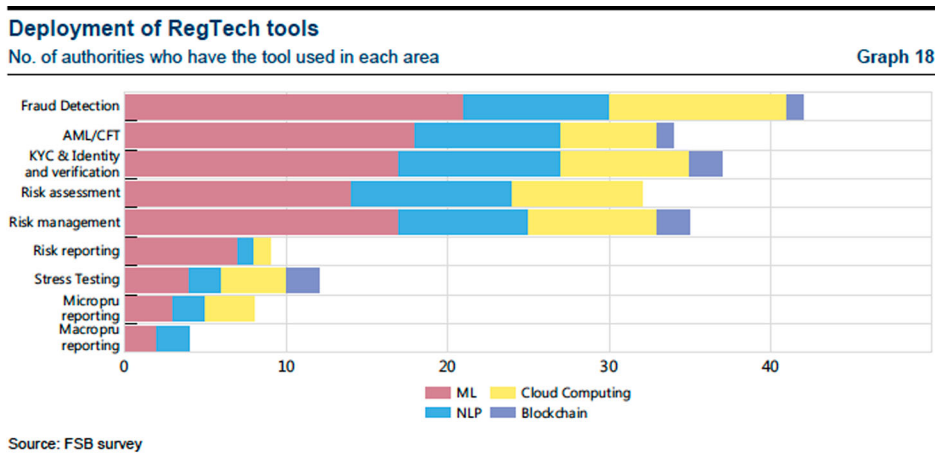


Figure 2. Deployment of RegTech tools: areas of interest. Source: FSB (2020, p. 31).

sharing cross-border), and the ESAs (e.g. *in the context of the reporting of data for stress test exercises and the monitoring of macro prudential risks*).<sup>5</sup>

The vision advanced instead is one of ‘digital technologies that make regulatory compliance and reporting, on the one hand, and supervisory processes and risk analysis, on the other, more efficient and cost effective’ (*ibid*). When they do materialise, macroprudential approaches to regulation are positioned as merely *one of a variety* of contributions that RegTech is imagined providing. As illustrated in Figure 3, the BIS relegates the macroprudential ‘use cases’ of RegTechs under the ‘Data analytics’ category of ‘Supervisory Technologies (SupTechs)’ (BIS 2019).

In the RegTech imaginary, macroprudentialism is envisioned as number crunching to enhance analytics in certain specific areas like forecasting, as well as unspecific ones (e.g. ‘risk signaling’). The macroprudential solutions offered by RegTech are envisioned as merely one of various solutions to problems understood *separately*. Rather than providing solutions connecting between and across areas/sectors of finance, RegTech is represented as rendering individual operations and sectors more efficient – thereby remaining squarely within the dominant framework of analysis structured by methodological individualism (Ahdieh 2011). Put differently, the largest, most significant and historically reoccurring problem in global finance – crises of growing scope and severity – is presented as just one of many separately considered problems. There is little creative interpretation of how RegTech is intended to make the global financial system *as a whole* more efficient than the sum of its more efficient parts. The vocabulary of optimisation and efficiency is never questioned, and always assumed as a necessary foundation of the system that, seemingly, cannot be questioned. This is despite very profound systemic changes since 2008 in both financial markets and their regulation that RegTech’s numerical and sector focus remains blind to, but which both political economy and social studies of post-2008 finance have increasingly identified and debated. These include, but are not limited to, major shifts from the Washington to Wall Street Consensus (Gabor 2021, Schindler *et al.* 2022), from bank-based to market-based finance (Hardie and Howarth 2013), as well as the growth of ‘asset manager capitalism’ (Braun 2021) and assetization of social relations, technical and data itself (Sadowski 2019, Birch and Muniesa 2020). These complex changes are difficult – if not impossible – for RegTech’s narrow numerical imaginary to consider.

Graph 5

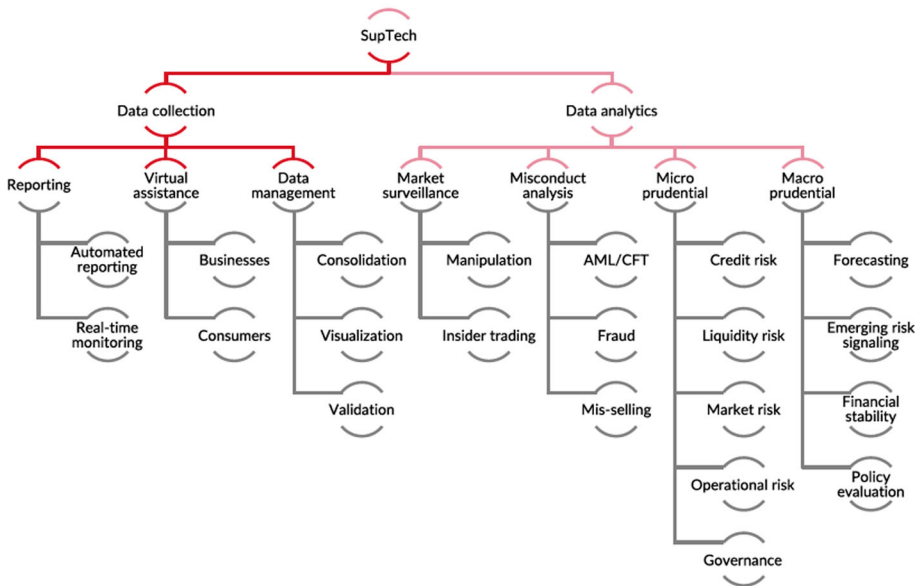


Figure 3. Where Macroprudential Solutions ‘fit’ in SupTech. Source: BIS (2019, p. 10).

In sum, instead of addressing ‘macro’ problems of systemic change and growing interconnectivity RegTech visions materialise solutions to ‘micro’ problems that are envisioned *separately* from solutions to larger problems, like systemic risk, that are stressed by the macroprudential paradigm and which remain largely wished away. The RegTech imaginary fails to offer insights into the connections between the microprudential (individual) perspective and the macroprudential (systemic) perspective. This failure appears clearly in BIS (2019, p. 13), which sees a potential use of ‘neural networks to detect liquidity problems at banks in anticipation of potential deposit runs’: but such use does not show, nor discuss, connections between banks – which are crucially involved into systemic risks. Although the BIS (2018, p. 8) contains indications on data consolidation, for example, as ‘supotech allows for the smooth creation of macro data by aggregating micro data, such as risk exposures and interconnections between financial institutions’, the AML example used to underline this case remains unclear about what the systemic implications of better detecting money laundering are. Although it remains to be seen, there is the potential for RegTech to exasperate the very problems it is envisioned as resolving.

## Conclusion

Furthering an on-going interdisciplinary engagement between political economy and STS, this article drew on the notion of socio-technical imaginaries to interrogate the social sharing and materialisation of *visions* underpinning emerging technologies, that are explicitly geared, marketed and sold as fulfilling regulatory aims. Identifying the RegTech imaginary emerging in global finance since 2015, we questioned the novelty of the solutionist visions RegTech materialises and underlined its twin dynamism and systems failures. Our findings indicate that, at best, the RegTech imaginary fails to live up to the hype surrounding it. At its worse, RegTech actively distracts and impedes efforts to materialise *alternative* visions of what regulation, technology and the combination thereof can be and can do. By simplifying regulation to ‘following a rule’ – understood from a computational perspective – the RegTech imaginary sidesteps the more dynamic views of regulation, based on context-dependent interpretations characterised by finitism (Hatherly *et al.* 2008). By focusing on idiosyncratic firm-by-firm and sector-by-sector problems, the RegTech imaginary sidesteps efforts to materialise more systemic and dynamic approaches to regulation in a global finance and its governance that are each undergoing profound changes. Together these failures point to a RegTech imaginary offering little to understand and act on the vast portion of activity that regulators and financiers themselves must consider as systemic to prevent reoccurring crises in this crucial sector of the global economy.

Future research needs to consider RegTech as a potential generator of crisis and instability. The extent to which the phenomenon is not merely a *response* to, but also a *cause of* instabilities in financial markets and beyond is important to consider. This is particularly because artificial intelligence (AI) is often invoked as solutions to the kinds of dynamism and systems failures we identify in this article. Yet, as indicated in other activities such as policing (Eubanks 2017), how and to what extents might AI systems merely further code the failures we identify here into global financial regulation? Equally important is to assess the degrees to which RegTech has been imagined in potentially similar and different ways historically and geographically. Future research in languages beyond English could inject variation in RegTech beyond its apparent origins at the British FCA and initial take-up in the Anglo-American financial centres. Notably, RegTech imaginaries in Asia in general and China in particular may be distinctive from those identified in our analysis. This is a particular important line of inquiry for political economy scholars given the rapid and extensive degrees to which RegTechs are becoming integrated in China (Gruin 2021). In sum, our hope is that this contribution to interrogating RegTech catalyses wider and more profound questioning of the visions underpinning an important but largely neglected phenomenon emerging in financial governance since 2015.



## Notes

1. As indicated by web searches on Google Trends: <https://trends.google.com/trends/explore?date=all&geo=US&q=regtech>
2. For instance, FSB (2020) highlights 28 case studies of illustrative RegTech firms, while Deloitte (2020) provides extensive lists of RegTech companies across various sectors of activity.
3. See: <https://www.pentagram.com/work/droit/story>.
4. See <https://ciphertrace.com/ciphertrace-introduces-cryptocurrency-real-time-predictive-risk-scoring/>.
5. See: [https://ec.europa.eu/info/sites/info/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/191113-report-expert-group-regulatory-obstacles-financial-innovation\\_en.pdf](https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/191113-report-expert-group-regulatory-obstacles-financial-innovation_en.pdf).

## Disclosure statement

No potential conflict of interest was reported by the authors.

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