“#Imagination Fail”: RegTech in Finance

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Abstract:
The notion of ‘RegTech’ emerged over the past half-decade and has become a buzzword for applications of emergent technologies to regulatory activities. This paper contextualizes 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 ‘imagination’ from Science and Technology Studies, we identify a particular solutionist vision materializing across public documents from national and international financial regulators, industry organizations, as well as RegTech and consulting firms. Based on Social Studies of Finance and International Political Economy studies of finance we draw out two failures of the RegTech imagination. First, is a dynamism failure in the way RegTech materializes static visions of regulation. Second, is a systems failure as the solutionist RegTech imaginary focuses on narrower, individual problems in finance. We conclude that RegTech reflects continuities rather than the profound changes its advocates and observers exclaim. Our analysis points to the need to further identify and interrogate the novelty underlying the possibilities and limits posed by technology for regulation in a digital world.

Keywords: Digitalization; Financial imagination; Financial regulation; FinTechs; Imaginary; Innovation; New technology; RegTechs; Risk and failure.
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Introduction

This paper contextualizes and interrogates the novelty of the RegTech phenomenon as expounded in recent years by industry practitioners, regulators and a growing chorus of scholars. Drawing on an underutilized notion in studies of information systems, that of ‘imagination’, we document what we call a ‘solutionist imaginary’ underpinning RegTech. We do so by examining visions materializing across the sector from which this phenomenon emanated since 2011: global finance. Drawing together Social Studies of Finance (SSF) and International Political Economy (IPE) studies of finance, we identify two failures of the RegTech imaginary. First, a dynamism failure in the way RegTech materializes static visions of regulation. Second, is a systems failure as the solutionist RegTech imaginary focuses on narrower, individual problems in finance. Together, these two failures reflect important continuities undercutting the promise of profound changes that RegTech advocates and observers continually promote.

In identifying and elaborating these failures, this paper extends the few critiques existing of RegTech in finance. Such critiques have ranged from early post-2008 applications in specific areas (Williams, 2013) to the “Tower of Babel problem” (Butler, 2017; Haldane, 2012) of semantic issues as posing “a huge challenge and a significant obstacle for RegTech” (Butler and O’Brien, 2019: 87). Most complementary to our analysis is Omarova (2020: 50), who views attempts for RegTech to replace “normatively grounded, and holistic judgment with an algorithmic matching of standardized 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”. These and similar issues have been raised by regulators but not yet synthesized into a more systematic critique examining the specific visions materializing in RegTech.

The central contribution of this article then is to open up RegTech to more critical interrogation. Rather than providing definitive answers, we seek to catalyze a more profound questioning of the visions underpinning this emerging phenomenon. Our central claim is that despite its wrapping in the language of ‘disruption’ and ‘innovation’ RegTech fails to renew longstanding static understanding of notions of regulation and technology. In the sector in which it originated, global finance, RegTech has not delivered fundamentally new perspectives on how financial regulation could be thought and practiced in a time of increasingly extensive automation and digitization. Such continuities matter as, contrary to Currie et al. (2017), we find RegTech to be enabling

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1. We refer the expressions “global finance” or “finance” mostly to Anglo-American finance that dominate the global financial system today, with London and New York City as the main centers of trading, banking and insurance. The examples and observations used in this paper have, for a vast majority, been collected in these countries. However, this does not mean RegTech have, will, or could develop in distinct directions in other geographic areas. This variation is noted as an important direction for further research.

2. See for instance: ESRB (2020). Table 1 in the Appendix provides the list of documents (primary sources) quoted in this article, Table 2 provides the full name of acronyms used in Table 1.
rather than revolutionizing a financial system marred by crises of increasing frequency and severity.

To elaborate our argument, we proceed as follows. First, we distinguish views on imaginaries as broadly socio-technical phenomena drawing on an interdisciplinary lineage of thought in Science and Technology Studies (STS), and narrowly ‘solutionist’ drawing on the work of Evgeny Morozov (2013). Second, we provide methodological contexts on how and where we identify a RegTech imaginary. Third, we identify four key characteristics of RegTech in finance. Fourth, we highlight two failures of the RegTech imaginary and point to significant continuities in the visions it materializes following the global financial crisis of 2007-8. We conclude by summarizing our argument and offer suggestions for further research.

### Imaginaries and their Limits

In this first section, we elaborate two distinct approaches to conceiving and interrogating imaginaries: we contrast an interdisciplinary view with an integrative view in setting the stage for our analysis of the RegTech imaginary.

**An Interdisciplinary View: The Socio-Technical Imaginary**

In the social sciences, ‘imagination’ and ‘imaginary’ are invoked in many distinct ways. Typically, multiple conceptions are set in conjunction with other terms, qualifying for instance a specific “moral imagination” (Godwin, 2012; Hargrave et al., 2020), a “social imaginary” (Lash, 2012), or “spatial imaginaries” (Shim, 2014) – to name a few among a myriad possible examples invoked across anthropology (Durand, 1999; Godelier, 2020; Sneath et al., 2009), philosophy (Sartre, 2004), literary studies (Mooij, 1993), or International Relations (Chenou, 2019).

Drawing together insights from across fields of study, we distinguish 1) ‘the imaginary’ as a material *product* emanating from 2) the *process* of imagination. We understand the latter as a complex psychological phenomenon broadly involving the social sharing of individual *representations* (the process) that, when materialized in ‘concrete’ ways, become imaginaries (the product). Our understanding and use of ‘imaginaries’ is closest to those elaborated in Science and Technology Studies (as in, McNeil et al., 2017), and in particular the notion of “socio-technical imaginaries” defined by Jasanoff & Kim (2009: 120) as “collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects.” Both the process of imagination and the product of imaginary, respectively, are creative developments at the heart of what is generally referred to as ‘innovation’. Yet, imagination and imaginaries can be ‘innovative’ in both a forward-, as well as backward-looking sense. They can open up new possibilities, as well as foreclose them. The important point is that imaginaries and the process of imagination are not necessarily progressive; they can also be regressive and, indeed conservative. This is because imaginaries are structured by both the social and technical settings into which they materialize. To the extent that they are ‘innovative’, these processes are best understood as *bricolage*: “the creative, ad hoc re-use of existing resources (ideas and other cultural resources as well as artefacts)” (MacKenzie and Pardo-Guerra, 2014: 157).
The interdisciplinary view of imaginaries then foregrounds the social and the technical. In Jasanoff’s (2015: 4) words, imaginaries are “collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology”. Collective is crucial here as individual representations of the world remain just that – representations in one’s mind – if they are not shared. The social sharing of individual representations occurs in both material and non-material ways. In the former instance, and for example, individual representations are shared verbally in conversations that may be passed on generationally. In the latter instance however, materiality involves the sharing of representations in documents, pictures or via other media. Representations are materially embedded in printed pages, shared via internet cables, saved on hard drives and implicated in other technologies. The key point here is that both collectiveness and concreteness are crucial: as opposed to ‘dreams’, imaginaries are ‘real’ to the extent that they can be identified in objects and their materiality, in turn, contributes to the further diffusion of visions, allowing for a broadening of collective worldmaking.

In short, imaginaries are ‘real’ in being both structured by the social and technical settings through which they emerge and are taken up. They also have structuring effects on collective action, as stressed in the second view to which we now turn.

**An Integrative View: The Solutionist Imaginary**

A specific manner of socially and materially enacting individual visions is channeling the creative process of imagination into the development of concrete solutions that ‘fit’ within, rather than challenge, existing structures and practices. What we identify as the ‘solutionist imaginary’ is characterized by four main features:

1. A materialization of visions focused on solutions rather than on problems. In foregrounding the former, the latter tend to be assumed and naturalized: “solutionism presumes rather than investigates the problems that it is trying to solve” (Morozov, 2013: 6). Like socio-technical imaginaries, solutionist imaginaries are concrete in impacting collective action.

2. A solidification of existing visions that shy away from offering new shared visions. Solutionist imaginaries advance what we specify as ‘integrative’ solutions for perceived problems rather than ‘out of the box’ attempts to reframe problems. They involve a “failure to ‘problematize the norm’” (Williams, 2013: 556), persisting with solutions presuming rather than problematizing the problem.

3. A “twisting” of the very perception of problems in ways that obscure achievement and the meaning of success. In their focus on solutions, “the problem becomes something else entirely” (Morozov, 2013: 8). The ‘innovation’ here is to silence the problem by re-framing failure to address it as success (see more generally, Best, 2020). This re-positioning can occur through multiple means, most prominent of which in the digital age is through quantification. Morozov (2013: 260-261) equates solutionism with a “numeric imagination” and a “predisposition to seek out quantitative and linear casual explanations that have little respect for the complexity of the actual human world”.


(4) A universalizing of solutions as always applicable, everywhere. In harnessing quantified facts as key metrics of success, the solutions imagined here are “seen as eternal”, as well as ones that are “timeless and never expire” (Morozov, 2013: 260). The universality of techno-solutions is understood as applicable across both time and space.

These four features are not disconnected from one another but tend to overlap and feed into one another in practice. Before illustrating the solutionist RegTech in global finance we outline important limits to such imaginaries.

**Imagination Fail**

What we describe as imagination failure refers to the inability of solutionist imaginaries to overcome two key limits. First and foremost, is the tendency of their simplifications to conceal important complexities of a diverse socio-material world. Morozov’s (2013: 260-261) central critique is that solutionism and the numeric imagination are “very bad at describing complex systems, let alone imagining how those systems can be rearranged”. This is because while such imaginary “enables us to think in numbers”, it “never challenges us to think of how a different set of numbers might be generated” (*ibid.*: 262, emphasis added).

The second, and related, limit to solutionist imaginaries is ahistorical stasis. Morozov (2013: 261) criticizes how the numeric imagination “lives in the present and eschews any kind of contingency and historicism.” This, he argues, is problematic insofar as “most present practices, norms, and commitments are not timeless” (*ibid.*, emphasis added). Morozov then goes on to distinguish the numeric imagination from the “narrative imagination” where there is far more recognition and interaction “with complex socio-technological and political systems and the ability to see one’s own role in them” (*ibid*). And indeed, in the narrative imagination there is far greater awareness of the observer in accounting for the world in particular ways. This self-reflexivity is juxtaposed with the numeric imagination’s stress on objective accounts that are timeless and never expire: “the world just reveals itself before the observer much like electricity use reveals itself on the observer’s metering system: there’s not much to debate” (*ibid.*). What Morozov identifies here is an imagination that re-makes the world in a way that ‘fits’ with existing realities through numerical information – like prices in financial markets – that are simply ‘discovered’ rather than constructed. Despite its narrowness and limited creativity, such an imagination is pervasive in both financial and regulatory imaginaries of technologies, which are considered mere tools to strengthen and reinforce markets.

Imagination failure can then be overcome by side-lining imaginaries foregrounding ‘objective’ solutions in favor of more self-reflexive “narrative imagination”, offering interpretations of the multi-fold problems facing finance in particular rather than universal contexts in which pathologies like instability, criminality, inequalities are socially and materially embedded. This returns to the interdisciplinary view outlined above in which the successes and failures of imaginaries need to be “temporally situated and culturally particular” (Jasanoff, 2015: 19). The next sections thereby explore imaginaries of RegTech evolving in the specific context of global finance.
Locating and Situating the RegTech Imaginary

To identify and interrogate the emerging RegTech imaginary, we turn to the financial sector for two main reasons. First and foremost, the term initially appeared in a call for input on a document entitled *Supporting the development and adoption of RegTech* published by the United Kingdom’s Financial Conduct Authority (FCA, 2015). Google Trends indicates that online searches for RegTech took off thereafter. This particular context is important as finance is where many of the most contentious changes in regulation and technology originated over the centuries. Banking, bookkeeping, insurance can all be understood as technologies that arose in response to crises and challenged existing modalities of governance (de Goede, 2005). The context in which specific visions of RegTech materialize is equally important to consider because finance in 2011 was, and arguably still is, recovering from what economic historian Adam Tooze (2018) refers to as a ‘decade of financial crises’ that began with the 2007-8 financial crisis and whose shockwaves surfaced in the 2010 Eurozone crisis and the emerging markets crisis that followed.

The second reason for locating the RegTech imaginary in global finance is due to the oversight of technology and regulation in the otherwise expansive interdisciplinary literature on financial imaginaries (e.g. Haiven, 2010; Komporozos-Athanasiou, 2020; Komporozos-Athanasiou and Fotaki, 2020). Existing studies have identified ‘the financial imaginary’ in regulatory circles as representing efficiency, rationality, optimization, creating a conceptual space where solving (mathematical) problems and finding solutions to complex equations is key (Ailon, 2019; Ortiz, 2014). The vision of global finance, shared amongst regulators and market participants alike, has long been one of hyper-competition. Meanwhile, regulation is typically envisaged as either obstructionist or as a limited tool for solving market imperfections and/or vulnerabilities, whether they result from conjunctural misbehaviors or more structural inefficiencies. While useful in identifying financial imaginaries dominating this sector, the existing literature has granted less consideration to the roles of technologies in regulation, generally, and RegTech in particular. Our analysis overcomes this gap by identifying the RegTech imaginary emerging in global finance since approximately 2015.

Documentation collected from four sites enabled us to identify the collective vision of RegTech materializing in global finance. First, is the firm-level site, where visions of individual RegTech visionaries materialize in start-up firms and other market-based organizations offering technology services for regulation. Here we consulted white papers and promotional material outlining collective visions for financial regulation. Second, is the industry-level site where visions of individual firms materialize in documents produced by national and transnational associations such as the Washington, D.C. headquartered Institute for International Finance. Third, is the professional-level site, where visions of accountants, consultants and lawyers materialize into shared documentation by the ‘professional services firms such as ‘Big Four’ companies (Deloitte & Touche, Ernst & Young, KPMG and PwC). Fourth, and finally, is the regulatory-level site, where visions of RegTech shared across industry bodies materialize into formal public and quasi-public documents by central banks and the ‘central bank of central banks’, the Bank for International Settlements (BIS).

In order to identify and collect documentation from these four sites, we searched institutional websites, selecting all documents containing keywords “regtech” and “regulatory technolog*”. We then examined a total of 135 documents and discarded those that were not relevant (N = 42), favoring for example an original report rather than the press release advertising the publication of said report. A total of 93 documents tackling RegTech in some detail were collected (see Annex 1). The qualitative data analysis software MAXQDA was then employed to create frequency tables of prominent notions and themes that enabled our identification and interpretation of the emerging RegTech imaginary in global finance.

The RegTech Imaginary in Global Finance

Our analysis of documents produced by firms, industry associations, professional services firms, and regulatory institutions reveals a RegTech imaginary that is highly techno-solutionist in matching each of the four following features above. In the following subsections, we illustrate a dominant RegTech imaginary that foregrounds (a) solutions rather than problems; (b) ‘fit’ within existing structures and practices; (c) quantified metrics of success; and (d) universality of application across time and space.

Focused on solutions rather than problems

To recall, “solutionism presumes rather than investigates the problems that it is trying to solve” (Morozov, 2013: 6). Across financial firms, industries, regulators and professional organizations, RegTech documents consistently stress solutions to problems whose roots are infrequently elaborated. Based on its response to the 2015 UK Financial Conduct Authority’s Call for input, the IIF (2016: 2) defines RegTech as “the use of new technologies to solve regulatory and compliance requirements more effectively and efficiently”. At industry-level, RegTech is envisioned as materializing a wide range of solutions to the legal needs of firms, specifically the 500 firms from 70 different countries represented by a private association like the IIF. At regulatory-level, RegTech is re-positioned as ‘Supervisory Technology’ (SupTech), as BIS (2019: 6) illustrates in the chart reproduced below, “third-generation data collection solutions and fourth-generation data analytics solutions are considered suptech” (see Figure 1).

--- Insert Figure 1 here ---

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, founded in 2012, 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

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4. Where White Papers were not available at firm-level, information was gleaned from websites of RegTech firms that were identified in documents produced at the three other levels. For instance, FSB (2020) provides 28 case studies, while Deloitte (2020) provides extensive lists of companies in various sectors of RegTech.
“computational law and automated real-time decision-making”. The vision materializing in ADEPT is of RegTech as a tool that automates the intelligence behind decisions that guide transactions from banks, asset managers, hedge funds and execution venues through the thousands of rules and regulations necessary for compliance. These global legal frameworks are always changing, and Droit, working in real time, changes along with them. The platform is engineered to analyze the intricate rules behind transactions as they happen, incorporating digitized legal texts, machine-readable regulations and machine-executable implementation. (Droit website)

Designed as a “responsive solution”, ADEPT materializes a vision of RegTech as solution to a problem – that of regulation – that is objectively understood rather than questioned, with little discussion or interpretation. There is little questioning of the very source of changing regulation: the volatile nature of finance.

This first characteristic of the solutionist imaginary is also found at the professional level. For instance BFA Global, a “research, advisory, data analytics and product innovation firm focused on the intersection of finance, data and technology” that sells 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: 1). Taking the case of Anti-Money Laundering and Counter-Terrorism Financing (AML/CFT) regulation, BFA Global underlines how “existing applications of ML to AML/CFT have already demonstrated their effectiveness in lowering the incidence of false negatives and false positives” (ibid: 26). Here AML/CFT regulation is conceived of as an activity that amounts to the identification of money flows rather than deeper analysis of problems stemming from the socio-economic and socio-cultural contexts in which money-laundering and/or terrorism financing occurs (Maurer, 2016). Once again, RegTech is envisaged as merely a solution – in this case for identifying illegal practices – rather any more fundamental question of the deeper roots of such problems.

Solutions that ‘fit’ within, rather than challenge, existing structures and practices

Our set of documents also reveals a vision of RegTech in global finance materializing solutions that extend existing visions while shying away from offering new shared visions. Despite being referred to as enabling a paradigm shift in financial regulation (CGAP, 2016), the RegTech imaginary we identify is one in which technologies ‘fit’ within longstanding efforts to address problems in finance rather than propose any fundamental ‘rethink’ of existing approaches (Anagnostopoulos, 2018). This characteristic emerges at all the sites of financial activity that we examined but is particularly clear in documents from the regulatory level. A BIS report defines this particular form of RegTech as extending a “risk-based approach to supervision” (BIS, 2018: 1). This approach, however, is far from novel. Rather it is a longstanding approach to regulation both internally, within financial corporations (e.g. Power, 2004) and financial regulators themselves (e.g. de Koker, 2009). One can even 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’, RegTech is envisioned as extending rather than re-visiting the risk-based approach to regulation.

What is not conjured here is fundamental change to a longstanding risk-based approach. This is in spite of major problems with this approach having been widely exposed in the worst financial crisis since the Great Depression. In the lead up to the volatilities of 2007-8, a flurry of systemic risks remained unnoticed amongst others, due to calculations that were siloed (Tett, 2009). Regulators themselves recognized these blind spots in the aftermath of the crisis (Haldane, 2012). Yet despite such recognition of the potential for further unaccounted risks, alternative visions to the pre-existing risk-based approach do not materialize in RegTech. For the IIF (2016: 3-4), for example, a key benefit of RegTech is 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 is stress on improving the data underlying a risk-based approach rather than shifting away from this approach. The status quo nature of RegTech imaginaries is echoed in the BIS’ vision of RegTech, which it narrows to SupTech, and envisions as enabling “[d]ata standardization, data quality and data completeness” (BIS, 2018: 3). Positioning RegTech as improving rather than overcoming risk-based approaches to regulation is thus an imaginary of progressive tinkering with what exists already rather than revolutionizing. Simply acknowledging that the improvements offered by RegTech are “likely to come with relevant challenges” does not in itself provide novel solutions to either these or earlier well-recognized challenges.

Further illustrations of RegTech materializing visions that are far from ‘out of the box’ are provided at firm-level. California-based analytics CipherTrace for instance develops “forensic tools”, for “real-time predictive risk scoring” of activities on the ‘distributed ledger technology’ otherwise known as blockchains that arose in the aftermath of the 2007-8 financial crisis. This RegTech solution to illicit activity on the most infamous application of this technology, 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 novelty 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”⁶. Fundamentally, however, the technological solutions provided by CipherTrace and other ‘blockchain intelligence services’ firms seek progressive improvement of the status quo, specifically to fix “weak or porous KYC [Know Your Customer] processes”. What this RegTech does not do is re-think financial identification practices. The vision materializing here simply extends pre-existing KYC practices, that of data collection and data analysis to flag potentially illicit users: despite the coating of RegTech in ‘newness’, nothing fundamentally novel is provided here.

Similar solutionist visions of RegTech materialize at professional-level. For instance, Big Four consultant KPMG (2017: 15) envisions 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 vision, 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 RegTech is envisioned as providing materialize in ways that extend existing practices rather than revolutionize them.

Solutions re-positioning failure as success through quantification

A further key feature of the solutionist RegTech imaginary is a predominance of quantification and calculation that attempts to re-frame existing problems as successes. One of the major issues regulators and firms have faced since finance became increasingly digitalized since the 1980s, has been the “data deluge” (Ainger, 2015): the increasingly vast quantities of data rendering decision-making – particularly, the risk-based analysis discussed above – increasingly difficult. The RegTech imaginary attempts to re-position this key problem of the digital age problem as a success. It does so by a ‘doubling down on data’ in which quality of the data informing decision-making is emphasized in a way that sidesteps the fundamental problem of seemingly ever increasing data quantity and, more to the point, how best to act on the variety, volume and velocity typically accorded to ‘Big Data’ (Campbell-Verduyn et al., 2017). Problems surrounding quantification and digitalization are thus not questioned in RegTech solutions attempting to reposition the ‘data deluge’ as more of an opportunity.

For instance, and at firm-level, RegTech data vendors promote improved data and the ability to make them “algorithm ready” (Gillespie, 2014: 171). The focus here is on producing ‘solutions’ that feed growing quantities of data into algorithm-based decision-making systems yet that not only overlook the data deluge, but also issues pertaining to how algorithmic systems act on such data in potentially problematic ways exposèd by re-occurring periods of volatility in which algorithmic decision-making goes awry (such as the ‘Flash Crash’ of 2010, see Borch, 2017). Due to their proprietary nature, the inner workings of decision-making systems are left ‘black boxed’, with discussion of their problems re-positioned as the most efficient way to measure success. The vision that RegTech firms collectively materialize then is one that reframes as analytical success key silences, such as the myriad processes that cannot be made algorithm ready – for instance on-demand regulatory advice provided by compliance officers as an answer to questions traders face in specific market contexts.

At the regulatory level, too, the quantification offered by RegTech is imagined as re-positioning failure as success. The body assigned by the G20 to supervise global financial stability, the Financial Stability Board, envisions the benefits of RegTech as “[t]ranslating rules into machine-readable format and enabling regulatory reporting for regulated institutions” (FSB, 2020: 32-33). It draws particular attention to how “Digital Regulatory Reporting” (or, DRR) by the Bank of England and the UK FCA attempts to convert reporting instructions enounced in natural language into code, exclaiming how:

Under DRR, the regulator would publish a coded version of reporting instructions. The natural language version may also be published or may be replaced by a structured, machine-executable version. This process utilizes constrained natural languages to limit the expressivity of regulatory text and requires the building of compilers to convert regulatory rules from machine-readable language into machine-executable language. (FSB, 2020: 43)
These remarks are echoed in a promotional video of the DRR initiative where the Bank of England and the FCA promote RegTech solutions as limiting the need for interpreting rules and automating compliance, even if that might not be possible for every rule. The vision RegTech materializes is one in which the problem of regulatory costs is reframed as a benefit through quantification.

The vision of RegTech materializing problems in financial regulation as codified digital solutions is also shared at professional level. Here law firms specializing in financial regulation put forward a vision of digital regulatory reporting that materializes as “inch closer to automated compliance” (Linklaters, 2020). The quantification of regulatory practices, however, reframes these along the very lines of the automated, algorithmic market practices that regulation is ostensibly meant to address. This vision of RegTech further materializes in documents of the FSB where regulation imagined mimicking the computerization of markets while side-stepping many of the well-recognized problems revealed by such processes. The RegTech imaginary develops as the anterior face of the same coin, as if regulation was diluted in the dominant cognitive framework, structured by practices of quantification. This characteristic of solutionism is best expressed by the global association of investment professionals, the Chartered Financial Analyst (CFA) Institute, which envisions “the true potential of RegTech” as “its ability to effect a profound transition from a ‘know your customer’ (KYC) to a ‘know your data’ (KYD) approach – underpinned by efficient and effective processes for the collection, formatting, management, and analysis of reported data, accompanied by a fundamentally datacentric mindset” (CFA, 2017: 3). Once again, the problems and failures involved with such a ‘transition’ are repositioned as successes through the recurrent emphasis on quantification and calculation.

**Solutions that are universal and timeless**

A final characteristic of the solutionist imaginary is the stress on facts that are “seen as eternal” in solutions that are “timeless and never expire” (Morozov, 2013: 260). While variation per sector and per jurisdiction is recognized across the documents we examined, RegTech is nevertheless seen as overcoming these differences in materializing a vision of regulation that is seamless and as interwoven as the global financial markets regulators are confronting. This is revealed by a stress on interoperability and standardization that positions RegTech as the solution to linguistic and other variation across jurisdictions and sectors. This ‘nuanced universality’ underlying the RegTech imaginary is noted especially at the regulatory level. For instance, the FSB (2020: 10) notes how data localization measures offered by RegTechs may “not apply universally, in larger scale jurisdictions, e.g., EU, same jurisdiction localization may be valid.” In the same report the Board goes on to argue that “language-specific fine-tuning and sometimes complete redevelopment of the tools may be inevitable to achieve good use of SupTech tools in multilingual jurisdictions.” This recognition of diversity-as-overcome-by-universal-technology perspective is shared by the German financial regulator BaFin (2018: 114) underlining how RegTech enables “policyholders could be inexpensively supported anytime and anywhere”.

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Similar forms of nuanced universalism materialize in RegTech imaginaries at the firm-level. Companies such as Arachnys (2020:12) position technology as accelerating the “onboarding and monitoring” in the context of KYC and AML/CFT compliance anywhere, anytime. Here variations in the applicability of RegTechs across time are downplayed as RegTech solutions are conjured as ‘timeless’ and always applicable. The “straight-through processing”, and “real-time registry” Arachnys materializes is a similar time of instant regulation transpiring in visions by firms like Silicon-valley start-up Compliance.ai (2020: 24) delivering “trustworthy insights, analysis, summarization and obligation detection in real time, setting it vastly apart in speed and cost from other products that rely on manual analysis.” These firm-level imaginaries also appear at professional-level, where global consultancies such as KPMG (2017: 7), envision RegTech as materializing future regulation in which “artificial intelligence analyzes global trading, accounting, controls and risk management in real time”. This nuanced universality, that envisions digital technology as a solution for overcoming regulatory variation, is further echoed at the industry-level. The IIF (2016: 12) for example envisions RegTech as offering the “mechanism to give regulators direct, instant and full transparency of information” in financial institutions. It 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 analyze systemic risk” (ibid). Whether or not such nuanced universalism is appropriate all of the time, particularly in times of volatility and crisis, that are not addressed in visions of the benefits that RegTech materializes. We return to the themes of systemic risk and crisis in the next section, after a brief summary of the RegTech imaginary.

**RegTech as a Tentatively Solutionist Imaginary**

Our identification of key characteristics of solutionism in the RegTech imaginary emerging in global finance is solutionist in its materialization of visions of technology as solutions to certain pre-existing regulatory problems in universalizing ways that reframe problems as solutions through quantification. This imaginary, like all imaginaries, is of course tentative and open to change. Our findings note a remarkably stable vision materializing across a range of documents published in the half decade between 2015 and 2020. These reveal a consistently solutionist imaginary based on four characteristics across four levels of analysis and activity (see Table 3). Moreover, the solutionist imaginary we identify confirms the visions materializing more widely in the limited academic studies of RegTech that are available to date. Most prominently, the stress on techno-solutionism is visible in The RegTech Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries in Regulation where RegTech is focused on solutions rather than problems: “the use of technology specifically geared towards solving regulatory problems” (Barberis et al., 2019: 147). While echoing the potential for enabling “paradigm change” (Katics, 2019: 312), scholars of RegTech also go on to note its tendency to re-enforce rather than revolutionize existing regulatory paradigms in providing “byte by byte” improvement of existing practices (Arner et al., 2017: 404 sq.). We now proceed to interrogate this and other key tensions in drawing out two key failures of the RegTech imaginary.

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12
Discussion: Two Failures of the RegTech Imaginary

This section highlights two failures of the solutionist RegTech imaginary that we identified in the previous section. We build on the interdisciplinary view of imaginaries and Morozov’s critiques of the solutionist imaginary above to argue that the visions materializing in RegTech fail in two ways: 1) the ahistorical and static views of regulation, 2) the oversimplified solutions that focus individual sectors of finance.

Dynamism Failure

To recall, one of the central limits of solutionist imaginaries outlined above is their ahistorical stasis. Morozov’s key criticism of solutionism is the setting aside of contingency, the understanding of practices as necessarily situated and unfolding in particular contexts. This is contrary to what he contrasts as a narrative imagination, structured by hermeneutic practices of interpretation.

A first way in which the RegTech imaginary fails then is in materializing 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 recognizes and acts on problems is at odds with a more dynamic, context-dependent view of regulation as creative jurisprudence (Lenglet, 2019). 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 particularly define financial activities (Riles, 2004). It is exposed particularly during periods of volatility such as during the 2007-8 financial crisis. Then as always, monitoring transactions was of course an important task for regulators, internal controllers and compliance officers. Yet regulation progressed in far more dynamic, context-dependent manners. At the height of market volatility, in September 2008, short-selling bans that forbade speculation on certain stocks became enforced in order to prevent a wider market 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 authorize transactions. The point is that regulation is not simply a form of monitoring that can be coded into algorithmic procedures (Siering et al., 2017), but a set of active interpretations of rules that themselves evolve in particular geographical and temporal context. Fundamentally, regulation is a relational activity (Thompson, 2011) involving dynamic processes, which in the solutionist RegTech imaginary does confront directly through its emphasis on static view of regulation.

The particular historical context in which visions of RegTech materialized is important, we believe, because of the challenge the 2007-8 global financial crisis provided to the form of risk-based analysis prevalent in this sector. Widely acknowledged to have contributed to major oversights of risks that led to the most severe crisis since the Great Depression was a microprudential stress on regulating risks in specific institutions (banks, insurance companies) and individual sectors (banking, insurance, securities, etc.). This approach was countered by a macroprudential stress on risks stemming from interplay between firms and in complex, evolving
relations between sectors. 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 in and across this key sector of the global economy (Haldane and May, 2011). There is a far more active attempt here to overcome critiques that “the national and global regulators did not understand the complex underlying systemic risks […] nor could they keep up with the pace of their innovation” (Goldin and Vogel, 2010: 7). Instead, macroprudentialism proposed a key innovation in post-crisis regulation: generating knowledge and acting on systemic risks.

Yet, materializing macroprudentialism required not only the injection of “fresh thinking” but concrete “change and innovation required to make it a reality” (Underhill and Blom, 2013: 131). As scholarly studies of the post-2008 period have noted, the more dynamic macroprudential turn was fundamentally reliant upon technological developments for its uptake into regulatory practice. 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). A reliance on “mathematised control technologies” became necessary as “the technical capacity of regulators to reach such calculations and judgements and the data sets and data collection techniques they have to hand” (Baker, 2014: 36). In other words, “macroprudential ideas have been tamed by the microprudential risk measurement practices” (Kranke and Yarrow, 2019: 817).

Only portions of financial regulation, however, can effectively be changed to bits. As Mirowski (2007: 239) argues, “markets have attained a higher degree of computational complexity throughout time, even though most individual markomata might still operate at a relatively rudimentary level”. What RegTech instead spurred the materialization of a particular vision of regulation that doubles-down on the pre-2008 microprudential view of regulation as a monotonous activity. If an essential aspect of macroprudential regulation is the need to interpret complex, systemic risk, it is unclear how RegTech representations materialize the ebb and flow of regulation as a hermeneutic practice that, for a good part, cannot be foreseen – or reduced to pre-ordered calculations – in any kind of productive way (see Table 4 hereunder).

In sum, in materializing 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 regulation that navigates and negotiates attempts to interpret uncertainty as it happens and provide a semblance of order to everyday market reality RegTechs materialize a static, ahistorical vision of regulation. Though solutionist in nature, RegTech imaginaries offered little in the way of solutions to the 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: 26)?
**Systems failure**

A second, and related, failure of the RegTech imagination lies in the inability to materialize an alternative vision (in Morozov’s words, a “different set of numbers”) in ways that do not merely recreate existing systems in reducing complex problems to overly simplified solutions. The imaginary of RegTech persistently foregrounds individual-level firm and sectoral issues such as misconduct, insider trading, AML/CFT, fraud, and others typically emphasized in microprudential regulation. Meanwhile, systemic-level interconnections of the type stressed in macroprudential regulation are infrequently represented as Table 5 below illustrates in listing the frequency of occurrence of key terms in the RegTech documents consulted.

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Insert Table 5 here

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This analysis is confirmed by a FSB survey (2020: 26 italics added; see also Figure 2 below from p. 31), 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”. The FSB (2020) concludes that “the primary use cases of RegTech tools among regulated institutions are in fraud detection, reporting, risk management and AML/CFT, with an upward trend in the field of KYC and identity verification”.

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Insert Figure 2 here

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The central point here is not that there is no systems-level imaginary; rather it is that RegTech simply does not materialize a vision for addressing systemic issues 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 analyzing suspicious transaction reports, reported data and data-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).” The vision of RegTech advanced 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 materialize, macroprudential approaches to regulation are positioned as merely one of a variety of contributions 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, 2018).

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Macroprudentialism is envisioned as numbers 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, moreover, are envisioned as merely one of various solutions to problems understood separately. That is, 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). In other words, the largest, most significant and reoccurring problem in global finance – crises of growing scope and severity – is presented as just one of many separately considered problems. There is little to no 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 optimization and efficiency is never questioned, and always assumed as a necessary foundation of the system that, seemingly, cannot be questioned.

In sum, rather than to seek to address the ‘macro’ problems of systemic interconnectivity, RegTechs are largely positioned as solutions to ‘micro’ problems that are considered separately while solutions to the larger problems, like systemic risk, stressed by the macroprudential paradigm, remain absent. To be sure, RegTechs are not imagined as possibly offering insights into the connections between the microprudential (individual) perspective and the macroprudential (systemic) perspective. This appears quite clearly in BIS (2019: 13), seeing 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 BIS (2018: 8) contains indications on data consolidation, as “suptech 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 make the case remains unclear about what the systemic implications of better detecting money laundering are.

Conclusion

This article identified the RegTech imaginary in global finance, the sector from which this phenomenon emerged since 2011. It interrogated the novelty of the visions RegTech materializes by pointing to dynamism and systems failures. Despite widespread claims to offer novelty, RegTech is far from new: indeed, all technologies order and re-order behaviors in particular ways. What is new with RegTech is the extent to which it strives towards codification, digitalization and automation of existing practices and behaviors – more specifically those that dominated global financial regulation prior to the 2007-8 crisis.

At its best, the RegTech imaginary fails to live up to the hype surrounding it. At its worse, RegTech actively distracts and impedes efforts to materialize different visions of what regulation, technology and the combination thereof can be and can do. By simplifying regulation to “following a rule” the RegTech imaginary sidesteps the more dynamic views of regulation in which “every action according to a rule is an interpretation” (Wittgenstein, 2009: 87). By focusing on idiosyncratic firm-by-firm and sector-by-sector problems, the RegTech imaginary sidesteps efforts to materialize more systemic forms of regulation in finance. Together these failures point to a RegTech imaginary that offers little for the vast portion of regulatory activity
that must consider systemic interconnectivity if it is to prevent and not contribute to the reoccurring crises in this crucial sector of the global economy.

Future research, could explore this link between RegTech and crisis, examining the extent to which the phenomenon is not merely a response to, but also a cause of instabilities in financial markets. Particularly here will be delving further into the artificial intelligence systems that are often pre-emptively invoked as the solution to the dynamism and systems failures we identify. Our hope is that this contribution to interrogating RegTech catalyzes wider and more profound questioning of the visions underpinning this emerging phenomenon.

Figure 1. The development of SupTech

![Image of Figure 1](Source: BIS (2019))
Figure 2. Deployment of RegTech tools: areas of interest

Source: FSB (2020)

Figure 3. Where Macroprudential Solutions ‘fit’ in SupTech

Source: FSB (2020)
<table>
<thead>
<tr>
<th>Title of document</th>
<th>Available at</th>
<th>Accessed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovative Technology in Financial Supervision (Suptech) – the Experience of Early Users</strong></td>
<td><a href="https://www.bis.org/fsi/publ/insights9.htm">https://www.bis.org/fsi/publ/insights9.htm</a></td>
<td>27 Jan. 2021</td>
</tr>
<tr>
<td><strong>The Imperative to Automate Regulatory Change Management for Compliance in Financial Services</strong></td>
<td><a href="https://www.compliance.ai/regtech100/">https://www.compliance.ai/regtech100/</a></td>
<td>27 Jan. 2021</td>
</tr>
</tbody>
</table>

Source: BIS (2019)
Table 2. Acronyms used in Table 1

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMF</td>
<td>Autorité des Marchés Financiers</td>
</tr>
<tr>
<td>BaFin</td>
<td>Bundesanstalt fur Finanzdienstleistungsaufsicht</td>
</tr>
<tr>
<td>BIS</td>
<td>Bank for International Settlement</td>
</tr>
<tr>
<td>CNBV</td>
<td>Comisión Nacional Bancaria y de Valores</td>
</tr>
<tr>
<td>CRTA</td>
<td>Canadian RegTech Association</td>
</tr>
<tr>
<td>EBA</td>
<td>European Banking Authority</td>
</tr>
<tr>
<td>ESMA</td>
<td>European Securities and Markets Authority</td>
</tr>
<tr>
<td>ESRB</td>
<td>European Systemic Risk Board</td>
</tr>
<tr>
<td>EY</td>
<td>Ernst &amp; Young</td>
</tr>
<tr>
<td>FATF</td>
<td>Financial Action Task Force</td>
</tr>
<tr>
<td>FCA</td>
<td>Financial Conduct Authority</td>
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<td>FINRA</td>
<td>Financial Industry Regulatory Authority</td>
</tr>
<tr>
<td>FSB</td>
<td>Financial Stability Board</td>
</tr>
<tr>
<td>G20</td>
<td>Group of Twenty</td>
</tr>
<tr>
<td>GFIF</td>
<td>Global Financial Innovation Network</td>
</tr>
<tr>
<td>IIF</td>
<td>Institute of International Finance</td>
</tr>
<tr>
<td>IOSCO</td>
<td>International Organization of Securities Commissions</td>
</tr>
<tr>
<td>IRTA</td>
<td>International RegTech Association</td>
</tr>
<tr>
<td>LSE</td>
<td>London Stock Exchange</td>
</tr>
<tr>
<td>Pwc</td>
<td>Pricewaterhouse Coopers</td>
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<tr>
<td>ROFIEG</td>
<td>Expert Group on Regulatory Obstacles to Financial Innovation</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities and Exchange Commission</td>
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<tr>
<td>WFC</td>
<td>World Finance Council</td>
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</table>

Table 3. Overview of the RegTech imaginary

<table>
<thead>
<tr>
<th>Solutions vs. problems</th>
<th>‘Fit’ within existing structures and practices</th>
<th>Quantified metrics of success</th>
<th>Universality of applicability in time and space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm-Level</td>
<td>Automated “responsive solutions” to regulatory issues (Droit’s ADEPT platform)</td>
<td>“Forensic tools”, for “real-time predictive risk scoring” (CipherTrace)</td>
<td>‘Better data’ from RegTech data vendors, even though regulatory practices cannot be fully automated</td>
</tr>
<tr>
<td>Industry-Level</td>
<td>“To solve regulatory and compliance requirements” (IIF, 2016)</td>
<td>Better quality of data to inform existing forms of risk analysis (IIF, 2016)</td>
<td>A “know your data” approach, and a “datacentric mindset” (CFA, 2017)</td>
</tr>
<tr>
<td>Professional-Level</td>
<td>“New solutions to help financial authorities upgrade the speed and capabilities of their systems” (BFA Global,</td>
<td>Controlling costs, complying with rules and regulations and innovating to differentiate from competition</td>
<td>“Inching closer to automated compliance” (Linklaters, 2020)</td>
</tr>
</tbody>
</table>
Regulatory-Level

“RegTech as SupTech”: third-generation data collecting solutions and fourth-generation data analytics solutions” (BIS 2019)

“A risk-based approach to supervision”; striving for “data completeness” (BIS, 2018)

Regulation as code: automating compliance to address problems stemming from these very processes (FSB, 2020)

Supporting policyholders anytime, anywhere (BaFin, 2018); providing “operational audit at any time” (FSB, 2020)

Table 4. Terms comparison: average frequencies of ‘computation’ vs ‘interpretation’

This table indicates average frequencies for selected terms relating to computation / automation (first half) and interpretation (second half). It shows that notions of computation and automation appear more often, on average, than hermeneutic issues in the documents we analyzed (N = 93)

Table 5. Comparison: average frequencies of sectoral issues vs. systemic issues

This table indicates frequencies for selected terms relating to sectoral issues (first half) and more systemic issues (second half). It shows that sectoral issues appear more often, on average, than systemic issues in the documents we analyzed (N = 93)
<table>
<thead>
<tr>
<th>Notions (lemmatized)</th>
<th>Rank</th>
<th>Frequency (&gt;20)</th>
<th>Full-set N = 93 (100%)</th>
<th>Firm-level N = 5 (5%)</th>
<th>Industry-level N = 11 (12%)</th>
<th>Professional-level N = 18 (19%)</th>
<th>Regulatory-level N = 59 (63%)</th>
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<tr>
<td>aml</td>
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<td>519</td>
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<td>2,30%</td>
<td>0,69%</td>
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<td>0,05%</td>
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**Sectoral issues**  
*Avrg. Freq. = 165*

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<td>systematically</td>
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**Systemic issues**  
*Avrg. Freq. = 70*
References


