

Regulatory failure

A review of the international academic literature

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State of the Art in Regulatory Governance Research Paper 2022.11



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Regulatory failure: A review of the international academic literature

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Professor Jeroen van der Heijden

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Abstract

Regulatory failure is much talked about, but little understood. Discussions about regulatory failure are often discussions about different understandings of what can be expected of regulatory governance and public regulation. The rhetoric of regulatory failure (typically a blame game) easily (and often) overshadows its analytical explanation. To improve our understanding of this topic, this research paper presents findings from a broad scoping of the international academic literature on regulatory failure. The literature review is structured according to four broad perspectives on regulation: public interest theory, public choice theory, private interest theory, and institutional theories.

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*The number of discharges of raw sewage into the Thames and its tributaries around Oxford has tripled since 2018 because of Thames Water’s failure to invest in sufficient treatment capacity and “**massive and inexcusable regulatory failure**”, a report says. – The Times (UK)¹*

*Yielding to the mobile ecosystem demand for excessive 5G spectrum poses the risks of the dampened auction bids, spectrum being unsold or, even worse, under utilised by terrestrial players at the expense of other players such as Satellite Operators. These outcomes will result in a **costly regulatory failure** for India through loss of substantial overall economic opportunities. – The Times of India²*

*Naylor, like utility managers across Texas, considers the [winter storm] Uri deep freeze crisis to have been **more a regulatory failure than a market one**. The Electric Reliability Council of Texas (ERCOT) kept the price at the astronomically high market cap for the full five days of Uri (Feb. 13-17) when that wasn’t necessary. – Forbes (USA)³*

1 Introduction

The snippets above come from articles published by three major international news outlets at the time that I am writing this research paper, January 2022 (the emphases are mine). Obviously, I could fill many pages of this paper with such snippets. If we must believe the news outlets, regulatory failure is the rule rather than the exception.

What is regulatory failure?

Whilst the term regulatory failure is used frequently, it is difficult to pin down exactly what regulatory failure constitutes (Baldwin, Cave, & Lodge, 2012). We could unpack the term. Regulation, of the kind that I discuss in this research paper series, is typically conceptualized as a government intervention that seeks to achieve desirable societal outcomes. Failure is typically conceptualized as a lack of success.

Regulatory failure would then be a lack of success in realizing the desirable societal outcomes that a piece of regulation was developed to achieve. Unfortunately, this is not a helpful definition. Regulation is typically introduced to achieve a broad and flexible set of outcomes, and (measurable) outcomes are sometimes not specified at all. Often, the outcomes that regulation is expected to achieve are flexible and sometimes even conflicting (McDermott & Peterson, 2005).

As a result, debates on regulatory failure are often a combination of an analytical observation that something has gone wrong and a rhetorical interpretation that regulation is the reason for that something having gone wrong (Baldwin et al., 2012). I would like to make this sound easier and say that debates about regulatory failure combine *objective* data and *subjective* interpretation, but that is often not the case.

¹ <https://www.thetimes.co.uk/article/raw-sewage-spills-into-thames-tripled-since-2018-w03crxvsm> (accessed on 29 January 2022)

² <https://timesofindia.indiatimes.com/blogs/voices/should-your-wi-fi-spectrum-be-auctioned/> (accessed on 29 January 2022)

³ <https://www.forbes.com/sites/llewellynking/2022/01/06/texas-rural-coop-says-smaller-utilities-need-to-be-heard/?sh=4ea48f752862> (accessed on 29 January 2022)

Typically, an objective benchmark against which the case of regulatory failure can be measured is missing. Often, the data used to 'prove' that we are witnessing a situation of regulatory failure are incomplete, and sometimes these data are of disputable quality or are collected only to support the perception of regulatory failure. This means that the data introduced to support an observed instance of regulatory failure are often as subjective as their interpretation (Wilson, 1984).

The lack of a clear understanding of what makes for a regulatory failure, combined with the lack of solid support for experienced cases of regulatory failure, make this an incredibly difficult topic of inquiry (Derwort, Jager, & Newig, 2019; Wolf, 1979). It also does not help that public governance scholarship tends to be biased towards studying governance success, and overlooks governance failure (Fitzgerald & Spencer, 2020; Motherway, Pazzaglia, & Sonpar, 2018).

TEXTBOX 1 – REGULATORY FAILURE IS AS MUCH AN ANALYTICAL AS A RHETORICAL ISSUE

Regulatory scholars who study regulatory failure keep coming back to the insight that regulatory failure is often as much an analytical issue as it is a rhetorical issue (Baldwin et al., 2012).

This means that regulatory failure is sometimes construed through an analytical, rational, or scientific process in which 'hard' evidence is used and evaluated to assess whether the goals of regulation have been achieved. At other times, regulatory failure is construed through a process of argumentation in which rhetoric and political framing are used to point out that regulation has failed. And at yet other times, the analytical and the rhetorical processes are combined in observations of and responses to regulatory failure (Derwort et al., 2019).

Regulatory failure is often as difficult to explain as regulatory success

I would argue that defining and understanding regulatory failure is, with some exceptions, as tricky as defining and understanding regulatory success. For illustrative purposes, we could say that, thus far (again, I am writing this research paper in January 2022), the regulatory response to Covid-19 in Aotearoa/New Zealand has been remarkably successful. We could claim this success on the basis of objective data: Aotearoa/New Zealand has had a very low number of Covid-19 cases and Covid-19 related deaths compared to other countries.

However, is this an undisputable regulatory success? Some will answer that, for numerous good reasons, it is,⁴ but many others have already answered that it is not. These latter say that the long-term costs of early regulatory measures such as lockdowns and the later traffic light system do not outweigh the benefits.⁵ Others say that the closure of Aotearoa/New Zealand's border for almost

⁴ <https://academic.oup.com/medlaw/article/29/3/468/6375400> (accessed on 29 January 2022)

⁵ <https://www.nzherald.co.nz/nz/judith-collins-government-announces-new-traffic-light-system-but-at-what-cost/GK4YVZLAFNMG0Z2SVTBIWNFHAJ/> (accessed on 29 January 2022)

two years now violates fundamental human rights.⁶ In short, every argument that supports the claim of this regulatory success comes with a counterargument claiming the opposite. And this holds for experienced cases of regulatory success more generally.

In a similar vein, it could be asked: was this indeed a *regulatory* success? Was it purely the set of regulatory interventions that explains the success, or were other factors equally or even more relevant? For example, being a remote island nation with a relatively small population (in a small number of relatively large cities) has undoubtedly helped Aotearoa/New Zealand, at least to gain time and witness the devastating effects of Covid-19 elsewhere.

The even more challenging question to answer is: in comparison with what is this a regulatory success? Compared to a situation of no regulation, or of less intrusive regulation, or of (even) more intrusive regulation? How can we estimate the impact of a hypothetical regulatory alternative if it is already so difficult to understand the impact of the current regulatory situation? To put it in more practical terms, because Aotearoa/New Zealand is so different from, say, the Netherlands, it is impossible say how the Dutch regulatory response to Covid-19 would have worked out in Aotearoa/New Zealand, or vice versa.

These kinds of questions are typically raised by the media, policymakers, and the public at large when regulators (or others) claim regulatory success. Yet, strikingly, the media, policymakers, and the public at large often brush aside these questions when they claim to observe regulatory failure.

There are no simple stories about regulatory failure

The lack of nuance in debates on regulatory failure makes this one of the most demanding systematic literature reviews on a regulatory topic that I have carried out thus far. One-sided arguments about regulators ‘dropping the ball’, to quote Jacinda Ardern when she reflected on a case of regulatory failure,⁷ make for good newspaper headlines and political rhetoric. However, they offer little opportunity for learning and reflection. Nuance is required if we want to draw meaningful lessons from the existing knowledge on regulatory failure and to advance regulatory theory and practice. With this research paper I aim to bring some nuance to the debate.

This research paper builds on two sets of academic literature. The first is a series of 20 articles, books, and book chapters by leading academics who share their insights on regulatory failure – what it is, what it is not, and how we can study and understand it. The second is a series of 38 articles that, in a subtle manner, map, explore, and interrogate one or more cases of regulatory failure.

In what follows, I will first discuss the set of 20 publications using four dominant perspectives on regulation: public interest theory, public choice theory, private interest theory, and institutional theories. I hope that, after looking at regulatory failure from those four perspectives, we will have a better appreciation of why it is so difficult to define and understand it. From there I will discuss the

⁶ <https://www.groundedkiwis.com/> (accessed on 29 January 2022)

⁷ <https://www.nzherald.co.nz/nz/politics/prime-minister-jacinda-ardern-says-the-nz-transport-agency-had-dropped-the-ball/J2ZVMR6PEVGU5FYWAMHVKSMXUJ/> (accessed on 29 January 2022)

main insights that I draw from a comparative reading of the 38 case-study articles. The final chapter draws conclusions.

2 A public interest perspective

Public interest perspectives on regulation hold that regulation is developed and implemented to pursue goals that serve and protect the public at large. These goals include addressing market failures and ensuring just and equal welfare provision.

This conceptualization immediately points to the challenges of pursuing regulation from a public interest point of view. There is no objective answer to what a market failure or equal welfare provision are. Answers to these questions will always carry normative (and political) weight, and can (and will) be challenged by others.

In addition, those who justify regulation from a public interest point of view may face criticism when the (economic) benefits that the regulation aims to achieve are not immediately apparent, are challenging to measure, or take a long time to materialize (Joskow, 2010).

Regulatory failure from this point of view

From a public interest point of view, then, regulatory failure means a situation in which regulation that aimed to overcome a market failure or to protect the public at large fails to achieve that goal (Carman & Harris, 1986). It also includes situations in which the (monetary and other) costs of regulation do not outweigh its benefits (Wolf, 1979).

Kinds of failure and their causes from this point of view

An overview of the literature that engages with regulatory failure from a public interest point of view finds that three broad themes stand out: failure in the design of regulation, failure in the implementation of regulation, and failure due to the economic costs (and lack of benefits) of regulation.

Failure in the design of regulation

For various reasons, regulators may fail to design clear, consistent, and fit-for-purpose regulations (whether these are regulatory instruments or even a full regulatory system). This could result from information challenges, such as a lack of information about the problem to be regulated, information asymmetries between regulators and regulatees, or ambiguity in the original legislation (Haenschen & Wolf, 2019; Wilson, 1984). A regulatory 'error of commission' may occur when a regulator introduces the wrong regulation based on flawed information. A regulatory 'error of omission' may occur when a regulator does not introduce regulation because they lack information (O'Doherty, Bailey, & Collins, 2003).

A shocking example of a regulatory failure related to design is the mass salmonella outbreak in the USA in 2009 that 'officially killed nine, sickened 700 and caused the largest food recall [in USA history]' (Leighton, 2016, 81). The regulation allowed producers to test their products multiple times, effectively allowing them to retest a batch of salmonella-infected products until they achieved a false negative (which, statistically, will occur at some point).

Regulators may also have a poor understanding of cause and effect relationships in regulation, and, for example, introduce regulatory solutions because those solutions have worked in another context

(Baldwin et al., 2012). There is then a risk of a mismatch between the regulatory intervention, the problem it addresses, and the context in which it operates (Carman & Harris, 1986; Haines, 1999; Lodge, 2002). A typical example is the critique of both one-size-fits-all solutions (because they are too blunt to deal with complex situations) and detailed and case-specific regulation (because it comes across as over-protection and over-regulation) (Baldwin et al., 2012).

Failure in the implementation of regulation

Regulatory failure is likely to occur when the agency in charge lacks either the infrastructure or the power, or both, to enforce regulation (Baker, 1989). Likewise, regulatory failure may result from the wrong sort of implementation. For example, a over-coercive stance in implementation runs the risk of animosity on the side of regulatees and a diminished willingness to comply, and yet an over-cooperative stance may result in regulatees learning how to roll with the punches and get away with non-compliance (May, 2005; Wilson, 1984). Alternatively, a regulator may modernize 'on paper' by embracing risk-regulation or performance-based regulation, but if it does not modernize its staff through training and upskilling they are unlikely to be able to implement the modernized regulations well (Quinlan, Hampson, & Gregson, 2014).

Regulators may also not respond sufficiently promptly, may take a reactive stance and 'wait' for a violation to happen, may let minor violations slip through too often, or may let regulatees get away with increasingly more significant violations (Haenschen & Wolf, 2019). Such 'failures' may ultimately make it difficult to take action, and could set a precedent to which other regulatees may refer when the regulator does not cut *them* any slack (Butler, Scammell, & Benson, 2016; Kavame Eroglu & Powell, 2020). The Madoff investment scandal is an example of a regulatory culture not standing up to prominent corporate violators even when wrongdoing was known to the regulators (Kavame Eroglu & Powell, 2020).

Another recurring example of regulatory failure due to the implementation of regulation is 'creative compliance' (which could also be a design failure – the boundaries often overlap) (Andrijasevic & Novitz, 2020; Leenes & Kosta, 2015). This is usually understood as a situation in which regulatees comply with the letter, but not with the spirit, of the law (May & Burby, 1998), but it sometimes goes a step further. Here the Volkswagen 'Dieselgate' scandal is illustrative: a 'defeat device' was installed to reduce vehicle emissions only at the time that cars were being tested in a lab setting to show compliance, and the regulators 'failed' to repeat the assessment of vehicle emissions outside the lab setting (Palmer & Schwanen, 2019).

Failure due to (economic) inefficiency

A final type of failure that is often observed from a public interest point of view is regulation that is too costly, or a situation in which the costs of regulation do not outweigh the benefits. It is often complicated for a regulator to provide good insights into (all) the (economic) benefits of regulation. Still, it is relatively easy for those subject to regulation to point out its costs. Likewise, regulators may be experienced in 'failing' to spread the costs (or benefits) equally or equitably over the targets or beneficiaries of regulation (Baldwin et al., 2012; Wilson, 1984).

Along the same lines, regulators may fail to consider the indirect costs of regulation (or its absence), such as transaction costs or the costs of the unintended consequences of regulation (Carman & Harris, 1986; Joskow, 2010). As Fiona Haines concluded in an overview of the literature in 1999, from an efficiency point of view, '[regulatory] failure might result from perceptions of too much regulation ... too little ... or the wrong sort of regulation' (Haines, 1999, 24).

To conclude

This is by no means an exhaustive overview of all the kinds of regulatory failure that can be identified when looking at regulation from a public interest point of view. However, this overview gives a flavour of the sort of failures that regulators, policymakers, and the public at large have pointed out when arguing that regulation (whether that be a specific intervention, the implementation of a specific intervention, or a regulatory system as a whole) has failed to deliver an outcome that serves the public interest.

As early as 1989 the renowned regulatory scholar Robert Horwitz argued that 'public interest theory remains the yardstick by which [regulatory failure] is measured' (Horwitz, 1989, 27). This still seems to hold for the way in which regulatory failures are discussed in policy debates and in the (popular) media. The academic literature has, however, become a little more nuanced, as is illustrated in the chapters that follow.

3 A public choice perspective

Public choice perspectives on regulation hold that regulators and their targets, beneficiaries, and political principals pursue or oppose regulation as self-interested agents. Two distinct arguments stand out in this perspective.

The first argument is that bureaucrats, managers, and policymakers use their involvement in regulation for personal gain (Horwitz, 1989). Likewise, at the agency level, units may pursue objectives to obtain more resources or prestige, or use agency appointments, hoping that this will result in future (political) rewards (Carman & Harris, 1986).

The second argument is that regulatory systems create a false sense of rationality and predictability. Individuals and collectives, including regulatory agencies, typically lack the cognitive abilities, information, and time to understand and influence the complex causality through which regulation achieves its effects (Caplan, 2007; Stigler, 1971).

Regulatory failure from this point of view

From a public choice point of view, then, regulatory failure means a situation in which regulation fails to protect the public at large because bureaucrats, policymakers, or regulatory agencies willingly abuse their powers, or because they suffer from cognitive failures (Caplan, 2007).

Kinds of failure and their causes from this point of view

An overview of the literature that engages with regulatory failure from a public policy point of view finds a mixed bag of themes. I summarize these as self-interested bureaucrats and agencies, limited rationality, and electoral/legislative/jurisdictional failures.

Self-interested bureaucrats and agencies

The literature touches on self-interested bureaucrats who, to greater or lesser extent, neglect their regulatory responsibilities (shirking); on the bribery of individual regulators by targets or beneficiaries (or even by policymakers); and on the tendency of (some) bureaucrats to shift between, at one time, holding public office to regulate an industry and, at another time, working in a key position in that industry (the 'revolving door' mechanism) (Lodge, 2002; van Schouwen, 2018). Obviously, such behaviour makes individuals who work in a regulatory environment prone to capture by those they seek to regulate (a theme that returns in the private interest perspective on regulation; see the following chapter).

Along roughly similar lines, the literature touches on the possibility that regulatory agencies (or units within them) pursue their mandates with insufficient effort ('bureaucratic slack'), or engage in turf wars over which agencies (or units) are responsible for which part of a regulatory system (Bueno de Mesquita & Stephenson, 2007). The latter could result in parts of regulatory systems getting insufficient attention because agencies (or units) assume that others are responsible for those parts. Agencies may also seek to please (or may bend to the will of) politicians through agency appointments – an illustrative example is the string of vocal anti-regulation individuals who were appointed to lead key regulatory agencies in the USA under the 2017–2020 Trump administration (Tollefson, 2017).

Limited rationality

Another group of regulatory failures presented in this literature stream revolves around the idea of bounded rationality. This idea is that rationality is limited when humans (and the collectives they form) make decisions, and it applies equally to individual regulators (Baldwin et al., 2012) and to the agencies of which they are part (Horwitz, 1989). These insights may come across as somewhat stale, now that regulators have rapidly embraced insights from the behavioural sciences to develop regulation that deals with the bounded rationality of their targets (van der Heijden, 2019).

Nevertheless, when these insights first appeared in the literature they provided novel explanations for why regulation (and other policy interventions) sometimes does not achieve its objectives: we often simply lack the information, mental capacity, and time to develop and implement perfect regulation, and the best we can do is 'satisfice' (Simon, 1997 [1945]).

We should not dismiss such critiques, however, now that we have a better understanding of 'real' human behaviour. More knowledge may result in people holding even more strongly to their beliefs about why a specific regulatory solution is necessary or why it has failed. Likewise, more data, more data processing power, and more reliance on artificial intelligence is not necessarily a solution to the bounded rationality of a regulatory system (O'Doherty et al., 2003). On the contrary, it just runs the risk of further inflating the false sense of security created by a complex regulatory system (Hallsworth, Egan, Rutter, & McCrae, 2018).

Electoral/legislative/jurisdictional failures

Yet another group of regulatory failures presented in this area of the literature are derivatives of the previous ones. For example, during elections (self-interested) politicians may promise that they will regulate or deregulate parts of society when they are in office, but when they are in power they may not follow up on their electoral commitments. Or, lacking the time or capacity to understand a political party's regulatory agenda, voters may choose politicians who do not serve their interests (Carman & Harris, 1986). Alternatively, voters may not choose those politicians who *do* serve their interests, because those politicians fail to explain the benefits of their regulatory agenda in a comprehensible manner (Bovens, 't Hart, & Peters, 2001).

Regulation may also fail because it is too flexible and open to interpretation, which may give (self-interested) regulators or regulatory agencies considerable room to diverge from their mandates (Seifter, 2018), or regulation may fail because it is easy for small groups of regulatory targets to organize and oppose the regulation but it is difficult for large groups of beneficiaries to organize in support of it. This could result in a situation in which regulators (or policymakers) repeatedly hear from a (relatively) small group of targets, and misinterpret their 'noise' as the general or societal opinion about regulation (Wilson, 1984).

Yet another kind of regulatory failure is when the unintended or undesirable consequences of the (lack of) regulation in one jurisdiction fall on another jurisdiction (Carman & Harris, 1986). A typical example here is the relocation of polluting industries from jurisdictions with strong environmental regulation to those with weak environmental regulation (Altman, 2001).

To conclude

The public choice perspective adds an essential dimension to the understanding of regulatory failure, by shifting our attention towards human and organizational behaviour. Seen in this light, regulation may fail not only because of technical errors in its design and implementation (as described using the public interest perspective discussed in the previous chapter), but also simply because individuals make (cognitive) errors or use regulation to serve their personal interests.

Arguably, the public choice perspective has an overall negative outlook on regulation. Still, the insights it adds may help us to refrain from replacing one regulatory design with another when the first design fails (from a public interest perspective). Unintentional human errors and intentional self-interested behaviour will not be solved by changing one regulatory design for another. Instead, such a failure requires different types of solution – for example, increased training of regulatory staff and improved accountability structures for regulatory agencies.

TEXTBOX 2 – THERE ARE NO EASY STORIES ABOUT REGULATORY FAILURE

The initial aim of this research paper was to present a systematic review of the academic literature on regulatory failure published in English. A set of 38 journal articles that each describe one or more regulatory failures was systematically analysed (see further Appendix A). They cover approximately 40 regulatory failures from across the world, except for Africa.

Upon analysing the 38 articles it became clear that this set was simply too incoherent for a formal evidence synthesis along the lines of those published in the *State of the Art in Regulatory Governance Research Paper* series. The main challenge is that it is very difficult to source literature about regulatory failures because we lack a clear definition of the term. Put differently, in the process of comparing documented cases of regulatory failures, it quickly becomes clear that what different authors describe as a regulatory failure has such a great variety that comparing their studies is akin to comparing apples and oranges.

Central lesson from the review

Still, a central lesson stands out: **there are no easy stories about regulatory failure.**

To illustrate, the 38 empirical articles were coded for ten items that depict regulatory failure because of government (in)action, such as capture, design flaws, under-resourced regulators, or enforcement shortfalls. They were also coded for four items that depict regulatory failure because of regulatory target (in)action, such as intentional non-compliance, creative compliance, or holding an information advantage. These 14 items were the most frequently mentioned ‘causes’ or ‘factors’ of regulatory failure in the theoretical literature that is discussed in Chapters 2–5 in this research paper.

Of the 38 articles, half reported on four or more of the items (n=19, 50%), the vast majority reported on multiple items (n=35, 82%), and only a very small number reported on a single item (n=3, 8%). Moreover, nearly half of the articles reported that government (in)action combined with target (in)action contributed to the regulatory failure (n=18, 47%). The most commonly mentioned items were enforcement shortfalls (n=18, 47%), design flaws (n=16, 42%), capture (n=12, 33%), and under-resourced regulators (n=11, 29%). These items all relate to government (in)action.

What becomes clear from the 38 articles is that regulatory failure is typically the result of multiple causes and often manifests itself in different parts of a regulatory system (these multiple manifestations could occur over time or at the same time). The articles also indicate that regulatory failure often builds up over time, and that it is exceptionally difficult to say exactly when (in time) and where (in the regulatory system) a situation of ‘not a failure’ becomes a situation of regulatory failure.

In sum, the theoretical literature discussed in this paper should not give the illusion that regulatory failure is an ‘either/or’ issue. Regulatory failures are messy and complex. Therefore, we should not try to oversimplify their descriptions (rhetoric) and analyses.

4 A private interest perspective

A private interest perspective on regulation holds that regulation is developed and implemented not always (or not only) to pursue goals that serve and protect the public at large, but sometimes also to pursue goals that serve the private interests of some individuals and groups. The assumption underpinning the private interest theory of regulation is that these individuals and groups seek to influence regulators to introduce regulation that serves their personal interests but not necessarily those of the broader public.

A good illustration is calls by established businesses in existing markets to restrict the market access of new businesses in those markets. Local businesses, for example, may argue that it is not safe to allow international businesses to operate in the domestic market because they have no understanding of or appreciation for local issues such as biosecurity, culture, and so on (den Hertog, 2012).

The private interest theory of regulation boils down to the idea that regulators are continuously influenced by their targets, beneficiaries, and political principals and often favour these private interests, sometimes at the expense of the public interest (Mitnick, 2011).

Regulatory failure from this point of view

From a private interest point of view, then, regulatory failure means a situation in which regulators have been influenced ('captured') by their targets, beneficiaries, and political principals to such an extent that they systematically ignore the public interest (Horwitz, 1989).

Kinds of failure and their causes from this point of view

There is an overlap between the private interest perspective on regulation and the public choice perspective (discussed in the previous chapter). It is difficult to delineate where one perspective ends, and the other begins. Still, two kinds of regulatory failure are distinctly 'private interest': capture and the life-cycle theory of regulation.

Capture

Typically, regulatory capture is seen as a situation in which individuals and collectives have been successful in influencing an (individual) regulator or agency and shaping a regulatory system to serve their own (private) interests (Sheikh, Saligram, & Hort, 2015; You & Park, 2017). Regulatory capture may, for example, be possible when it is relatively easy for a small number of firms targeted by regulation to coordinate their attempts to influence the regulators but it is difficult for the vast number of dispersed beneficiaries of that regulation to do the same (King & Hayes, 2018; Wilson, 1984). In particular, the anti-regulation rhetoric that emerged in the USA and the UK in the 1970s and 1980s argued that regulators had been captured by the very industries they sought to regulate, and their attempts to regulate these industries well were therefore seen to have failed (Shleifer, 2005; Stigler, 1971).

It is likely that there will be some truth in this 'evil genius' explanation of capture (i.e., vested interests that actively, purposefully, and successfully lobby regulators), but more seems to be at stake. Often regulators cannot entirely shield themselves from being influenced by the individuals

and organizations they target (Sheikh et al., 2015). For example, regulators are often highly dependent on the industry they regulate for compliance information or the development of future regulation. As a result, the industry will always have an information advantage over the regulator. Some form of collaboration and partnership-building with the industry is required if the regulator wants to access this information (King & Hayes, 2018; Wilson, 1984). In such situations, the challenge for regulators is to find a balance between being informed and being influenced (van Schouwen, 2018).

It is also relevant to stress that not all forms of regulatory capture will result in (blatant) regulatory failures, as some parts of the literature suggest. For example, in a situation of weak capture, the public at large might, at least sometimes, still be better off with regulation that is modestly influenced by vested interests than with a situation of no regulation at all (Carpenter & Moss, 2013).

Life-cycle theory of regulation

Within the private interest perspective, regulatory failure is sometimes explained using the 'life-cycle theory of regulation' (Bernstein, 1955). This holds that, when newly established, a regulatory agency attracts enthusiastic staff and has full political backing. It can then regulate its targets vigorously. However, over time, the targets learn to roll with the punches of the agency and become more cooperative towards the agency, and at the same time the agency slowly loses its enthusiastic staff and political backing. As a result, the regulator must rely more and more on cooperation with its targets. Later, the regulator adopts the values, opinions, and interests of the targets it regulates, because of the ever-stronger relationship. While the theory has been challenged as unrealistically predictive (Wilson, 1984), its inherent notion of creeping capture aligns well with the causes of regulatory failure discussed in institutional perspectives on regulation (these will be further explored in the next chapter).

To conclude

In its darkest form, the private interest perspective on regulation holds that regulators are captured by their (malicious) targets, and introduce regulation that harms the public interest to serve the interest of these targets. In a lighter form, it holds that regulators must inevitably cooperate with their targets to develop suitable regulation, obtain compliance information, and so on. In this cooperation process, regulators run the risk of being captured, particularly because it is sometimes easier for targets to organize than for beneficiaries of regulation to do so.

Obviously, regulatory failure resulting from regulatory capture is the main insight added by this perspective. However, the more nuanced insight it provides is perhaps more relevant. It asks regulators to think carefully about the stage at which, in the often-necessary process of collaboration, being informed by its targets becomes being influenced by them, and what strategies should be in place to prevent the latter from happening.

5 Institutional perspectives

Institutional perspectives on regulation broadly overlap with the theories of policy process that are well-known to scholars of public administration (e.g., Weible & Sabatier, 2018). Within these perspectives, some focus on small and gradual change, others on rapid and shock-like change, and others on no change at all.

Various factors may trigger modest changes to regulatory systems, and, over time, the small changes add up to big ones. Alternatively, large-scale and rapid regulatory change may be triggered by external shocks, such as society-wide crises (the Covid-19 pandemic is a prime example) or environmental disasters for which a quick response with existing regulatory systems is not possible.

Of course, sometimes a regulatory system, or parts thereof, *should* be undergoing change, but no change is happening because of institutional constraints. For example, a regulatory system may have become so rigid over time, so caught up in politics, or so captured by vested interests that it is virtually impossible to change it.

Regulatory failure from this point of view

From an institutional point of view, then, regulatory failures are situations in which the wrong sorts of changes are made to regulatory systems, the wrong sorts of new regulatory systems are introduced (or suitable systems are wrongly dismantled), or the required changes are not made (Baldwin et al., 2012).

Kinds of failure and their causes from this point of view

The literature that engages with regulatory failure from an institutional point of view follows the three broad themes that I set out above: regulatory failure due to incremental change, due to crises and shocks, and due to no change.

Incremental change

Small and incremental changes to regulatory systems can be flawed and turn into a regulatory failure over time. Likewise, small and rather inconsequential violations may have a cumulative effect and add up to a pervasive regulatory failure over time (Gorton, Lowe, Quarrie, & Zarić, 2010). However, more is at stake. The ongoing layering of new initiatives onto existing regulation may result in a regulatory system with internal inconsistencies, unnecessary redundancies, over-regulation, and a general lack of coordination (Agarwal, Lucca, Seru, & Trebbi, 2014). The public at large may experience such complex regulatory systems as burdensome, and may interpret the ongoing process of change as proof that regulators will never get it right.

In a similar vein, incremental changes in the context of a regulatory system may, over time, result in a situation in which that system is no longer capable of achieving its aims. For example, incremental non-compliance that is not corrected by the regulator may become the norm for the industry targeted by the regulator. Likewise, changing government priorities may, over time, result in situations in which regulatory agencies can no longer carry out their statutory obligations. For example, ongoing minor cuts in a regulator's budget will eventually result in a situation in which it cannot enforce sufficiently and may not be able to prevent a failure from occurring (Haines, 1999).

It is likely that such unintended consequences of modest but accumulating changes will only become visible after some time has passed. However, there is a risk that the most recent change is seen as the trigger of a regulatory failure. An illustrative example here is the amount of attention that has recently been paid to neo-liberalism as a cause of regulatory failure (Fitzgerald & Spencer, 2020; Wennström, 2019; You & Park, 2017). Now that we have some years of experience with self-regulation, regulation at a distance, privatized enforcement, and so on, it is becoming clear that these reforms come with their own flaws (and sometimes that those flaws are larger than the problem of government regulation the reform sought to cure). We must be careful, however, about concluding that these approaches to regulation are flawed in and of themselves. It could very well be that some of their shortfalls are related to less-than-optimal interactions with the existing parts of the regulatory systems onto which they were layered.

Crises and shocks

Regulators are often blamed for not preventing significant society-wide crises (such as the Covid-19 pandemic or climate change). Regulatory failure is conceptualized as the lack of a timely response by regulators to a slowly emerging or quickly developing crisis in such situations (Buckley & Arner, 2011). The flipside of this tendency to blame regulators when something big goes wrong is that regulatory failures that do not cause crises and shocks may go unnoticed for a long time (Neal, Pilkey, Cooper, & Longo, 2018).

Shock-like events and disasters (such as the collapse of a building or a transport incident) are also often framed as regulatory failures. Typically, somewhere in the causal chain leading towards the crisis or shock, a product or activity did not comply with regulation, and the regulator failed to observe this non-compliance. The shock and its consequences are then seen as having revealed that something is structurally wrong with a regulatory system or the responsible regulator (McDermott & Peterson, 2005).

Arguably, in most of these situations, many will agree that the regulator played only a modest part in the crisis or shock and that it is simply not possible to assess whether each and every part of life complies with regulation (Hood, 2007). However, in the political blame game that follows such crises and shocks, something must be blamed, and that something has become ‘the regulatory system’ (Coglianese & Yoo, 2015).

No change

The final group of regulatory failures presented here results from institutional constraints that stand in the way of change – effectively, the regulatory failure is ‘no change’. For example, regulatory systems may have closed themselves off from outside disturbances and input over time. This could result from reliance, over many years or even decades, on a handful of in-house technical experts (think of complex building regulations) or from ongoing reliance on input from a handful of industry players (think of complex financial regulation).

Another challenge that may arise over time is that a regulatory system becomes too rigid or too complex to understand for most of its beneficiaries (who often have little incentive to study the

system's intricacies or lack access to the regulator). In simpler terms, rigidities in a regulatory system may lead to public disappointment in that system (with the targets or beneficiaries of regulation seeing the rigidity as failure) and to people feeling that there is no point in them trying to change it (Baldwin et al., 2012).

To conclude

The institutional perspectives add another essential dimension to understanding regulatory failure, by shifting our attention towards the (often unintended) consequences of changes to regulatory systems (or the lack of such changes) over time. Seen in this light, regulation may fail not only because of technical errors in its design and implementation (as per the public interest perspective), or because of human and organizational behaviour (as per the public choice perspective), or because of regulatory capture (as per the private interest perspective). Instead, regulatory failure may happen simply because a regulatory system is not subjected to periodical 'health check' and is not maintained well over time.

The insights added by the institutional perspectives may help us to refrain from seeking the 'culprit' of regulatory failure in the most recent change to a regulatory system or a necessary change that is long overdue. Instead, they ask us to look at the intricate interactions of the many parts of regulatory systems, the interactions between regulatory systems and their environments, and the consequences of minor and major changes in those systems and their environments for (long-term) regulation performance.

6 Bringing it all together

In the introduction to this research paper, I explained that reviewing the international academic literature on regulatory failure is challenging for various reasons. First, we lack a clear definition of the concept. Second, debates about regulatory failure are often a combination of analytical observation and rhetorical interpretation. Third, an observer's stance towards regulation often influences their analytical observations of regulatory failure.

Arguably, there is often a double subjectivity when regulatory failure is discussed. First, *what* the observer sees as a regulatory failure is coloured by their perspective on regulation. Second, *how* the observer interprets and narrates that observed regulatory failure is coloured by their perspective on regulation. Because there is a wide variety of perspectives on regulation, there is also a wide variety in what is considered a regulatory failure (and what are considered to be the causes of that failure) and what is not.

Bringing the four perspectives together

To gain a better understanding of what regulatory failure is and what its causes may be, the previous four chapters have presented regulatory failure from a public interest perspective, a public choice perspective, a private interest perspective, and institutional perspectives. Each perspective shows us something different. The table on the next two pages gives an overview.

The table distinguishes between differences in kind and differences in degree. Differences in kind refer to the different perspectives on regulatory failure. Differences in degree are the different groups or sets of regulatory failures identified within each perspective.

The table also distinguishes the levels at which a regulatory failure is observed (cf., Derwort et al., 2019). *Micro-level failures* occur at the level of individual actors, such as policymakers or administrators. *Meso-level failures* are found at the level of regulatory agencies (individual agencies and groups of agencies). They include intra-organizational factors (e.g., organization resources, information asymmetries, financial resources, deficient feedback mechanisms, etc.). Finally, *macro-level failures* are found in the broader societal, economic, and natural environment.

Please note that the table is by no means intended to provide an exhaustive overview of all the perspectives on regulatory failure and all the kinds of regulatory failure that exist. Instead, it is mainly meant to illustrate that there are many ways of experiencing, understanding, and framing a regulatory failure.

Table 1 – An overview of theoretical perspectives on regulatory failure

Perspective			Illustration/explanation
<i>Difference in kind</i>	<i>Difference in degree</i>	<i>Level</i>	
<i>Public interest</i>	Design (instrumental)	Micro, meso	Failure to formulate clear and consistent policies, for example due to a lack of information or information asymmetries (Carman & Harris, 1986; Horwitz, 1989; Joskow, 2010; Wilson, 1984); a flawed understanding of cause–effect relationships in regulation (Baldwin et al., 2012); the fact that every intervention has (unintended) side effects that can be exploited by opposition (Baldwin et al., 2012); a mismatch between (one-size-fits-all) interventions, the problems they address, and/or the contexts in which they operate (Carman & Harris, 1986; Haines, 1999; Lodge, 2002).
	Implementation (strategy)	Micro, meso	Creative compliance (Baldwin et al., 2012); time-lag between implementation of a regulatory intervention and its results (Joskow, 2010); the challenge that a coercive stance in implementation may result in animosity from regulatees, whilst a cooperative stance may negatively affect compliance (Wilson, 1984).
	(Economic) inefficiency	Micro, meso, macro	Difficulty in comparing the cost of regulatory intervention (or failure) to the cost of a situation of no or hypothetical regulation (Baldwin et al., 2012; Wilson, 1984); under-regulation or the absence of regulation (Baldwin et al., 2012; Haines, 1999; Wolf, 1979); the direct or indirect costs (such as transaction costs or the costs of unintended consequences) of the regulatory intervention outweigh the cost of the market failure (Carman & Harris, 1986; Joskow, 2010).
<i>Public choice</i>	Self-interested bureaucrats	Micro	Revolving door mechanisms (Horwitz, 1989), individual regulators being open to bribes (Horwitz, 1989); shirking by bureaucrats (Lodge, 2002).
	Self-interested bureaucratic agencies	Meso	Using agency appointments as political rewards (Horwitz, 1989); pursuit of organizational objectives contrary to those of public policies, which may result in bureaucratic slack and turf wars (Carman & Harris, 1986).
	Bounded rationality	Micro, macro	Bureaucratic irrationality (Horwitz, 1989); bounded rationality of regulators (Baldwin et al., 2012).
	Electoral failures	Meso	Electorate chooses policymakers with a regulatory agenda that does not serve their interests, or who do not carry out their regulatory promises (Carman & Harris, 1986); regulators fail to explain regulatory performance to beneficiaries (Baldwin et al., 2012; Bovens et al., 2001); it is worthwhile for a small group of targets to organize and oppose regulation, but it is difficult for a large group of beneficiaries to organize in support of regulation (Wilson, 1984).

Table 1 – An overview of theoretical perspectives on regulatory failure (continued)

Perspective			Illustration/explanation
<i>Difference in kind</i>	<i>Difference in degree</i>	<i>Level</i>	
<i>Public choice (continued)</i>	Legislative failures	Meso	Regulatory mandates are necessarily flexible and open to interpretation, leaving considerable room for regulators to diverge from their legal/stated mandate (Baldwin et al., 2012; Seifter, 2018; Wilson, 1984).
	Jurisdictional failures	Meso	The consequences of regulatory interventions (or lack thereof) in one jurisdiction fall on (the population of) another jurisdiction (Carman & Harris, 1986).
<i>Private interest</i>	Capture	Meso, macro	The regulator is influenced by regulatees to such an extent that it systematically favours their private interests and systematically ignores the public interest (Baldwin et al., 2012; Horwitz, 1989; Joskow, 2010; Wilson, 1984).
	Life-cycle theory of regulatory failure	Meso, macro	Young regulatory agencies are staffed with enthusiasts and have political backing from the coalition that created them, so they can regulate their respective industry vigorously. Mature agencies need to find a middle way between, on the one hand, political and societal critique about their existence and, on the other, the industries they regulate. Later in time, regulatory agencies may move towards taking on the opinions, values, and interests of the industries they regulate (Joskow, 2010; Wilson, 1984).
<i>Institutional</i>	Gradual change	Meso	Unforeseen unintended consequences due to ‘drift’ (result of changing government preferences, agencies diverting from their statutory objectives, and industry not following regulatory requirements) or ‘layering’ (over-regulation, overlap, redundancies, regimes that operate side-by-side, a lack of coordination) (Baldwin et al., 2012; Haines, 1999; Jessop, 2003; Joskow, 2010).
	Rapid/accelerated/ exogenous change	Macro	‘Punctuated equilibrium’ failures (e.g., society-wide crises, external shocks, etc.) to which regulation or regulators cannot quickly respond or adapt (Baldwin et al., 2012; McDermott & Peterson, 2005).
	No change	Meso, macro	Self-referential regulatory systems that close themselves off from outside disturbances; failures resulting from institutional rigidities; profound disappointment in the public’s expectations and an unwillingness of the public to pursue regulatory change (Baldwin et al., 2012).

Note: this table is inspired by a comparable approach to mapping different perspectives on regulatory failure by Baldwin, Cave, and Lodge (2012).

Conclusion: What have we learned?

Regulatory failure means different things to different observers. That puts regulators in a difficult position. A small or large public incident is often followed by a political or (social) media blame game. It is then usually found that something was wrong with the regulation that was in place: too much or too little regulation; regulatory frontline staff who were too enthusiastic or too passive; a relationship between the regulator and its targets that was too close or not close enough. I could go on and on.

Because of the broad range of perspectives on regulatory failure, multiple factors can often be found that can be argued to have caused the regulatory failure. In most situations of a perceived regulatory failure, it will be virtually impossible for regulators to counter such narratives. Every argument brought up by the regulator will be countered by those who observe regulatory failure. As a result, it is likely that regulators will remain the inevitable political and (social) media scapegoats when small or large incidents happen (although sometimes regulators are genuinely to blame for these).

The four perspectives on regulatory failure discussed in this research paper may help regulators to get a better sense of the various kinds of critique they may face in those situations. This could help them to think carefully about the responses they could prepare. In a related vein, we should not forget that, whilst regulatory failure often has negative consequences, it can have productive potential as well (Derwort et al., 2019). After all, some regulatory problems have a long-standing history and have been well-known to regulators, their targets, and their beneficiaries for a long time, but it then takes an explicit regulatory failure to generate the political and societal support for regulatory change.

More importantly, the four perspectives indicate that what a regulator would think of as being regulatory failure is not necessarily what its targets, its beneficiaries, and politicians see as regulatory failure. The four perspectives could provide the basis for a checklist that regulators could go through to check whether the various parts of their regulatory systems are still fit for purpose and not at risk of failing.

Last but not least, the four perspectives have also highlighted that the term regulatory failure creates a false dichotomy between an identifiable point in time at which regulation was not failing and an identifiable point in time (and an identifiable location in the regulatory system) at which it 'suddenly' failed. As Ronald Coase argued as early as 1964, 'Until we realize that we are choosing between social arrangements that are all more or less failures, we are not likely to make much headway' (Coase, 1964, 195).

Any form of or approach to regulation is doomed to fail at some point, but so is each 'free market' solution (Kahn, 1988). Often, regulatory failure begins to grow on the very day a regulation or a regulatory reform is introduced. Rather than asking 'will regulatory failure happen or not?', the question should be 'when will regulatory failure happen, and how do we respond?'. Let's try not to

fear regulatory failures but to accept them as a fact of life, learn from them when they occur, and do better next time.⁸

TEXTBOX 3 – THERE IS NO CLEAR DEFINITION OF ‘REGULATORY FAILURE’

Whilst scholars who study regulatory failure have tried to define the concept, there are no clear, uncontested definitions available. A few definitions and conceptualizations that recur in the literature are:

- [Regulatory failures are situations when] public actions intended to correct purported market failures fail to achieve their goals (Carman & Harris, 1986, 51).
- Regulatory failure occurs when the outcome of trying to address market failures is inferior to that achievable in the absence of regulation (Horwitz, 1989, 1).
- ... ‘failure’ might focus on the absence of adequate rules or guidelines (...) Alternatively the presence of cumbersome even criminogenic rules might form the substance of charges of non-performance (...) In short, failure might result from perceptions of too much regulation (...), too little (...) or the wrong sort of regulation ... (Haines, 1999, 24).
- Regulatory failure ... is concerned with failure of systems of control (Lodge, 2002, 273).
- Regulatory failure has many meanings including flawed market outcomes due to criminal intent or negligence of targets, or complicity by regulators (O’Doherty et al., 2003, 581).
- ... regulatory failures are products of institution designs where rigidities in the ability of the institutions to adapt to shocks lead to profound disappointment in the public’s expectations (McDermott & Peterson, 2005, 89).
- ... in the classic economic sense [regulatory failure means] failing to achieve its instrumental goals or creating market inefficiencies by achieving those goals at too great a cost ... (Short, 2013, 27).
- I define a regulatory failure as the state executive branch’s consequential divergence from a legal mandate, whether from the state legislature, Congress, or a federal agency (Seifter, 2018, 151).

⁸ Or, as Julia Black puts it, ‘Regulation will fail, however hard we try to design ways to improve it. The hard part is engaging regulators, firms, politicians, and the wider public in a debate on which failures are acceptable, and which are not’ (Black, 2006, 26).

Appendix A – Methodology

The narrative review presented in this research paper builds on a broad reading of the academic literature on regulatory failure. Initially, an attempt was made to carry out an evidence synthesis of this literature, following the format in earlier research papers in the *State of the Art in Regulatory Governance Research Paper* series. Unfortunately, the set of articles sourced for this evidence synthesis was too incoherent to synthesize findings and draw conclusions beyond what is presented in textbox 2 in this research paper.

For the initial evidence synthesis, a protocol was developed and followed for sourcing and coding peer-reviewed journal articles.⁹ This protocol builds on four (partly overlapping) tools, standards, and protocols that are conventional for the type of research presented here:

- AMSTAR 2, A MeaSurement Tool to Assess systematic Reviews version 2 (Shea et al., 2017);
- MARS, American Psychological Association (APA) Meta-Analysis Reporting Standards (essentially the MARS protocol is modified from, Cooper, 2017);
- MMRS, Mixed Methods Research Synthesis protocol (Heyvaert, Hannes, & Onghena, 2017); and
- PRISMA-P, Preferred Reporting Items for Systematic Meta-Analysis (Shamseer et al., 2015).

Sourcing articles

In selecting the source material for the evidence synthesis, no restrictions were set by time, length, or repetitions on the studies that were to be included in the evidence synthesis. No restrictions were set by the setting(s) of studies; however, only articles written in English were included. Also, only published peer-reviewed articles, including ‘online first’ and ‘early access’ publications, were included. The limitations of excluding non-published academic work and academic publications other than peer-reviewed articles are acknowledged (Vevea, Coburn, & Sutton, 2019).

The articles included in the evidence synthesis were systematically sourced in four rounds from different databases: WorldCat, Scopus, and Web of Science. In the first step, these databases were explored to identify articles that were likely to engage with Ayres and Braithwaite’s ideas on responsive regulation:

- From WorldCat, all articles with the words “regulatory failure” in any searchable field, published in English, since 1900, in the subject areas ‘business and economics’, ‘law’, ‘sociology’, and ‘political science’ were included. This search resulted in 98 documents.
- From Scopus, all articles with the words “regulatory failure” in their titles, abstracts, or keywords, published in English, since 1900 in the subject areas ‘social sciences’, ‘business, management and accounting’, and ‘economic, econometrics and finance’ were included. This search resulted in 241 documents.
- From Web of Science, all articles with the words “regulatory failure” in any searchable field, published in English, since 1900, in the disciplines ‘business economics’, ‘government law’,

⁹ Protocols are available from: <https://jeroenvanderheijden.net/?p=410> (published on 10 August 2020).

'public administration', 'social issues', and 'social sciences other topics' were included. This search resulted in 182 documents.

This search resulted in 521 documents. After removing 152 duplicates, this initial search resulted in a set of 369 peer-reviewed journal articles. Of these, 20 articles could not be obtained and were excluded from the search also, resulting in a final set of 349 peer-reviewed journal articles.

In the second step, article titles, abstracts, and keywords were screened to exclude articles that were unlikely to explicitly deal with regulatory failure or its prevention or that were explicitly not empirical, or both. For this, the following scores were used: yes (include), no (exclude), unsure (include). The screening was carried out by two coders. The full set of set of 349 articles was coded, and 246 articles were included in the next round. The agreement percentage between the two coders was 94%, with a Cohen's Kappa of 0.86 (representing excellent agreement, Heyvaert et al., 2017). In this step, a liberal approach to inclusion was taken: if one of the coders used the score 'yes' or 'unsure', the article was included for screening in the next step.

In the third step, the research design sections (or similar) of the articles were read to exclude articles that did not deal with an observed instance (or instances) of regulatory failure or a regulatory failure prevention strategy, and method sections (or similar) of the articles were read to exclude articles that were explicitly not empirical. For this, the following scores were used: yes (include), no (exclude), unsure (include). Of the 246 articles, 75 were included in the final round. The agreement percentage between the two coders was 95%, with a Cohen's Kappa of 0.86 (representing excellent agreement, Heyvaert et al., 2017). In this step, the coders resolved all discrepancies where one coder used the score 'yes' and the other 'no'.

In the fourth step, the articles were read in full to exclude articles that did not deal with regulatory failure or its prevention, or that were explicitly not empirical, or both. To come to a final decision on articles to include in the review, all disagreements between the coders were discussed and resolved. In this step, 40 articles were included for further analysis. During our full analysis of these 40 articles, we have decided to exclude two more articles. One article touched on regulatory failure only loosely but did not explicitly explore it; the other was addressing the failure of an international regulatory regime and as such was an outlier in the set (none of the other articles addressed regulation at the international level). The final set of 38 articles was systematically analyzed.

Data abstraction

From the 38 articles, data were abstracted following the *PICO* criteria (participants, interventions, comparators, outcomes):¹⁰

- *Study designs*: There were no a priori restrictions set on the study design or the type of data used. All 38 articles had a predominantly qualitative approach to understanding the example or examples of regulatory failure they addressed ('thick case descriptions').

¹⁰ These are well explained at www.en.wikipedia.org/wiki/PICO_process (3 June 2020).

- *Participants*: There were no a priori restrictions set on the background, type or number of the participants (including, but not limited to, people, firms, regulators, and jurisdictions) in the studies.
- *Interventions*: There were no a priori restrictions set on the type of regulatory failure (or its prevention). Of interest were studies that empirically observe failure of a regulatory intervention, or the empirically study the performance of an intervention that seeks to prevent regulatory failure.
- *Comparators*: There were no a priori restrictions set on the type of comparators used in the assessment of regulatory failure (or its prevention)
- *Outcomes*: The following outcome indicators were set (a priori) to evaluate observed examples of regulatory failure (or its prevention):
 - The stage of the regulatory process in which regulatory failure is observed.
 - The causal process of regulatory failure observed.
 - The impact of regulatory failure observed on the regulator (monetary costs, extra time required to achieve compliance, etc.).
 - The impact of regulatory failure observed on the targets of regulation (monetary costs, property damaged, lives lost, extra time required to achieve compliance, etc.).
 - The political implications of regulatory failure observed (loss of confidence in policymakers, shift in policy rhetoric, etc.).
 - The impact of regulatory failure on society at large (monetary costs, property damaged, lives lost, etc.).
 - As per the above for regulatory failure prevention strategies observed.

Data coding

To gain a rich understanding of the cases of regulatory failure (or its prevention), all 38 articles were read closely and coded in Atlas.ti using the codes presented in table B.1. These coded data were explored and analysed using Atlas.ti.

Table B.1 – Coding of the literature sources

Codes used		
Empirical	Failure due to government (in)action	Failure due to politics
		Failure due to capture
		Failure due to design
		Failure due to implementation
		Failure due to enforcement
		Failure due to punitive action
		Failure due to a too static stance
		Failure due to revolving door processes
		Failure due to multiple regulators/no coordination
		Other

Table B.1 – Coding of the literature sources (continued)

Codes used				
Empirical (continued)	Failure due to target (in)action	Intentional non-compliance		
		Compliance with the letter but not the spirit of the law		
		Flawed self-regulation		
		Information advantage over the regulator		
		Other		
	Questionable operationalization of failure	Non-compliance		
		Other		
	Theoretical	General observations	Analytical vs rhetorical	
			Bootleggers/Baptists theory	
			Creative compliance	
Difficulty...			... to define (regulatory) failure	
			... to (objectively) measure regulatory failure	
			... to study regulatory failure	
Quote				
Neo-liberalism as cause				
Positive effects of regulatory failure				
Predictor of regulatory failure				
Preventing regulatory failure				
Regulatory failure as context dependent				
Regulatory failure is understudied				
Public interest theory		Design		
		Implementation		
		Instrumental		
Public choice theory		Self-interest		
		Limited rationality		
Private interest theory		Capture		
		Life-cycle theory		
Institutional theories		Structural/institutional regulatory failure		
		Incremental		
		Shock		

Limitations

As with any approach to systematic research, the approach chosen here comes with limitations. There is a risk of bias because only peer-reviewed articles, including 'online first' and 'early access' publications, were included. First, not all research on regulatory failure makes it through the journal peer-review process, and not all research on regulatory failure from around the world is carried out by academics. The exclusion of non-published academic work, academic publications other than peer-reviewed articles, and non-academic publications logically limits the number of observed applications of regulatory failure in real-world settings (Mahood, Van Eerd, & Irvin, 2014). Second, there is a risk that experiences with regulatory failure are under-represented in the academic literature (Fitzgerald & Spencer, 2020; Motherway et al., 2018), which represents a selective reporting bias (Vevea et al., 2019). Unfortunately, because of the types of study designs and types of data used in the included articles (predominantly single-n or small-n studies), it was not possible to run tests for sample biases (cf., Hardwicke et al., 2020).

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