Enforcement concepts and styles

A review of the international academic literature

Professor Jeroen van der Heijden
Dr Olga Batura

State of the Art in Regulatory Governance Research Paper 2023.12

VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA
WELLINGTON SCHOOL OF BUSINESS AND GOVERNMENT

GOVERNMENT REGULATORY PRACTICE INITIATIVE

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Abstract

This research paper reviews the rich literature on regulatory enforcement, discusses the status quo in research and practice, and highlights the challenges of different approaches, illustrated with examples from the enforcement of European Union (EU) law and regulation. It first reviews classic debates on regulatory enforcement, including deterrence-based enforcement, compliance-based enforcement, and mixed strategies such as responsive regulation. From there, it reviews recent trends in regulatory enforcement, including (enforced) self-regulation, outsourced and privatised enforcement, regulatory intermediaries, risk-based regulation, and the embracing of information technology and insights from the behavioural sciences in regulatory enforcement. Finally, the research paper concludes with suggestions for future research.

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1 Introduction

Over the last 60 years, our thinking about enforcement has changed considerably (Van der Heijden 2016). The traditional approach to enforcement, deterrence, premised on the assumption that people comply because they fear the consequences of rule-breaking (Tyler 1990), began changing from the 1960s onwards when it was found that people also comply because they follow social norms because they feel it is the right thing to do, or because they consider the rules to be legitimate. Instead of approaches increasing the chance that rule-breakers would be caught and making penalties for non-compliance severe (Foucault 1995 [1975]), in the 1970s and 1980s, regulators started to experiment with 'softer' and more facilitative forms of enforcement.

The resulting compliance orientation of enforcement came with its own drawbacks as well, however. Also, in practice, regulators often applied a mix of deterrence and compliance. This led some scholars to realise that combining these two strategies may help overcome their weaknesses. The best-known and most formalised approach to mixing these two strategies—'responsive regulation'—sees enforcement as a cooperative and facilitative enterprise where regulators move towards more coercive and punitive interventions only if their targets do not respond well to cooperation (Ayres and Braithwaite 1992).

From the 1980s onwards, cost-effectiveness became another driver for changes in enforcement concepts and strategies. Under the paradigm of New Public Management, governments were expected to reduce their overall spending, outsource and privatise public service delivery, and reduce regulatory burdens where possible (McLaughlin et al. 2002). This has led to the increasing use of (enforced) self-regulation (Fairman and Yapp 2005), delegated and outsourced enforcement (Van der Heijden 2009) and 'regulatory intermediaries' (Abbott et al. 2017) in compliance processes and interventions. Risk management practices and applying risk (based) regulation emerged as a significant regulatory innovations (Haines 2017).

Since the 2000s, we are witnessing again two broad developments in compliance concepts and strategies—one behavioural, the other technological—brought about by the desire to further improve enforcement in the wake of, among other things, the global financial crises of 2008, the climate crisis and the COVID-19 pandemic. Regulators increasingly embrace insights from the behavioural sciences to attune their compliance actions to the various heuristics and biases that may explain non-compliance (Halpern 2019). On the other hand, regulators are exploring the value of technological developments such as big data and algorithmic regulation to optimise their enforcement processes and interventions.

This research paper reviews the rich literature on regulatory enforcement, discusses the status quo in research and practice, and highlights the challenges of different approaches, illustrated with examples from the enforcement of European Union (EU) law and regulation. In what follows, we take a broad perspective on enforcement, which includes monitoring, oversight and corrective actions undertaken by regulators. In section 2, we focus on the classic debate and approaches (deterrence-compliance spectrum) and in section 3, we discuss the more recent thoughts on self-regulation, risk-based and behavioural science. Section 4 concludes.

2 Classic debate: deterrence-strategy, compliance-strategy and mixed strategies

A central question driving much of the classic and contemporary enforcement literature is why people (and organisations) obey law and regulation. After all, if we better understand what explains compliance behaviours, we can develop and implement more suitable enforcement processes and interventions.

Deterrence-based enforcement

Broadly speaking, it has long been assumed that compliance results from a fear of the consequences of being found in violation (Ogus 2004). The deterrence-based enforcement strategy builds on this assumption. It aims to deter non-compliance before the law is broken (Reiss 1984) or sanction non-compliance after the breach (Hawkins 1984). A central hypothesis within this strategy is that the greater the chance of getting caught breaking the law and/or the higher the sanctions if the law is broken, the less willing people are to break it (Williams and Hawkins 1986). Sanctions are then often a (financial) penalty or imprisonment. This model has a solid top-down and highly technocratic understanding of compliance. Whilst the thinking about enforcement has moved on considerably, this model is still likely to be what many policymakers and the public consider when discussing enforcement and compliance (Freiberg et al. 2022). The model is also still dominant in real-world regulatory enforcement, including EU law enforcement, most typically EU administrative and criminal law.

Whilst the deterrence-based strategy has been and still is very popular as an approach to regulatory enforcement, critics point out that by putting the onus of monitoring compliance entirely on the regulators, this strategy can quickly become expensive (it requires large swaths of well-trained compliance staff and it puts a considerable burden on targets of regulation for evidencing compliance), and that it concentrates too much on end-of-the-line solutions (the strategy is reactive and can only 'correct' a situation of non-compliance after a breach of rules is observed) (Schell-Busey et al. 2016). The strategy is also prone to what is termed 'regulatory capture' when too close a relationship between regulator and regulatees comes into being (Carpenter and Moss 2013). Furthermore, the strategy builds on an outdated model of human behaviour, the idea that humans are rational and make compliance decisions based on cost-benefit analysis (more on what follows) (Nagin 2013).

Compliance-based enforcement

Acknowledging such shortfalls of the deterrence strategy, governments worldwide have been searching for alternatives for a long time (Van Rooij and Sokol 2021). The first significant move away from the deterrence-strategy was embracing a compliance-based enforcement strategy, which emerged in the early 1980s (Vogel 1986). This strategy considers that positive incentives such as grants and subsidies or education and support can be expected to have a better result in achieving compliance than the negative incentives used in the deterrence-strategy (Hutter 1997). Positive incentives may help take away the barriers met by regulatees when complying with the law (Weaver

2014). The proponents of grants and subsidies as incentives in enforcement argue that these give more freedom to the targets of regulation about how they wish to comply and that these freedoms incentivise them to reduce harm to zero, if possible, rather than to a prescribed level. One could, however, question whether this is an approach specific to enforcement or an alternative approach to governing societal problems (Khanna 2021). As such, the focus on grants and subsidies is left outside the scope of the current research paper. However, the focus on education and support, as alternative enforcement strategies, is of interest here. These activities allow a regulator to explain its targets the rationale behind the law and to provide advice on how these targets can best comply with it (Parker and Lehman Nielsen 2017).

In short, where the deterrence strategy takes a top-down approach, the compliance strategy takes a bottom-up approach by asking questions such as: Why do targets (not) comply with laws and regulations? Do they lack the financial or physical capacity to do so? Do they not understand the rules? Do they perhaps not know of the rules? The proponents of this strategy consider that intensive interaction between target and regulator may result in valuable information flows between the two. Therefore, they suggest regulators take a cooperative and collaborative stance towards their targets (Alm et al. 2012). In the EU, the strategy is used, for example, to enforce the internal market rules and labour law. Yet, like the deterrence-strategy, the compliance-strategy comes with complications. The positive incentives it builds on work indirectly and may therefore respond too late; the public may question why some undesired behaviour is (or appears to be) tolerated and not rigorously rooted out; and the focus on cooperation and close interaction between regulators and their targets may open the door to undesired capture (Baldwin et al. 2012).

Mixing strategies: Responsive regulation

The deterrence and compliance strategies discussed here should be understood as very stylised models, and real-world enforcement by regulatory agencies and their staff is unlikely to fit these perfectly. In practice, regulators typically combine elements of 'punishment and persuasion' to use the strengths and overcome the weaknesses of the strategies (Braithwaite 1985). Responsive regulation is the best-known systematic approach for doing so (Ayres and Braithwaite 1992). The responsive regulation approach considers punishment as a first choice to be unaffordable, unworkable, and counterproductive. Governments generally have limited enforcement capacity, and not all subject to regulation need a similar level of enforcement to ensure compliance. To make regulatory enforcement more effective, regulators can safely assume that a large part of the population will show compliant behaviour with a moderate level of enforcement. Yet altogether rejecting punitive incentives is considered naïve as well. According to the responsive regulation strategy, the trick in regulatory enforcement is a staged approach to enforcement, beginning with elements from the compliance strategy (i.e., persuasion) and only using the more intrusive elements from the deterrence strategy if the situation calls for it (i.e., punishment).

Thus, responsive regulation considers the day-to-day interactions between regulators and their targets essential in achieving compliance. In practice, responsiveness can occur at the organisational level (e.g., formal choices about when to switch from helping targets to comply to penalising them for non-compliance) *and* at the frontline level (i.e. in the direct interactions between regulatory frontline workers and their targets). For example, frontline workers can choose between pursing a facilitative style and explain why the target should comply and how this can be done (or even accept

a violation today as long as the violation will be remedied by a set date) or a formalistic style by sticking closely to the letter of the law and takes disciplinary measures as soon as a violation is found (May and Wood 2003). The responsive regulation strategy expects that choosing responses based on the target's behaviour gives the regulator an advantage over its target since the latter does not know what the regulatory response to its behaviour will be (Braithwaite 2011).

Responsive regulation has received much praise over the years from scholars and practitioners for providing a pragmatic approach to the longer-term strategic compliance choices that regulatory agencies must make *and* the day-to-day compliance decisions their frontline workers must make—it is worth noting, however, that there is no firm evidence base that it always delivers on its normative promises (van der Heijden 2021b). Moreover, while the strategy is applied by regulators worldwide, there is little insight into how it is applied in enforcing EU law at the time of writing this research paper (Blanc and Faure 2020).

3 Recent trends and new thoughts in the literature

The abovementioned enforcement concepts and strategies mainly take the compliance behaviour of targets of regulation as their starting point. On the other hand, other enforcement concepts and strategies begin by asking whether the government should enforce its regulation or if others can do this as well or perhaps even better. Here, the focus shifts from *why* targets of regulation comply to *who* is the most suitable actor to carry out enforcement best (Gunningham and Grabosky 1998).

Self-regulation and enforced self-regulation

Questions about whether government should develop and implement regulation and enforcement (and broader public services) to achieve societal desirable goals were put on the political agenda in the early 1980s (Kahn 1988). However, it is mainly the ideas of Ronald Reagan in the United States of America and Margaret Thatcher in the United Kingdom (UK) on how to steer society that are at the base of a neo-liberal, deregulatory and privatisation agenda that has been in force around the world, including the EU, for a long time now (Majone 1993). Arguments were made that government often lacks the means to carry out adequate monitoring and enforcement tasks and cannot often carry out such tasks with sufficient depth. This will then result in large parts of regulated areas being under-enforced. Moreover, because the targets of regulation will always have an information advantage over the regulators (they know their own conduct and that of their peers better than a regulator ever could), it may (sometimes) be better for them to self-regulate, the arguments continued (Gunningham and Rees 1997).

Self-regulation refers to a situation in which a target of regulation or a group of targets monitors and enforces its own behaviour or that of the group (Bartle and Vass 2007). Self-regulating firms are expected to have higher levels of expertise than government regulators. They are highly aware of their processes and will therefore know better than a government inspector where to look, when, and what to look for. It is also argued that self-regulating firms can free up resources to carry out enforcement tasks when needed. Besides, self-regulating firms are a lighter burden for society since the firms, not the ordinary taxpayer, pay the costs related to inspections (Short 2013). An example of self-regulation within EU law is the Code of Practice on Disinformation (CPD) (European Commission 2022). The CPD comprises a set of principles, commitments and standards to fight disinformation and is signed by leading social networks, online platforms, advertisers and the advertising industry. By signing the CPD, the signatories promise to secure their services against inauthentic behaviour, encourage transparent advertising and share relevant data with the research community (Plasilova et al. 2019). More examples of effective self-regulation at the EU level can be found in intellectual property rights.

Yet, self-regulation of this kind often comes with its own challenges (Short and Toffel 2010). For example, self-regulating firms are often reported to have a poor record of choosing the public interest over the private interest in their activities (Bartle and Vass 2007). Moreover, without governmental involvement, self-regulation may lack accountability and the right incentives for self-regulating actors to ensure they comply with the regulations (Núñez 2007). Indeed, the results of the CPD have been mixed (Shattock 2021). For example, not all signatories seem to be equally committed, and there are differences in interpretation of the rules underpinning the CPD, which has

led to inconsistencies in how restrictions are implemented and adhered to (European Commission 2020).

To overcome challenges with self-regulation, it is sometimes suggested that regulators not rely on a strategy of full self-regulation but opt for *enforced self-regulation* (Schulz and Held 2004). This strategy strikes a balance between a traditional approach to regulation and enforcement carried out by regulators and self-regulation carried out by the targets of regulation. It suggests regulators introduce clear expectations about how their targets self-regulate, for instance, by stipulating the sorts of internal control systems targets must introduce and the information about the self-regulatory activities they must report back to the regulators (Fairman and Yapp 2005). Higher levels of compliance with enforced self-regulation (compared to self-regulation) are expected because regulators can take punitive action if their targets do not comply with the agreed self-regulatory rules or simply because the regulators' presence in the self-regulatory system works as a reminder for the targets to stick to their commitments (Mendoza et al. 2019).

Contracting out, outsourcing and (other) regulatory intermediaries

Another set of enforcement strategies that has come out of the neo-liberal, deregulatory and privatisation agenda is the involvement of third parties in regulatory enforcement. Such third parties could be independent auditors, registered certifiers or even citizens. This idea underpins another well-known book, *Smart Regulation*, by Neil Gunningham and Peter Grabosky (Gunningham and Grabosky 1998). They consider parties, roles, and interactions in studying the regulatory and enforcement process. The focus on the possibility of there being different parties in the process has, in particular, been a move away from the traditional ideas of regulatory regimes that considered the regulatory process to be too much of 'a dance between two participants – government and business' (Gunningham and Grabosky 1998, 93). Instead, the key to the smart regulation philosophy is to involve those actors who are best fitted to enforce regulation in the regulatory process. This may sometimes be through traditional government agencies; sometimes through self-regulatory or co-regulatory initiatives in which private sector actors enforce rules against members of their own bodies; and sometimes through third parties that do not have a formal mandate or authority to carry out enforcement tasks, such as consumer interest groups or insurance companies, which act as 'surrogate regulators'. Here we should note that the term 'smart regulation' has also been used by the European Commission, particularly in the early 2010s. Yet, the European Commission's conceptualisation of smart regulation is significantly different from Gunningham and Grabosky's (Van der Heijden 2016).

The involvement of third parties in enforcement processes has been gradually more formalised. Since the 1980s, regulatory and enforcement tasks traditionally carried out by government agencies have been contracted out or outsourced to firms, and sometimes they have even been fully privatised (Cohen and Rubin 1985). The EU has been promoting private enforcement in various domains, including consumer protection, alternative and online dispute resolution, food law, procurement law, intellectual property rights, and competition law (e.g., Havinga 2018). It has typically been assumed that due to competition and the ability to specialise, private parties can deliver regulatory and enforcement 'services' more cost-effectively than government agencies can, which results in economic benefits for citizens (Harvey 2005). Yet, the flip side of involving third parties is that it may negatively affect the transparency or accountability of enforcement processes

and that problems of regulatory capture may arise when targets of regulation directly hire and pay private sector inspectors (Naderpajouh et al. 2022). Therefore, the modest body of literature on the topic indicates that it is essential for governments to maintain some level of involvement in enforcement processes if they opt for contracting out, outsourcing or privatisation. Here it is relevant to note that the contracting out, outsourcing and privatising regulatory and enforcement tasks typically result in hybrid regulatory systems in which regulatory agencies (i.e., government) work side-by-side with these private sector parties (Van der Heijden 2015).

More recently, the language on third parties' formal and informal involvement in enforcement processes has shifted. Acknowledging that nowadays often parties other than a regulator (R) and a target (T) are involved in regulatory and enforcement processes, Kenneth Abbott, David Levi-Faur and Duncan Snidal have suggested systematically including these 'regulatory intermediaries' (I) in studies of regulation and enforcement. They define regulatory intermediaries as 'any actor that acts directly or indirectly in conjunction with a regulator to affect the behaviour of a target' (Abbott et al. 2017, 19), acknowledging that the intermediary can also act on behalf of the target. In recent years, the RIT analytical model that they suggest has been eagerly embraced by scholars studying the implementation and enforcement of EU law, with examples ranging from regulating online platforms (Busch 2020) to pharmaceuticals (Maggetti et al. 2017).

Risk-based strategies

Moving beyond questions about *why* targets of law and regulation comply and *who* can carry out enforcement best, another set of enforcement concepts and strategies is concerned with *how* to allocate limited enforcement resources best. After all, regulatory agencies, self-regulating firms and intermediaries in enforcement processes will (likely) always have too few resources to monitor, inspect, educate, reprimand and so on, each and every one of their targets—and each and every activity, product, service and so on of these targets. Again, this calls for a reasoned approach to allocate enforcement resources so that the most meaningful overall level of compliance can be achieved.

Increasingly since the early 1990s, regulators around the globe have begun to embrace risk-based approaches to regulation and enforcement (Van der Heijden 2021a). This indicates that these regulators have realised that entirely reducing risks (such as non-compliance) to zero is impossible (Boin 2010). In response, they have adopted 'apparently rational, objective, and transparent ways of prioritising work, and the deployment of limited regulatory resources' (Hutter 2017, 103). Their risk-based strategies originate in the sort of risk-management practices that gained popularity in the private sector in the 1980s (Renn 1998). In short, regulators typically seek to map those targets and areas where, for example, non-compliance is most likely and where non-compliance could have severe implications for public health, public wellbeing, the environment, and so on. Combining the chance of non-compliance with the severity of the consequences then indicates where regulatory resources can be allocated best (the typical formula to 'calculate' risk is like this: risk = probability x loss) (Renn and Klinke 2016).

This 'rational-instrumental' (Fisher 2010) risk-based approach to regulation and enforcement can be observed in various areas of EU law, including food law, banking regulation and anti-money laundering. Whilst the risk-based strategy is often lauded for increasing the transparency and

accountability of the choices regulators must make to allocate their limited resources, the strategy is increasingly critiqued. First is that regulators often lack the data to carry out adequate risk-assessments. Sound risk-assessment and management build on multiple sources of knowledge regarding various elements (Haines 2013). These elements include, but are not limited to, the extent of harm, the probability of occurrence, the remaining uncertainties (incertitude), the geographical and temporal spread of harm (ubiquity), the duration of harm (persistence), the reversibility of harm, the delay effect between the trigger and the occurrence of harm, and the potential for mobilisation of those affected (Renn and Klinke 2016). Regulators typically do not have this data readily available and lack the resources to obtain it. The available data may be outdated, and too much weight may be given to its probabilities. Finally, data (and its collection) can be compromised by political and other interests, and the biases of regulators and data analysts may colour how data is collected and interpreted (Aven 2011).

Moving beyond such challenges of collecting and interpreting data, scholars also point to more fundamental challenges that come with risk-based strategies for regulation and enforcement. First, it is not merely an instrumental or rational approach to allocating regulatory and enforcement resources but a 'particular way to construct the regulatory agenda' (Black and Baldwin 2010, 210). The construction, packaging and identification of risks involve political choices and give considerable power to decision-makers. Risk-based strategies may be in the interests of some targets of regulation but not in the interests of others or not in the interests of some societal groups. A typical example is the allocation of enforcement resources and activities based on risk and harm profiling by the Dutch Authority for Consumers and Markets (ACM 2016). Another example is the identification of 'high risk' targets of tax regulation in the Netherlands based on 'objective' criteria (i.e. risk profiling) to prevent tax fraud resulted in a situation where the fundamental rights of well-willing citizens were systematically violated by the tax regulator (Appelman et al. 2021). Whilst this may be one of the more extreme negative examples of how a risk-based strategy may yield undesirable results, it illustrates a significant risk of the strategy: an over-technocratic application and overconfidence about its capabilities to improve enforcement.

Embracing information technology in enforcement

While information technology has already been used for a few decades to improve regulation and compliance (Arner et al. 2017a), it seems to be entering a new phase. For example, RegTech—the term for regulatory technology coined by the UK Financial Conduct Authority (2016)—promises the joint use of the same data and technological tools by regulators, regulatees and technology providers to allow for regulation, monitoring and reporting in real-time (Johannson et al. 2019). This could transform the role of regulators, allowing them dynamically adapt regulations and tailor regulatory decisions (Arner et al. 2017b).

RegTech was pioneered by the financial sector. In the EU, the complex, fast-increasing and changing body of rules faced by the financial sector, especially in the aftermath of the financial crisis, led to the adoption of various (semi-)automated solutions (Buckley et al. 2019). According to the European Banking Authority (EBA 2021), artificial intelligence, machine learning and cloud computing are used for fraud prevention, anti-money laundering, creditworthiness assessment and prudential reporting. Though the industry's satisfaction with these new tools is high, they are not yet mainstream in regulatory compliance management. The main challenges from the regulatees' perspective are,

among other things, lack of interoperability and integration with the existing legacy systems, inadequate regulation, lack of the necessary skills and immaturity of technical solutions. The regulators also notice regulatory risks, stating they may lack the tools and skills to supervise the RegTech utilisation by the industry.

The initial successful experiments with RegTech in the financial sector prompted discussions about its expansion to other areas of regulation. Privacy and personal data protection are of particular interest as the rigorous requirements of the General Data Protection Regulation (GDPR) have been challenging to comply with for companies (Rieger 2021) and difficult to enforce by the authorities (Ryan and Toner 2020). RegTech could help data protection officers within regulatees in tracking the compliance progress of their organisations, identifying and reducing errors and automating (some) privacy-related decisions (Ryan et al. 2020). Another example of a promising area of RegTech application is international trade (Copigneaux et al. 2020). Distributed ledger technologies (e.g. blockchains) can be used to speed up and make more transparent administrative exchanges between exporters/importers and customs and certification authorities (e.g. complying with sanitary and conformity rules, safety requirements and secured proof of origin) and facilitate relevant regulatory decisions (e.g. instant verification, electronic certificates and assurances to third-country authorities). Blockchains, the Internet of Things and artificial intelligence can also be employed to track and trace and enhance the transparency of international supply chains, increase compliance with consumer information obligations, and help to manage and enforce intellectual property rights.

A more comprehensive application of RegTech for compliance and enforcement would require many adjustments, both in the legal framework and regulatory practice (Buckley et al. 2019). First, it is crucial to accept that RegTech will not abolish risks. On the contrary, it may enhance some existing risks (i.e. cybersecurity), change the nature of the old risks (e.g. market volatility) and create new risks. Data-driven, real-time supervision and regulation would also demand new skills and processes from the regulator. Accountability and liability rules would need to be reconsidered to reach a proper balance between the technology providers and technology users and to account for the changed role of regulators. However, it is not clear yet where the lines should be drawn.

Behavioural science informed enforcement

Increasingly since the 2010s, questions have been raised about *whether* the assumption of rationality (of both targets of regulation and regulators) that underpins many enforcement concepts and strategies should be updated. Increasingly, insights from the behavioural sciences indicate that the image of *homo economicus* that is at the base of so much public policy and regulation (i.e. the image of humans as rational utility maximisers) does not represent human behaviour well. Regulators in Europe and elsewhere have rapidly begun to embrace these insights.

Narrow applications of insights from the behavioural sciences

Public policy, including regulation and enforcement, has long built (and often still builds) on the assumption that we humans make rational choices, pursue our own self-interest and choose the option with the highest value to us when given a choice ('utility maximisation'). Yet, ever-growing evidence from the behavioural sciences indicates that this image of *homo economicus* does not represent our actual behaviour well (Kahneman 2011). Our rationality is bounded by our limited

cognitive abilities, and we typically lack the time and capacity to collect and process all the information required to make optimal choices. As a result, much of our choice behaviour reflects routines or builds on heuristics ('mental shortcuts'). Often this is sufficient for making good choices. Still, sometimes it results in suboptimal choices in areas such as our health (we overeat and exercise too little) or wealth (we start or update our pension plan much too late in our working careers). Because regulation and enforcement affect choices that people make (to use a different term, regulators are 'choice architects') (Thaler and Sunstein 2021), the question has arisen whether regulators have a duty to develop their regulatory systems based on these emerging insights from the behavioural sciences?

A firm 'yes' to that question is the starting point of a book that has significantly impacted regulation and enforcement over the last decade-and-a-half: *Nudge: Improving Decisions About Health, Wealth and Happiness* (Thaler and Sunstein 2008). The authors argue that public policy, regulation included, should be developed and implemented so that it gently steers (i.e. nudges) people towards making choices that are in their best interest. But, so they add, it is essential that the choice is voluntary and not forced, the nudge should be easy to understand and cheap to avoid, and governments should only nudge people towards choices that are better aligned with people's self-interest. For example, indicating to a household how their energy consumption compares with their neighbours can trigger them to (voluntarily) reduce their energy consumption (Van der Heijden 2020). Inspired by the insights presented in this book, regulators around the globe have embraced nudging as a potentially helpful strategy to achieve improved levels of compliance at little additional cost (Linos et al. 2020). Indeed, nudging has been applied in EU law in areas such as data protection and privacy, consumer protection, and health (see, e.g., Alemanno and Sibony 2015), and the creation of a dedicated hub for behavioural analysis inside the European Commission (the Competence Centre on Behavioural Insights) indicates the Commission's interest in the topic (Baggio et al. 2021).

A broader appreciation of insights from the behavioural sciences

Yet, questions have begun to arise as to whether nudge-type interventions can meet the high hopes initially expressed about the value of behavioural insights for better regulation and enforcement (Huising and Silbey 2018). Much of the early-day evidence on nudging came from small studies or (laboratory) experiments, and the impacts of nudging in real-world (regulatory) settings are often found to be modest (Kosters and Van der Heijden 2015). Also, where the nudging can, in theory, be applied to help people overcome a range of heuristics and biases, in regulatory enforcement its principal value seems to be in the stressing of social norms and triggering people's social proof heuristic (i.e. our inbuilt human tendency to conform to group behaviour) (Huising and Silbey 2018). Furthermore, nudging is more promising for addressing minor rather than significant regulator challenges (ie it may help incentivise people to make decisions about organ donation, but not so much in significantly changing their environmental behaviour, see further Ewert et al. 2021). Another critique of *Nudge* is that it only engages with a specific part of insights from the behavioural sciences, namely behavioural economics, and not others. This one-sided view may bias regulators towards some behavioural insights and crowd out other insights or even entire areas of behavioural research (Feldman 2018). Finally, some wonder why would regulators not be subject to the heuristics and biases they seek to address in their targets? (Hallsworth et al. 2018).

Acknowledging these critiques, scholars have begun to call for a broader appreciation of insights from the behavioural sciences in regulatory governance (and other areas of public policy). Rather than merely considering these insights as valuable to create new regulatory tools (such as nudging), they see possibilities to move towards 'a behavioural model of the policy process that offers a nuanced understanding of the interrelations between social structures and individual action' (Ewert et al. 2021, 4). Such a model asks regulators and scholars of regulation to move beyond the popular but sometimes one-sided 'lessons' from behavioural economics and embrace a broader suite of insights from the behavioural sciences (Ewert and Kathrin 2021). It also asks them to appreciate that they are as much subject to cognitive limitations and heuristics as are their targets and that this holds at the level of individuals such as frontline workers and managers of regulatory units (micro-level) as well as at the level of regulatory agencies and organisations (meso-level) (Gofen et al. 2021). It further asks them to appreciate that the behaviour of individuals is not merely an outcome of their cognition but is also affected by the institutional structures and contexts they are embedded in (macro-level) (Moynihan 2018). Finally, a behavioural model of the policy process requires reappreciation that the various levels influence each other and are not static (Ewert et al. 2021).

At the time of writing, it is too early to say whether such a holistic behavioural model will result in better enforcement outcomes than what has been achieved thus far with nudge-type interventions. The model's appeal is improving regulatory systems-as-a-whole rather than merely optimising specific elements of those systems. The mere focus on elements thus far may have forgone the impact of interactions between elements on the performance of systems-as-a-whole. In addition, the model brings us back to reappreciating the interaction between structure and agency, rather than considering that one has dominance over the other (Giddens 1984).

4 Conclusion

This research paper has reviewed the rich literature on enforcement concepts and strategies and illustrated these with some examples from the enforcement of EU law. Two lessons stand out from this research paper. The first lesson is that the theorising on and the practice of regulatory enforcement has changed considerably since the 1980s, and this change is ongoing. The changes we have discussed here can broadly be split into those that seek to align enforcement concepts and strategies better with insights on human, organisational and institutional behaviour; and those that seek to improve the allocation of limited enforcement resources. The former includes the move towards compliance-based enforcement in the 1980s, introducing responsive regulation in the 1990s and embracing insights from the behavioural sciences in regulation and enforcement since the early 2000s. The latter includes the move towards regulatory intermediaries since the 1980s, embracing risk-based regulation since the 1990s and adopting information technology in enforcement since the 2000s.

The second lesson is that all the enforcement concepts and strategies discussed here come with their own strengths and weaknesses. In practice, they need to be combined so that the strengths of some can overcome the weaknesses of others. Responsive regulation was among the first systematic approaches to guide the mixing and matching of enforcement concepts and strategies to local circumstances. The call for holistic behavioural models for regulatory and enforcement processes appears to be another call for mixing and matching. That being said, it strikes us that the knowledge available on such mixing and matching of enforcement concepts and strategies has stayed within the behavioural stream or the allocation stream. Meaning, scholars appear to be interested in the mixing and matching of strategies that influence targets' behaviour (the 'behaviour stream'), such as responsive regulation, or the mixing and matching of tools and processes (the 'allocation stream'), such as using big data and algorithms in risk-based regulation.

From the above, it follows that future scholarship may explore the extent to which and how regulators are purposefully mixing and matching concepts and strategies from both streams and with what effects. What fruitful synergies emerge, for example, when concepts from the behavioural stream are combined with strategies from the allocation stream (e.g., only use nudges for targets with a specific risk profile)? In addition, scholars interested in the enforcement of EU law specifically may wish to explore whether and to what extent there is convergence (or divergence) in the use of these concepts and strategies between EU Member States and whether there is a specific 'EU flavour' in how EU law is enforced—i.e., to what extent does EU law enforcement overlap with or deviate from the various international developments discussed in this research paper? Last but certainly not least is the question of how EU law enforcers can stay ahead of their targets? After all, over time, the latter will learn how to roll with the punches of the former and may find and exploit weaknesses in enforcement regimes. What traditional and experimental approaches have EU law enforcement used to anticipate such strategic behaviour, and with what effects?

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