Smart Enforcement

Theory and Practice

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Abstract

There is an increasing attention both on how inspections and enforcement efforts with respect to regulatory breaches can be made as effective as possible. Regulatory breaches refer to violations of norms that have been prescribed in public regulation, such as, for example, environmental regulation, food safety regulation or regulation aiming at occupational health and safety. The enforcement of this regulation is qualified as regulatory enforcement. It has been claimed that inspections should not be random, but based on risk and target-specific violators and violations. Such a "smart" enforcement policy would be able to increase the effectiveness of enforcement policy. Policy makers are enthusiastic about this new strategy, but less is known about the theoretical foundations, nor about the empirical evidence. This article presents the theoretical foundations for smart enforcement as well as some empirics. Moreover, the conditions under which smart enforcement could work are identified, but also a few potential limits are presented.

Keywords: regulatory inspections, regulatory enforcement, environmental regulations, smart regulation.

A Introduction

Laws and regulations can only contribute to the policy goals that led to their enactment if they are effectively implemented and complied with. Whereas, for some legislation, no specific institutions, resources or measures are required to try and ensure such implementation and compliance, in a number of areas modern states have allocated resources to what is commonly called "regulatory

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enforcement".[1] In many regulatory areas, however, there have been concerns that, given scarce resources, many violations remain hidden, dissuasion is limited, and compliance levels are insufficient. Although such claims are by definition hard to prove (short of reliable ways to estimate compliance levels), and although there is much evidence that dissuasion (deterrence) is far from the only driver of regulatory compliance, there is some level of agreement that there is a real need to make implementation of regulations as effective as possible (given constant resources). Both the literature and practitioners have responded to this problem through approaches such as "risk-focused targeting" or "smart enforcement". In simple words this refers to an enforcement strategy within which both supervision and enforcement agencies and prosecutors focus their efforts on specific categories of supervised entities and of (potential or confirmed) violations in order to increase efficiency and effectiveness. They also differentiate between the regulatory and enforcement tools and measures used in proportion to the risk posed to the public interest, which is the purpose of the regulation.

One aspect of these "smart enforcement" approaches is what some opinions in the literature refer to as a "Tit for Tat" strategy of the enforcers, whereby agencies reward firms that voluntarily report their own violations, rapidly comply with inspectors' recommendations, and generally display efforts to comply. These firms receive a more lenient treatment if and when violations are found. A comprehensive vision of how regulatory agencies can have a "responsive regulation" approach to regulatory supervision and enforcement was developed already in 1992 by Ayres and Braithwaite,[2] and a further broadening of this vision was that of "smart regulation".[3] In the latter, the differentiated enforcement response (when violations are found) goes together with the use of varied and complementary strategies and tools to promote compliance, calling on a number of complementary drivers (including leveraging peer pressure, social norms etc.).

Several models (including the "responsive regulation" one) have argued in favour of an enforcement strategy whereby firms would be divided into different classes on the basis of their compliance behaviour, the intrinsic risk posed by their activities, or (the most widely accepted model) a combination of the two. From a practitioner's perspective, an application of this approach to enforcement decisions (when violations are found) is the "Enforcement Management Model"

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1   *See* OECD, *Best Practice Principles for Regulatory Enforcement and Inspections,* Paris, OECD, 2014, available at: www.oecd.org/gov/regulatory-policy/enforcement-inspections.htm (last accessed 19 April 2016), which distinguishes 'regulatory enforcement' in its broad meaning (including all measures that aim at ensuring implementation and compliance, including guidance, supervision etc.) from 'enforcement' narrowly construed (the decisions and measures taken if a violation is identified). In the United Kingdom, the term 'regulatory delivery' is used to designate the whole spectrum of activities aiming at increasing compliance. We have kept here to the more commonly used 'enforcement', which also corresponds better to our focus.

2   I. Ayres & J. Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate,* Oxford, Oxford University Press, 1992; R. Baldwin, 'Why Rules Don't Work', *The Modern Law Review,* Vol. 53, 1990, pp. 321-337.

3   N. Gunningham & P. Grabosky, *Smart Regulation. Designing Environmental Policy,* Oxford, Clarendon Press, 1998.

of the UK's Health and Safety Executive.[4] It is the "risk framework" that allows the planning of inspections based on the estimated potential risk (which combines probability and potential severity of hazard).[5] Thus, supervision and enforcement efforts would be correspondingly focused on those firms where risks are higher – because violations are more likely or because the potential consequences of these violations are larger – and enforcement responses would likewise be stronger when the assessment of violations suggests that the risk they pose is higher. In both cases, "risk" is defined as the likelihood of an adverse event combined with its potential magnitude.[6]

The idea of smart supervision and enforcement is therefore not to attempt to achieve universal control, nor to do random monitoring and inspections of all regulated entities, but to focus efforts on those where higher benefits from inspections could be expected. Similarly, the approach is to avoid imposing sanctions in a mechanical way for any violation found, and to modulate the enforcement response based on risk and compliance behaviour. Such higher benefits of inspections arise, for example, in situations where violations are more likely to lead to serious consequences. Risk-based approaches thus focus on those situations where violations could on the one hand be more likely (higher probability) but also cause greater damage if a violation were to take place. To some extent, as indicated, this targeting could take place on the basis of past experience with particular regulated entities – previous behaviour is then seen as a predictor of current compliance. Targeting is also possible *ex ante* (before violations have been established) on the basis of risk assessment, and this is one of the key tools of "smart enforcement". This is based on a classification that looks at intrinsic characteristics of the activity (type of industry, processes), its size or scope, as well as additional specific risk factors (*e.g.* location, vulnerable populations affected etc.).

Such targeting of enforcement efforts obviously becomes especially important in times of budgetary constraints, and this heightens the need to use the scarce resources available for monitoring, inspection and enforcement in a "smart" way. Rapidly expanding new types of activities or products also place additional stress on enforcement resources, and make risk-based approaches even more relevant.

Moreover, and as important, "smart enforcement" takes into account the complexity of compliance drivers, and the availability of different instruments to increase compliance. Indeed, dissuasion (deterrence) is only one element – but knowledge and understanding of regulations, material ability to comply, prevailing behaviour in the regulated group (peer pressure) and legitimacy of the regula-

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4 www.hse.gov.uk/enforce/emm.pdf.
5 *See, e.g.* Better Regulation Delivery Office, *Common Approach to Risk Assessment,* Department for Business Innovation and Skills, 2012, available at: www.gov.uk/government/publications/common-approach-to-risk-assessment.
6 *See, e.g.* www.gov.uk/government/uploads/system/uploads/attachment_data/file/263921/risk-assessment-paper.pdf.

tor (and of authorities more broadly) are as important, if not more so.[7] With some types of businesses (*e.g.* small and/or with inherently limited risks) inspections may not be the optimal tool and other instruments to promote compliance (such as information strategies) could be preferred. Such consideration of risk profiles and selection of the most appropriate regulatory delivery approach is a crucial part of "smart enforcement" broadly understood:

– How can inspection agencies actually use risk assessment in a smart way in order to increase the effectiveness of monitoring efforts?
– What precisely does the empirical evidence concerning smart enforcement and targeting indicate as far as the relevant factors that determine the success or failure of a particular targeting programme are concerned?
– If targeting strategies did succeed in particular domains and not in others, which were the crucial factors that determined this success or failure? Hence, on the basis of this empirical evidence, is it possible to provide elements of "best practices" in this respect?

Although theoretical literature originating from various disciplines (criminology, Law and Economics as well as sociology of law) has advocated smart enforcement,[8] there are, as this list indicates, still many questions concerning the precise conditions under which such a smart enforcement approach can be effective. The goal of our article is therefore to critically discuss "smart enforcement" approaches and practices by highlighting both the theoretical basis as well as the empirical evidence. Moreover, recent developments at the OECD and other policy levels with respect to the implementation of those types of targeting strategies will also be discussed. Several critical issues affecting the effectiveness of smart enforcement will be identified.

The article is set up as follows: after this introduction (1) the theoretical basis for smart enforcement and targeting will be provided (2); next the available empirical evidence with respect to the (in)effective nature of targeting strategies will be reviewed (3). Then, some examples of smart enforcement in practice will be presented (4). This will be followed by a critical discussion of specific issues related to the practical implementation of risk-based approaches (5). Section E focuses on a few limits of smart enforcement. Section F concludes.

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7   *See, e.g.* on the importance of legitimacy to foster compliance, and on the effects of procedural justice on legitimacy: T.R. Tyler, 'Procedural Justice, Legitimacy, and the Effective Rule of Law', *Crime and Justice,* Vol. 30, 2003, pp. 283-357 – and on the possible negative effect on compliance of exceedingly harsh enforcement approaches: E. Kirchler & E. Hoelzl, '"Modelling Taxpayers" Behaviour as a Function of Interaction between Tax Authorities and Taxpayers', *in* H. Elffers, P. Verboon, & W Huisman (Eds.), *Managing and Maintaining Compliance,* The Hague, Boom Legal Publishers, 2007, pp. 1-23.
8   Although the terminology used can differ between evidence-based enforcement, risk-based targeting and risk proportional enforcement, to some extent, as we will show, these cover similar and in some cases different concepts.

B   Theoretical Basis for Smart Enforcement and Targeting

I   Deterrence versus Cooperation

The literature has largely dealt with the question whether authorities should be hard on violators (such as environmental polluters) and should prosecute all cases, or whether negotiations between the violator and the enforcer, whereby the agency tries to bring them to compliance through persuasion and by providing information, can be more effective.[9] The first is often referred to as the deterrence model;[10] the second is referred to as the compliance model or "cooperative enforcement".[11] Both of those enforcement strategies have their strengths and weaknesses.[12] The principal virtue of a deterrence approach is that, following the economic approach advocated *inter alia* by Gary Becker,[13] it sends a clear signal to potential violators about the expected costs (the value of the sanction multiplied by the probability of being caught and punished). This, so the deterrence approach holds, would provide incentives to potential perpetrators to abstain from their violation. However, this pure deterrence approach has also been criticized both from a theoretical as well as from an empirical perspective. If deterrence is not carefully targeted, it could develop a "culture of regulatory resistance" and thus be counter-productive.[14] The same is the case when compliance is impossible as a result of practical difficulties and enforcement is therefore felt to be unreasonable.[15] Moreover, the deterrence approach is based on a rational actor making a cost–benefit analysis, comparing the benefits of violation with the expected sanction. However, criminological research has shown that many violations of (environmental) regulations do not take place wilfully, but rather as a result of a lack of information or knowledge.[16] In these cases, where companies lack adequate information and a rational cost–benefit weighing may be absent, a deterrence approach may fail.

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9   B. van Rooij, *Regulating Land and Pollution in China: Law-making, Compliance and Enforcement; Theory and Cases,* Leiden, Leiden University Press, 2006, pp. 228-229 and N. Gunningham, 'Enforcing Environmental Regulation', *Journal of Environmental Law,* Vol. 23, No. 2, 2011, pp. 169-201.

10   S. Oded, *Inducing Corporate Pro-active Compliance: Liability Controls & Corporate Monitors,* (Diss. Erasmus University Rotterdam, the Netherlands), 30 March 2012, pp. 21-54.

11   Oded, 2012, at pp. 55-78.

12   There are, moreover, in addition to the deterrence and cooperation approach, many other enforcement strategies as well. For a more detailed account, *see* Gunningham, 2011, at pp. 172-192. We will not discuss those other enforcement strategies in further detail in this article.

13   G.S. Becker, 'Crime and Punishment: an Economic Approach', *The Journal of Political Economy,* Vol. 76, No. 2, 1968, pp. 169-217.

14   This has been powerfully demonstrated in the work of E. Bardach & R. Kagan, *Going by the Book: The Problem of Regulatory Unreasonableness,* Philadelphia, Temple University Press, 1982.

15   K. Hawkins, *Environment and Enforcement: Regulation and the Social Definition of Pollution,* Oxford Socio-Legal Studies, Oxford, Clarendon Press, 1984, pp. 198-200.

16   *See inter alia* Dutch research by W. Huisman, *Tussen winst en moraal, achtergronden van regelnaleving en regelovertreding door ondernemingen,* The Hague, Boom Juridische uitgevers, 2001 and by W. Huisman & H.G. van de Bunt, 'Sancties, organisatie criminaliteit en milieudelicten', *Ars Aequi,* 1997, pp. 684-697.

However, there is equally overwhelming research showing that a mere cooperation strategy also has several dangers. One risk is that powerful and knowledgeable companies will *de facto* be able to control and "capture" the agency.[17] May and Winter showed that in environmental law enforcement in Denmark cooperative enforcement was undermined by a form of "soft" capture in some cases.[18] Imposing a cooperative approach on firms who are not disposed to voluntary compliance may "prove disastrous" and lead to "negotiated non-compliance".[19]

Therefore, neither a deterrence approach nor a cooperative approach (based on advice and persuasion) can in isolation be effective or efficient intervention strategies.[20] Further research suggests that compliance is more complex and is driven by more than deterrence and cooperation. Each individual, and each organization, may be motivated in each situation by a complex "blend" of factors, which includes knowledge and ability to comply, rational calculations (including cost of compliance and level of deterrence, but also potential market benefits of compliance), social conformity (prevalent behaviour in a given group in respect of the norms being enforced), ethical values (alignment between the individual's moral values and the norms in question), and the legitimacy of the authorities. The latter is particularly important, and research[21] has shown that the way authorities (in our case, regulators) behave can strongly influence their legitimacy. "Procedural justice", which is much appreciated, involves treating regulated entities with more respect, acting in a way that is perceived as transparent and fair, and listening to the regulated individuals' views and arguments. It results in increased legitimacy, which in turn increases compliance. Conversely, exceedingly harsh enforcement, lack of respect by inspectors, non-transparent decisions etc. reduce procedural justice, perception, legitimacy and compliance.

II Regulatory Unreasonableness

To some extent, the criticism of the pure deterrence-based approach formulated as early as 1982 by Bardach and Kagan constitutes the basis for a risk-based approach to enforcement. Their consideration of "regulatory unreasonableness" looks at what inspectors check (at least through the prism of "what they then decide to enforce"), and does it with a prism that is closely related to "risk-based approaches". Their definition of "unreasonableness" can be read, in a way, as the opposite of "risk proportionality".

While Bardach and Kagan use the word "risk" only rarely, and do not use the "risk-based" concept (which was yet to emerge at the time), the portrait they make of the "good inspector" encompasses many of the fundamental aspects of risk-based inspections "on the ground". First, they present precisely the problem

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17   Van Rooij, 2006, at p. 230 and Oded, 2012, at pp. 71-76.
18   P.J. May & S. Winter, 'Regulatory Enforcement and Compliance: Examining Danish Agro-Environmental Policy', *Journal of Policy Analysis and Management*, Vol. 18, 1999, pp. 625-651.
19   In the words of N. Gunningham, 'Negotiated Non-Compliance: a Case Study of Regulatory Failure', *Law & Policy*, Vol. 9, 1987, pp. 69-96.
20   Gunningham, 2011, at p. 66.
21   T.R. Tyler, *Why People Obey the Law*, New Haven, Yale University Press, 1990 and Tyler, 2003.

that is one of the key justifications for a risk-based approach, of selecting *what to inspect*:

> the inspector who walks through a factory and faithfully enforces each regulation may not detect or do anything about more serious sources of risk that happen to lie outside the rulebook; at the same time, he alienates the regulated enterprise and encourages non-cooperative attitudes (p. 123).

Indeed, at the core of onsite risk-based inspection work, there is the idea of effective investigation, looking for the key risks. This requires knowledge of how to prioritize, what to look for, and how to stimulate cooperation in order to get insider information (or, barring this, to detect dissimulation, and act accordingly). Bardach and Kagan introduce their vision of the "good inspector" by analogy with the "good cop", whose goal is to "reduce serious crime, particularly crimes of threat and violence" (p. 125). Translated into the regulatory field, this corresponds to a strong focus on risk, on "harm reduction". In order to achieve this, the police and regulators both need *cooperation* – "good community relations are an essential element of effective law enforcement" because "citizens must be willing to inform the police of serious law violations" (*ibid.*). The key, in their perspective, is to have inspectors that are able to spot and help solve *problems,* rather than focusing on *violations* (pp. 79-80).

III   Targeting – Differentiating Enforcement Approaches

Precisely as a consequence of the fact that a deterrence approach may work for particular violations and particular violators but not for others, the literature has examined whether it would be possible to distinguish between firms suited for a cooperative approach on the one hand and firms needing a deterrence approach on the other via the game theoretical concept of the so-called "tit-for-tat" (TFT) strategy.[22] In short, a tit-for-tat strategy refers to a game played in different phases whereby one party (the firm) could signal its willingness to engage in cooperative behaviour to which the other party (the enforcing government) would react with cooperative behaviour as well. Several variations of what is now referred to as a "targeting strategy" in enforcement have been developed in the literature. Scholz developed a targeting strategy, offering the enforcement authority the choice between a deterrence-based and a cooperative enforcement style, based on the initial behaviour of the firm. At the outset the firm would signal either cooperation or defection and based on that, be treated with a cooperative or a deterrence-based enforcement style.[23] The targeting strategy has been modelled by Harrington who showed that enforcement agencies can increase compliance by dividing firms into different groups depending upon their compliance performance in previous periods. Enforcement on the group that signalled "good" behaviour in the first period would be based on cooperation whereas the firms belong-

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22   Oded, 2012, at pp. 82-88.
23   J.T. Scholz, 'Cooperation, Deterrence and the Ecology of Regulatory Enforcement', *Law and Society Review,* Vol. 18, 1984, pp. 179-224.

ing to the "bad" group would be confronted with a more deterrence-based, hence tougher, approach.[24]

The idea of a targeting approach thus comes down to making a distinction between different types of violators and violations, and differentiating enforcement efforts accordingly. The motivations for such a targeting approach are double. On the one hand, targeting is expected to increase effectiveness by better distinguishing between different target groups of the regulated community.[25] On the other hand, it is also the result of the fact that detecting and prosecuting all violations is not in practice feasible, for the simple reason that it would be much too costly. Even with near-unlimited resources, it is unclear if it could be possible. Hence, this results in a reality where, even if a deterrence approach were the preferred one, identifying all regulatory violations and prosecuting all regulatory crimes would be simply impossible and also not done in practice. Taking the example of environmental regulations, empirical evidence in fact indicates that only a small number of environmental violations are effectively prosecuted before environmental courts using a pure deterrence approach.[26] Given limited agency assets to spend on inspections, it can even be considered a rational use of the scarce resources of the agency to engage in "regulatory dealing", using tolerance in some contexts and increasing compliance for other types of violations.[27] Thus the basic model in a targeting policy is that enforcement policy will no longer be based on a random auditing approach, but that firms will be divided into different classes on the basis of their past compliance behaviour, as a result of which enforcement efforts will be correspondingly focused.[28]

IV Filtering and Risk-Based Targeting

Another way of "targeting" is not via this rather *ex post* targeting (reacting to the past performance of the firm) but rather to follow an *ex ante* risk-based strategy whereby tools of risk assessment and modelling would be used, still allowing the enforcement efforts to be targeted on those areas where they are most needed.[29]

24 W. Harrington, 'Enforcement Leverage When Penalties Are Restricted', *Journal of Public Economics,* Vol. 37, 1988, pp. 29-53 and S. Rousseau, 'Evidence of a Filtered Approach to Environmental Monitoring', *European Journal of Law and Economics,* Vol. 29, 2010, p. 197. *See also* J. Arlen & R. Kraakman, 'Controlling Corporate Misconduct: an Analysis of Corporate Liability Regimes', *New York University Law Review,* Vol. 72, 1977, pp. 687-779.

25 For example, distinguishing between the (often smaller) badly informed enterprises that do not wilfully defect, but often lack adequate information and for whom therefore an information and persuasion strategy may work, and on the other hand the (often larger) well informed enterprises who rationally decide to violate.

26 For an overview of available empirical evidence in the Flemish Region in Belgium, the Netherlands, Germany and the United Kingdom. See M.G. Faure & K. Svatikova, 'Criminal or Administrative Law to Protect the Environment?', 24 *Journal of Environmental Law,* 2012, pp. 253-286.

27 *See* A. Heyes & N. Rickman, 'Regulatory Dealing – Revisiting the Harrington Paradox', *Journal of Public Economics,* Vol. 72, 1999, pp. 361-378; K. Hawkins, *Law as Last Resort – Prosecution Decision-Making in a Regulatory Agency,* Oxford, Oxford University Press, 2002 shows a similar situation for occupational safety and health in the United Kingdom.

28 W. Harrington & A. Heyes, 'The Theory of Penalties: "Leverage", and "Dealing"', *in* A. Heyes (Ed.), *The Law and Economics of the Environment,* Cheltenham, Edward Elgar, 2001, pp. 185-197.

29 Gunningham, 2011, at pp. 180-182.

Such a risk-based approach thus uses risk assessment (based on scientific and technical knowledge, statistical data, experience from previous years etc.) to analyse in which areas, such as for which sectors, sub-sectors and individual establishments, violations are likely to be most serious[30] and consequently where the higher benefits of monitoring and inspection can be generated.

In practice, a variety of hybrid strategies[31] may be used, combining the targeting of enforcement efforts based on prior behaviour (as a predictor of current company compliance) with a risk assessment based on intrinsic characteristics of the activity (such as the type of industry, processes, location and size). The idea of such a risk-based enforcement is to use the enforcement efforts in such a way as to maximize the cost-effectiveness of enforcement.[32] Unfortunately, however, there is, according to Gunningham, "very little available empirical evidence" as to how risk-based enforcement operates in practice.[33] That is why we will now attempt to review some of the available empirical literature in this domain.

B   Effectiveness of Targeting Strategy: What Does the Evidence Tell Us?

We will now consider two regulatory areas: existing literature that considered the effectiveness of risk-based approaches to environmental inspections, and an analysis of data on occupational safety and health inspections in several European countries, which apply different approaches to enforcement.

I   Perspectives on Risk-Based Environmental Enforcement

In the environmental field, there is some empirical evidence to support the effectiveness of such a targeting strategy: Friesen showed that "by targeting enforcement efforts on specific segments of the regulated community, greater compliance with environmental regulations [could] be achieved".[34] The fact that an enforcement agency (such as an environmental protection agency) "shows a certain degree of tolerance with respect to specific violations" does not necessarily mean that the enforcement agency "goes soft", but rather that it maximizes the available budget and thus the enforcement efforts.[35]

Also, Rousseau showed that the Environmental Inspection Agency in the Flemish Region in Belgium uses targeting to select firms it will routinely inspect and bases this selection on past compliance behaviour and on received complaints.[36] "Firms are inspected more frequently as long as the environmental

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30   This can both depend upon the likelihood of violation, but also upon the potential magnitude of the damage when violation occurs.

31   Gunningham, 2011, at pp. 184-186.

32   *Ibid.*, at p. 188.

33   *Ibid.*, at p. 189.

34   L. Friesen, 'Targeting Enforcement to Improve Compliance with Environmental Regulations', *Journal of Environmental Economics and Management,* Vol. 46, No. 1, 2003, pp. 72-85.

35   *Ibid.*

36   S. Rousseau, 'Timing of Environmental Inspections: Survival of the Compliant', *Journal of Regulatory Economics,* Vol. 32, 2007, pp. 17-36.

problem persists".[37] Once the problem is solved, "firms only receive routine inspections".[38] Hence, firms move relatively easy back to the "good" group.[39] Rousseau argues that higher deterrence could be achieved by lowering the probability of escaping from the "bad" group, which is effectively equal to one in Flanders.[40] Thus, the deterrence potential of targeting could even be better exploited.[41]

In these cases where companies lack adequate information, a deterrence approach may fail and a cooperative enforcement style could be more effective. This was also confirmed in an experimental study by Alpizar and others who showed that there are substantial learning outcomes from inspections, meaning that compliance with the desired pollution reduction targets were substantially higher in a second period when the firm was accurately informed about the contents of their obligations.[42]

Another study by Rousseau equally focuses on the Flemish textile industry. She investigates costs and benefits associated with specific monitoring and enforcement campaigns by the environmental authorities. She shows that such campaigns can play a beneficial role in an effective and efficient monitoring policy. Such a campaign is considered as an example of a filtered monitoring approach whereby the inspection agency monitors through project-related inspection. She argues that filtering has additional benefits to targeting (which would be based only on standard routine and reactive inspections).[43] The filtering approach implies the selection of firms for thorough audits based on certain signals, which leads according to her research to a more efficient use of the limited funds available to the inspection agency. She noticed that as a result of this filtered approach, many violations were detected, which were not likely to have been detected during routine inspections.[44]

A study by Earnhart and Glicksman focuses (again) on the traditional dichotomy between the deterrence and cooperative approach. They analyse the effects of the two approaches on environmental management practices in relation to the compliance with waste water discharge limits imposed on chemical manufacturing facilities. Their results reveal that a more cooperative relationship induces better environmental management and they conclude that "environmental regulators seeking to induce better environmental management practices should employ a more cooperative approach, not a more coercive approach".[45] Murphy and Stranlund examine via laboratory experiments individual responses to policies that seek to encourage firms to voluntarily disclose violations of environmen-

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37   *Ibid.*, at p. 34.
38   *Ibid.*
39   *Ibid.*
40   *Ibid.*
41   *Ibid.*
42   F. Alpizar *et al.*, 'Collective Versus Random Fining: An Experimental Study on Controlling Ambient Pollution', *Environmental & Resource Economics,* Vol. 29, 2004, pp. 231-252.
43   Rousseau, 2010.
44   *Ibid.*, at pp. 207-208.
45   D.H. Earnhart & R.L. Glicksman, 'Coercive versus Cooperative Enforcement: Effect of Enforcement Approach on Environmental Management', *International Review of Law and Economics,* Vol. 42, 2015, pp. 135-146.

tal standards.[46] They find that while it is possible to motivate a significant number of voluntary disclosures without adversely affecting environmental quality, this result is sensitive to both the fine for disclosed violations and the assumption that firms know their compliance status without additional cost. When firms have to expand resources to determine their compliance status, this may worsen environmental quality.

An empirical study by Helland[47] on the role of targeting in water pollution regulations in the American pulp and paper industry shows that the main effect of targeting is to encourage firms to report violations they detect and presumably take steps to correct them. However, whereas targeting may produce more cooperation (through self-reporting) it does not necessarily deter violations. Another interesting study by Liu and Yang[48] examined the effects of the high-priority violation (HPV) policy as a way to target enforcement in environmental regulations. The average number of inspections on HPV facilities was more than 4 times higher than that of none-HPV facilities. They find substantial general deterrence effects of the policy, but argue that the efficiency of targeting is undermined by the lower responsiveness of the targeted group. That was due to high abatement costs for the targeted group (some HPV facilities could not further reduce emission levels even when facing high inspection probability), and to the fact that not all EPA regional offices followed the HPV policy to the full extent. These findings show that, notwithstanding the potential positive effects from targeting, some limitations of targeting policy need to be taken into account as well.[49] Finally, Gray and Shadbegian analysed compliance by paper mills in the 1980s and found that the responsiveness to enforcement is strongly related to plant characteristics. Differences in responsiveness were found to relate to firm as well as to plant characteristics. Plants owned by larger firms were less responsive to inspection actions.[50]

It is also important to balance such considerations with findings suggesting the overall limited effectiveness of deterrence effects compared, for instance, to legitimacy and procedural justice effects.[51] In a recent review of research on legal

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46   J.J. Murphy & J.K. Stranlund, 'An Investigation of Voluntary Discovery and Disclosure of Environmental Violations using Laboratory Experiments', University of Massachusetts, Amherst, Department of Resource Economics, Working Paper, No. 2005-7, available at: www.umass.edu. resec/workingpapers.

47   E. Helland, 'The Enforcement of Pollution Control Laws: Inspections, Violations and Self-Reporting', *The Review of Economics and Statistics,* Vol. 80, No. 1, 1998, pp. 141-153.

48   L. Liu & Z. Yang, 'High Priority Violation Policy and Targeting Enforcement: An Empirical Analysis of its Effectiveness and Efficiency', Sam Houston State University Department of Economics and International Business Working Paper Series, 2014, No. 14-11, available at: www.shsu.edu/ academics/economics-and-international-business/documents/wp_series/wp14-11_paper.pdf.

49   Those will be further addressed in Section E.

50   W.B. Gray & R.J. Shadbegian, 'When and Why Do Plants Comply? Paper Mills in the 1980s', *Law & Policy,* Vol. 27, 2005, pp. 238-261 and for similar results N. Gunningham, D. Thornton, & R.A. Kagan, 'Motivating Management: Corporate Compliance in Environmental Protection', Paper presented at the Centre for the Study of Law and Society, Jurisprudence Social Policy Programme, University of California Berkeley, 2003.

51   Tyler, 2003.

compliance of businesses, Hodges[52] similarly concludes that the effects of deterrence are limited at best, and that most corporate behaviour is influenced by other drivers. He also shows that the *type of relationship* between regulator and duty holders is essential to predict behaviour, *e.g.* voluntary reporting of problems. In the aviation industry, for instance, self-reporting is encouraged in the UK and generally in the EU by a "no fault" approach, whereby voluntary reporting of incidents will not lead to sanctions. Thus, the effectiveness of a targeting strategy is likely to be conditioned also by other aspects of the regulatory enforcement approach, which foster (or not) the legitimacy of the regulatory system and cooperation between actors.

II   Comparing Different Approaches to Occupational Safety and Health Enforcement

We will now briefly look at the performance of two countries in Occupational Health and Safety (OHS). The United Kingdom and Germany share enough in terms of development history, income level, social structure etc. to be considered roughly comparable for our purpose. Standardized statistics for OHS are provided by the European Statistical Office (Eurostat), which makes data easily comparable.

While many OHS indicators are of relatively low reliability, the data for fatal accidents is widely held to be reliable because, for obvious reasons, fatal accidents are nearly always recorded, and an investigation takes place (meaning that work-related fatal accidents cannot so easily be "hidden" as non-work-related ones). In addition, data on the number of inspections in the OHS sphere is publicly available in the two countries.[53]

A proper comparison of the level of inspections in the two countries requires an adjustment for the difference in size in the employed population and the number of businesses. Considering different possible indicators (number of businesses with 10 employees or more, number of persons employed in non-zero employees businesses, total employed population etc.) gives an approximate average ratio close to 1.4 (Germany to the United Kingdom). Using this ratio to correct the ratio of the number of OHS inspections in Germany and the United Kingdom shows that they were always more than 3 times more frequent in Germany between 2006 and 2011, and in 2013 inspections were more than 5 times more frequent in Germany (the numbers decreased in both countries, but faster in the United Kingdom). Thus, there is little doubt that the inspection pressure is vastly lower in the United Kingdom. Combined with an approach that emphasizes strong support for compliance (both during inspections and through very active

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52   C. Hodges, *Law and Corporate Behaviour: Integrating Theories of Regulation, Enforcement, Compliance and Ethics,* Oxford, Hart Publishing, 2015.

53   This section is a summary of a more detailed research still to be published. It draws also on L. Tilindyte, *Enforcing Health and Safety Regulation. A Comparative Economic Approach,* Antwerp, Intersentia, 2012. Sources of data can be accessed here: (1) Eurostat: http://ec.europa.eu/eurostat/web/health/health-safety-work/data/database, (2) Germany: www.baua.de/de/Informationen-fuer-die-Praxis/Statistiken/Suga/Suga.html, (3) UK: webarchive.nationalarchives.gov.uk/20160106104255/http://discuss.bis.gov.uk/focusonenforcement/regulator-data-201213 and www.hse.gov.uk/lau/enforcement-lae1-returns.htm.

development of hands-on guidance, brochures etc. which are all easily accessible), this leaves little doubt that the burden on businesses from OHS inspections is far lower in the United Kingdom.

Outcomes in terms of safety, if assessed through the incidence of fatal occupational accidents, appear to be also to the United Kingdom's advantage. Considering fatal accidents *excluding* traffic- and transport-related ones,[54] the United Kingdom consistently, since the start of Eurostat data, has been the best performer in the EU. Its average incidence was 1.4 for 1998-2007 and 0.62 for 2008-2013.[55] Germany's average incidence was 2.1 for 1998-2007 (close to the EU-15 average of 2.4), and a much improved 0.87 for 2008-2013 (now much lower than the EU-15 average of 1.5) – but still higher than the United Kingdom's.[56]

In short, with considerably fewer inspections the United Kingdom has consistently achieved better OHS performance than Germany. Among possible explanations one could definitely cite the way the OHS system in the United Kingdom is *risk-based*, both in terms of regulation and of enforcement. Since the 1974 Health and Safety at Work Act, the duties of employers in the United Kingdom are defined in terms of achieving the best possible safety outcomes, rather than through a list of specific standards to be complied with, and there is a strong emphasis on risk assessment. Targeting of inspections and enforcement practices are risk-based and risk-proportional. Guidance and compliance support are central to inspectors' tasks and to the HSE's role. Data seems to clearly validate the effectiveness of the approach, with all the necessary caution due to the impossibility of achieving precise attribution of results to different causes.

This brief overview of the empirical literature therefore shows that it is difficult to come to general conclusions on the effectiveness of targeting strategies. Most of the empirical literature we discussed (such as the studies by Rousseau and Friesen) show that targeting enforcement efforts do indeed lead to higher compliance, thus confirming the assumption concerning the effectiveness of targeting strategies formulated in theoretical literature. Yet, the number of studies is relatively limited and the precise conditions under which targeting may work are not always clearly identified. Moreover, the comparison of the UK and Germany as far as the enforcement of OHS regulation is concerned, also underscores the importance of targeting: even though the UK had a substantially lower number of inspectors than Germany, safety outcomes in the UK seemed to be better (although it is of course impossible to prove a clear causal link simply on the basis of this comparison of data). Given the first promising results of those empirical studies, there is also increasing interest in targeting strategies among policy makers, as we will show in the next section.

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54   In the United Kingdom these are not covered by OHS inspectors but by the traffic police, and therefore their incidence does not reflect on the performance of OHS inspections in the United Kingdom.
55   Change in Eurostat series between the two periods.
56   Including traffic- and transport-related accidents reduces the gap but the difference is still to the United Kingdom's advantage.

C   Smart Enforcement in Practice

While the evidence base to demonstrate the effectiveness of "smart enforcement" is still limited, we can conclude from the above that it is clearly encouraging. Policy makers at several levels (international institutions such as the World Bank Group and the OECD, national governments etc.) have become increasingly interested in smart enforcement as well. Agencies interested in introducing smart enforcement may find inspiration in the OECD best practice principles on regulatory enforcement and inspections (A). There is large experience with smart enforcement in the UK. This not only relates to the example provided above of the enforcement of OHS regulation; different management tools have been developed in several policy areas in the UK, which are largely in line with a smart enforcement approach (B).

I   OECD Best Practice Principles on Regulatory Enforcement and Inspections

Policy makers looking for guidance on how to introduce or strengthen risk-based approaches to enforcement can look to the 2014 OECD *Best Practice Principles for Regulatory Enforcement and Inspections.* Drawing on research into accepted best practices in OECD members and beyond,[57] these articulate a form of prevailing consensus on why risk-based approaches are recommended, what they consist of, and how to put them into practice. They purport to help improve transparency and predictability, effectiveness and efficiency. They cover strategy and processes, institutions and methods.

The first four principles are to base enforcement priorities, allocation of resources, targeting etc. on evidence (data), employ state-led inspections and enforcement only when this is demonstrably the best approach to ensure compliance, and use risk-assessment (with risk defined as the combination of probability and potential magnitude of hazard) both for the targeting of inspections and enforcement decisions.

Principles 5-8 relate to institutions. They emphasize the importance of having a clear, stable government policy on enforcement (to avoid short-term crisis- or elections-driven changes that do not allow the development of robust, professional institutions). They call for coherence and coordination in the way enforcement mandates are allocated among different institutions, to avoid overlaps, duplication and gaps. They require a governance model for enforcement institutions that avoids political interference in daily operational decisions, ensures professionalism, and avoids instability linked to excessive concentration of powers. They also recommend the adoption of information systems that allow for effective data sharing between different institutions.

Finally, the last three principles are concerned with people and practices: clarity and fairness of decisions should be ensured through clear rules and bal-

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57   The *Principles* draw to a significant extent on the UK experience, but also on practices from countries as diverse as the Netherlands, Canada, Australia, Italy, Lithuania etc. – and on lessons learned from *negative* experiences with inspections and enforcement all across the OECD, and in other parts of the world.

anced rights and responsibilities for both inspectors and duty holders, the emphasis for enforcement agencies should be on promoting compliance (rather than "catching" as many violations as possible), and the need for inspectors to have professional skills that not only include both strong, up-to-date technical knowledge, but also specific "inspections and enforcement" competences such as risk assessment, compliance promotion, investigation etc.

These principles are of course by no means fully comprehensive, nor limitative – and they require a good deal of adaptation to each specific situation and environment. They represent, however, the consolidation of an emerging consensus on how, given a set of policy priorities, regulations and resources, the best possible combination of inspections and enforcement outcomes can be achieved.

II Country-Level Experience – The Case of the UK

Several countries have, to varying degrees, made significant efforts to make inspections and enforcement "smarter" and more risk-based. This includes for instance the Netherlands or Lithuania,[58] and a number of other countries inside the OECD and EU, and beyond. We will focus here on the case of the UK both because it has been one of the first (following the 2005 *Hampton Review*, but also earlier in individual agencies) to follow such a route, and because it presents a number of interesting practices that cover most aspects of a balanced "smart" approach.

Efforts to optimize the effectiveness and efficiency of inspections have a long history in the UK. Hawkins' very important work on enforcement practices in the United Kingdom's Health and Safety Executive (2002) considers in great detail and depth the practices of inspectors, the framework which influences their decisions, and the ways in which the agency's management attempts to shape them. It does this, however, without a specific focus on the question of *risk*, but rather at the notion of *discretion* and with a very open investigation of all the drivers that may be at play – and with a specific focus on the enforcement rather than on the inspection phase. Overall, a relatively "diffuse" notion of risk permeates both Hawkins' work and the culture and framework in which he sees inspectors as operating – but not (as this was not the purpose of his research) a "picture" of what a "risk-based inspections practice" may look like.

A practical example of guidance aiming at genuinely risk-based implementation of inspections and enforcement decisions is provided by the UK Health and Safety Executive (HSE) through its *Enforcement Management Model* (EMM). The EMM's purpose is to "promote enforcement consistency by confirming the parameters, and the relationships between the many variables, in the enforcement decision-making process", to "promote proportionality and targeting by confirming the risk-based criteria against which decisions are made" and to "be a framework for making enforcement decisions transparent, and for ensuring that those who make decisions are accountable for them" (p. 5). While it does not replace or limit inspectors' discretion, it aims to guide it (in particular for less

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58   OECD, *Regulatory Policy in Lithuania. Focusing on the Delivery Side,* Paris, OECD, 2015, available at: www.oecd.org/countries/lithuania/regulatory-policy-in-lithuania-9789264239340-en.htm.

experienced inspectors). The EMM includes a number of "decision trees", rating tables and matrices helping inspectors to make decisions based on risk. The EMM is a significant step (and, to our knowledge at least, unique – at least in its specificity) in making inspections and enforcement simultaneously more risk-based, more responsive, and more consistent.

To put such tools to good use, however, competent inspectors are needed. In fact, the more flexibility is introduced, the more discretion is needed, the finer the assessment of risk required – the more competent inspectors are indispensable.[59] This notion of "competency", however, includes more than just *technical* skills (relating to food safety, occupational safety and health, environmental protection etc.), but should also encompass skills relating to risk assessment, investigation, relations with business operators and their staff, compliance promotion etc. In the UK, a model has been developed in recent years, building on work done within the HSE. This effort involves a number of regulators and professional associations of regulatory staff, is led by BRDO, and has produced a *Competency Approach*. This is based on a set of "core skills" that are complemented by "technical skills" (rather than seeing core skills as "soft skills" they are put first).

The approach is fundamentally turned towards practice, and is thus not articulated in any lengthy document (only short summaries exist), but rather is supported by two web portals. The first is used for self-assessment (Regulators Development Needs Assessment – RDNA[60]) and the second for information and training (Guidance for Regulators – Information Point – GRIP[61]).

As can be seen for instance in the HSE's *Enforcement Policy Statement*,[62] a balanced inspections and enforcement approach involves the targeted use of a range of instruments – "information, and advice, both face to face and in writing", warnings, and an escalating range of sanctions. A really "smart" approach to inspections includes of course this differentiation in dealing with problems found during inspections, and it also considers inspection visits themselves as but one of a range of possible interventions. Not only are inspections primarily targeted at high-risk (and, to a lesser extent, medium-risk) objects, but there is also an effort to understand which tools and approaches will be effective to achieve improvements in compliance (and, more broadly, in safety) in particular groups of establishments. In its own "risk-intervention" pyramid, the UK BRDO sees the default type of intervention in low-risk establishments as information and guidance.[63] Even in cases where risk is not trivial, but inspections would be ineffective, looking for alternative interventions is essential.

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59 Bardach and Kagan, *supra* note 14, showed that, conversely, insufficiently competent inspectors tended to 'go by the book' (pp. 128-129) and be both more 'unreasonable' and less effective at managing risks.
60 http://rdna-tool.lbro.org.uk.
61 www.regulatorsdevelopment.info/grip.
62 HSE Enforcement Policy Statement, available at: www.hse.gov.uk/pubns/hse41.pdf.
63 Internal documentation, unpublished presentations, interviews with management.

Another example of a "smart" approach is the development and roll out of the "Safer Food, Better Business" (SFBB) toolkit.[64] The development of the toolkit was a response to the entry into force of the new EU "Hygiene Package"; and the approach taken stemmed from the finding that many catering businesses had fundamental problems with compliance because of ignorance or misunderstanding of safety requirements, and that this required an approach based on guidance and compliance promotion. In addition, UK food safety authorities had identified the importance of outreach to the many non-English-speaking professionals working in the country's food industry. One of the experiments leading to this acknowledgement was made in Chinatown by the Westminster City authorities.[65] After finding that cases of non-compliance in restaurants were not only frequent, but also not improving after repeated inspections, the Westminster regulatory team attempted to understand why. They found out that chefs mostly did not really understand English well, were not aware of local safety regulations, changed repeatedly, and that an inspection with negative findings resulted in a loss of face that made compliance, if anything, even less likely. The response was to emphasize prior training, and to use the chefs' language as much as possible.

Along these lines, the SFBB toolkit exists in 16 languages, those most widespread among chefs working in the UK.

D   Critical Issues

So far, we have indicated that there is a strong theoretical backing for the targeting of regulatory inspections and for a so-called "smart enforcement" (2), and that empirical research also provides some support for this trend (3). Moreover, policy makers are also increasingly implementing these ideas concerning smart enforcement, as the discussion of the OECD Principles and the UK example illustrate (4). However, regarding the specific application of "smart enforcement" in practice a variety of questions still arise that require a further deepening of the theoretical basis for smart enforcement, taking into account the practical experiences. First, there has to be an adequate definition and understanding of "risk", and of how and where it can be applied – which goes beyond simple enforcement, but rather is relevant to "smart regulation" more broadly (A). Second, risk-based targeting essentially fits into a pro-active approach towards monitoring (B). A fully fledged risk-based targeting focuses both on the likelihood of harm as well as on the potential severity and magnitude (C), but obviously requires data collection and information sharing between agencies (D).

I   Defining "Risk" and "Risk-Based" – Using Risk to Improve Regulation
If we are to properly assess the possible usefulness and effectiveness of risk-based inspections and enforcement, we first need to define what they entail, and what

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64   *See* the Food Standards Agency portal, available at: www.food.gov.uk/business-industry/caterers/
     sfbb.
65   Short case study by the Chartered Institute of Environmental Health, available at: www.cieh.org/
     library/Knowledge/Food_safety_and_hygiene/Case_studies/Westminster%20CHIP.pdf.

"best practice" consensus may exist. Indeed, some studies have at times presented disappointing results from "risk-based" practices[66] since, upon closer consideration, the cases examined did not really correspond to what would be accepted as "good risk-based practice".

The UK Better Regulation Delivery Office (BRDO)'s 2012 *Common Approach to Risk Assessment* outlines the different levels at which "risk assessment" (and, more broadly, risk-based approaches) can be applied in the regulatory sphere: "strategic risk", "priorities between national and local risk", "operational risk", "risk assessment of individual businesses" and "sanctioning according to risk" (pp. 3-4). Mertens[67] suggests a classification that focuses more on the risk assessment and management stages that take place within an inspectorate (p. 271). His classification has two broad levels. First a systemic one, which corresponds to the strategic inspection framework, defining priorities and programming. The output of the systemic stage is a classification of categories of risk level per type of establishment, and an action programme. Second, an operational level, which corresponds to the operational organization of inspections, involving information gathering and definition of specific focus.

The output of this second stage is an overview of results of prior inspections for each establishment, and an inspections plan.

Whereas policy makers can, in practice, decide to regulate even if a realistic assessment would indicate that resources are insufficient, the regulation ill-designed, the goals unachievable, inspectorates cannot stretch resources beyond what they have. Thus, if they do *not* prioritize they will generally end up having to visit an unrealistically high number of premises (or check an unrealistically high number of products), meaning that each inspection will have to be very short. There are only three possibilities in the absence of risk-based planning: "blanket" coverage (every establishment/product is controlled), random inspections, or selection on a basis other than risk. In the first case, each inspection will have to be so short (except in rare cases of inspectorates dealing with a very small field) that it will be essentially useless – and, in fact, *within a given establishment* inspectors will be unable to control everything, hence there will be selectivity anyway (by default). In the second, there is formal "equality" (everyone has equal chances of being visited), but no uniformity in fact (some are visited, some not), and a clearly less-than-optimal resource allocation. In the third case, in the absence of a rational, somewhat objective instrument for selection, inspections end up being targeted based on convenience of inspectors, potential for flattering numbers (of fines, for instance), or rent-seeking. In other words, risk-based inspections are not an alternative to "non-selective" inspections, but to "selective by default".

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66 *See, e.g.* H. Yan, J. van der Heijden & B. van Rooij, 'Contextual Compliance: Situational and Subjective Cost-Benefit Decisions about Pesticides by Chinese Farmers', *Law & Policy,* Vol. 37, No. 3, 2015.

67 F. Mertens, *Inspecteren: Toezicht Door Inspecties,* The Hague, Sdu Uitgevers, 2011.

II   Pro-Active versus Re-Active Enforcement

Understanding risk-based inspections requires also consideration of the question of *re-active* versus *pro-active* planning of inspections. Inspection agencies can visit establishments either because they respond to a complaint or request or a tip-off of some sort (, *re-active* inspections), or on the basis of their own planning, without any external trigger (, *pro-active* inspections).[68] While re-active inspections require fewer resources, they also tend to be less effective, because the *quality* of complaints-based information is frequently problematic.[69] There are also important biases in complaints; environmental complaints by private persons tend to be biased towards "nuisances" rather than very significant pollution issues, and cannot form a sound basis for enforcement activity), as well as major gaps. In consumer issues, Van Boom and Loos[70] show that in the cases of repeated infringements with only limited loss for consumers there is generally under-litigation. The propensity to complain, in addition, is strongly linked to a number of social and cultural parameters. A recent OECD study of regulations in Lithuania (2015) shows that there is a real problem of excessive use of reactive inspections by the market surveillance inspectorate, and that the vast majority of complaints is trivial, or relate to issues that are not regulated by law (pp. 133-134).

"Pro-activity" and "re-activity" are linked to the issue of risk-based targeting (or its absence), but in a somewhat complex way. In principle, complaints and other "tip-offs" *can* and *should* be integrated within a well thought-through risk-based targeting model. In practice, however, inspectorates that rely very strongly on complaints tend to have a very weak risk-orientation, if any. On balance, it appears clear that a risk-based approach to inspections means that an overwhelming majority of inspections would be pro-active, and data-driven, rather than re-active and complaints-driven.

III   Risk-Based Targeting in Practice

Selecting enterprises to be (pro-actively) inspected based on their risk profile requires the combination of the *likelihood of harm* with its *potential severity and magnitude*. Doing so in an effective way requires dis-aggregating the processes that may lead to harm, in order to understand what are the causes of the harms that the inspectorate seeks to prevent, and to ensure focus on the right issues and establishments.[71] There are different ways to structure the classification that is to form the instrument for planning. One approach[72] is to form a matrix with two

68   D.J. Black, 'Production of Crime Rates', *American Sociological Review*, Vol. 35, 1970, pp. 733-748; Tilindyte, 2012.
69   Tilindyte, 2012.
70   W.H. van Boom & M. Loos, 'Effective Enforcement of Consumer Law in Europe. Private, Public, and Collective Mechanisms', *in* W.H. van Boom & M. Loos (Eds.), *Collective Enforcement of Consumer Law in Europe. Securing Compliance in Europe through Private Group Action and Public Authority Intervention,* Groningen, Europa Law Publishing, 2007, pp. 231-254.
71   Mertens, 2011, at pp. 272-273.
72   Better Regulation Delivery Office, 2012; World Bank Group, *Good Practices for Construction Regulation and Enforcement Reform: Guidelines for Reformers*, Washington, DC, 2013, available at: http://documents.worldbank.org/curated/en/662881468170967367/Good-practices-for-construction-regulation-and-enforcement-reform-guidelines-for-reformers.

axes – one corresponding to the likelihood of harm (including the likelihood of non-compliance, but not limited to it – World Bank Group version) or the likelihood of violation (BRDO version), and the second to the potential severity and magnitude. In such an approach, intrinsic risk and management risk are somewhat aggregated in the way they are presented (even though, analytically, they are to be handled separately). Another is the approach presented by Mertens[73] where the risk classification is done purely on the basis of intrinsic risk, and *then* a level of inspection priority is determined by crossing the resulting risk level with the compliance history or expectation (risk management).

In any case, a fully fledged risk-based targeting should take into account a set of risk components that includes (a) intrinsic risk of the activity (hazardousness); (b) scope/size of the activity (number of people who could be affected, or other relevant indicators); (c) additional relevant vulnerability factors (*e.g.* types of populations affected, location etc.); (d) likelihood of harm. This last element can itself be split into intrinsic likelihood, and management-related likelihood, otherwise known as "compliance risk". Intrinsic likelihood may be combined with "intrinsic risk", in which case intrinsic likelihood and intrinsic severity are handled separately. The relative weight that is given to each of these factors can vary, even though most "matrix" models suggest that severity and likelihood should overall be given equal consideration. Precise methodologies on this issue differ widely. The ways in which these are rated, graded, measured etc. also vary considerably, with some agencies having far more sophisticated and "data-driven" models, some far more "qualitative" approaches.[74] The use of "qualitative" indicators does not mean the rating systems are necessarily simple – the Food Standards Agency in England and Wales has indicators that are mostly not data-driven, but a rating system that incorporates a number of dimensions and a sophisticated set of check-lists.

Once a classification has been created, as well as a grading/rating tool to assign a risk rating or category to each establishment (or product, or more generally "inspection object"), *targeting* involves assigning a category or rating to each *concrete* object, and to decide on an actual *plan* of inspections. These are two conceptually separate processes (whichever way they are actually conducted in practice).

If we look first at the question of *planning*, it involves matching resources to the needs, establishing "typical frequencies" for different risk categories, and also adding (or not) an element of "random selection". The guiding principle of a risk-based approach is that high-risk establishments should be visited far more regularly and frequently, that low-risk ones may not even warrant regular visits at all, and that the classification should be done in a way that results in only a minority of businesses being at the "peak" of the "risk pyramid".[75] In order to keep a "reality check" on whether the classification and ratings are adequate, and to avoid

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73   Mertens, 2011, at pp. 273-274.
74   *See* J. Black & R. Baldwin, 'Really Responsive Risk-Based Regulation', *Law & Policy,* Vol. 32, No. 2, 2010, pp. 181-213.
75   World Bank Group, 2013.

creating incentives for non-compliance for low-risk businesses, it is often accepted that keeping some level of (rare) randomly selected inspection cases for the low-risk category is a valid approach.[76]

Targeting and planning are but the first element of risk-based inspections, and the way inspections are actually conducted "on the ground", as well as the way inspectors and their management *follow up* on them, are just as essential if one is to have an approach that is really founded on risk. While there has been scholarship focusing on how inspectors take decisions and interact with regulated entities, there has been rather less on *what they check* (and what skills, experience and culture influence it). In this respect we can recall the experiences in the UK, both with the enforcement management model as well as with the "safer food, better business" toolkit, discussed above. Those examples show that there is no "one-size fits all" answer to what constitutes a smart inspection.

A "smart inspection" approach is one that recognizes both the importance of inspections (and the need to conduct them in the most professional, efficient and effective way) but also their limitations – and accordingly uses other tools as well to promote compliance and public welfare.

IV Data Collection and Information Sharing

While the classification and the "indicative frequencies" for each risk category provide the tools for the actual planning, replacing abstract categories with actual "targets" of establishments to be visited, requires data as a foundation. At a minimum, this should consist of a list (database) of all establishments under supervision, with at least some fundamental information on the most important parameters that allow the risk level to be determined. In some cases, the database can be very sophisticated, and be paired with an automated case selection system (which also takes care of matching the frequency of visits with the available resources etc.). However, in most cases, the systems are less sophisticated and require a significant human input. In any case data is, in a number of jurisdictions and agencies, the weakest link.

There are, however, frequent misconceptions around this, so it is important to distinguish what is absolutely necessary from what is "good to have", and to understand what is the real level of operational challenges and resources involved.

A common assumption is that putting in place effective data systems for risk-based targeting and management of inspections would be very costly, and that moving to a risk-based approach is thus a major investment for an inspectorate – which, in turn, can be a reason to settle for avowedly inferior approaches to inspections. Such concerns are voiced by Tilindyte[77] and Baldwin.[78] While in theory building an information database on objects under supervision and a risk-

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76   Black & Baldwin, 2010; M.K. Sparrow, *The Character of Harms: Operational Challenges in Control,* Cambridge, Cambridge University Press, 2008.

77   Tilindyte, 2012, at p. 42.

78   R. Baldwin, 'Better Regulation: Tensions about the Enterprise', *in* S. Weatherill (Ed.), *Better Regulation,* Oxford, Hart Publishing, 2007, p. 40.

based targeting system from scratch may be expensive, in practice such an information database would in most cases not have to be built from zero, as significant data is already available. Furthermore, gathering data on establishments under supervision is something that naturally occurs anyway as part of each inspection. The problem is that this data is often not managed properly, *i.e.* not entered into systems that would make it useful for further analysis and planning. Another difficulty is that in many contexts inspectorates do not share information among themselves, which reduces the number of establishments they can cover in a given year. In other words, there already are considerable "sunk costs" whereby inspectorates have collected or are regularly collecting information, through their main activity, *i.e.* inspections. The problem is how to best make use of this existing data.

More effective sharing of information between different state bodies (and in particular between those which have a regulatory and/or supervisory function) is indeed an essential element of "smarter regulation", if by this we understand a way of regulating that would be both more efficient and more effective. This is particularly true when it comes specifically to risk-based inspections because information sharing is the key to improving data on establishments/products under supervision, and making sure that risk information is comprehensive and up-to-date. Information sharing can be done in a number of ways. At the local level, the fact that most inspection fields are under a single department with local authorities in the UK means that there is a good amount of information sharing going on between them, and there is ongoing work to develop information systems that will make this sharing more systematic and easier – and also ensure that sharing happens between different regions.[79] In the Netherlands, two systems have been developed to allow for more effective sharing of information between inspectorates (Inspectie View[80]) – and to allow inspectorates to access a wealth of data on the business, avoiding duplicate submissions, specific queries etc. (*Ondernemingsdossier* – "Enterprise File"[81]).

79 Which, in the past (and even currently), has been a significant problem at least in some areas, which underlines the problem with various risk-assessment models (something the 2012 BRDO *Common Framework* was precisely created to address).
80 The system has gradually developed over several years and was created to allow any inspector to access data from other inspectorates on a given establishment/object – in particular prior inspection records. There is a general level (*Inspectie View Bedrijven* – 'Inspection View for Companies') which can be used for planning and aggregates inspections and results from Social Affairs, Environment and Transport, Food and Non-Food Products Inspectorates. There are then several 'specialized *Inspectie View*' with a deeper level of information sharing (greater wealth of information, *e.g.* on permits etc.) – for inland transport and environment (for now). For more information, *see* *Inspectieloket* portal, available at: www.inspectieloket.nl/organisatie/index – and detailed files at the project webpage, available at: www.informatieuitwisselingmilieu.nl/publicaties.php?id=11.
81 The 'Company File' allows access to all the information the company decides to make available – it is being rolled out gradually, by sub-sector of the economy, as it is run by businesses, not by the public administration. More information is available at: www.ondernemingsdossier.nl. The 'Company File' can be seen as an attempt to not only avoid duplication of reporting requirements, but also to access *more* information from businesses and thus make overall planning and targeting more effective (*see* Baldwin & Black 2008, p. 31 on the importance of mobilizing the private sector in gathering information).

E Limits of Smart Enforcement

We indicated that there is a relatively strong theoretical justification for targeting strategies (2) and there is some empirical support for the effectiveness of targeting strategies, although the literature indicates that this effectiveness often depends upon specific circumstances (3). It is therefore to some extent not surprising that smart enforcement is becoming increasingly popular with regulators, although more in some legal systems (like the UK) than in others (like Germany). The fact that not all regulators enthusiastically engage in a smart enforcement approach may have a variety of explanations, some having to do with the inherent limits of risk-based enforcement, which have equally been pointed out in the literature.[82] One warning formulated in the literature is that risk-based inspection can be based "on mock objectivity, which creates an illusion of control".[83] Presenting the enforcement problem in terms of risk suggests that the likelihood of an adverse event occurring is based on probabilistic calculations, whereas "regulators are often not dealing with risk but uncertainty".[84] Risk classifications may suggest more objectivity than is justified, whereas they are often based on underlying political choices.[85] On the other hand, however, the alternative is not to be seen as between an (inevitably imperfect) risk-based system, and a putatively perfect one. Rather, risk-based targeting systems (and risk-proportional enforcement guidelines) are introduced instead of practices that all exhibit serious problems, such as discretionary selection by inspectors, "convenience-driven" selection (whichever objects are closer, easier to control or more salient), attempts at universal control (which disperse resources on too many objects), or random selection.

None of these systems is perfect or non-problematic, and all of them tend to be inferior in terms of effectiveness, of efficiency, and (with the exception of true random selection) of transparency as well.

A second issue is that some countries may have concerns about the introduction of risk-based governance since this approach may be felt to be in conflict with particular governance norms (like equal treatment) or problematic from the perspective of accountability demands. Rothstein *et al.* argue that this explains why risk-based governance has been quite successful in the UK, but had a much more limited application in countries such as France and Germany.[86] These concerns may explain why risk-based governance is not developed in countries where such approaches are considered to create normative conflicts (for example with the idea of governance being based on security rather than risk in France, or constitutional concerns in Germany). Those concerns may therefore create obstacles

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82   *See, e.g.,* P. Mascini, 'Comparing Assumptions Underlying Regulatory Inspection Strategies. Implications for Oversight Policy', *in* S. Slyke, F. Cullen & M. Benson (Eds.), *The Oxford Handbook of White Collar Crime,* Oxford, Oxford University Press, 2016, pp. 521-539.
83   *Ibid.,* at p. 529.
84   Black & Baldwin, 2010, at p. 197.
85   Mascini, 2016, at p. 529.
86   H. Rothstein, O. Borraz & M. Huber, 'Risk and the Limits of Governance: Exploring Varied Patterns of Risk-Based Governance across Europe', *Regulation & Governance,* Vol. 7, No. 2, 2013.

to the introduction of risk-based approaches. Closer investigation suggests, however, that such concerns should not be exaggerated. Risk-based practices co-exist with non-risk-based ones in most of these countries, suggesting that when there is a real will, there can be a (legal) way. Risk-based practices have been introduced in countries of diverse legal traditions, such as the UK, the Netherlands and Lithuania, and issues related to specific legal and political cultures are maybe more relevant to "how" rather than "whether" they can be used in a given country.

There is equally a concern that the risk-based approach would lead to a "model myopia"[87] whereby "risk-based systems will tend to neglect lower levels of risk, which, if numerous and broadly spread, may involve cumulative dangers". A danger exists that risk-based enforcement would only focus on visible risks and on larger risks, thus ignoring small violations of which the cumulative impact could also be considerable. That is an important argument to still combine risk-based enforcement with random inspections.[88] This is why balanced risk-based models used by enforcement agencies often incorporate a small level of inspections of low-risk objects – rather than inspecting *only* high-risk ones, and *never* low-risk ones, they inspect high-risk more often, and low-risk more rarely. This also introduces a possibility of "reality check" of whether the risk criteria are correct, and maintains a level of deterrence. This means that it is important to incorporate inspections of low-risk facilities on a random basis within a risk-based model of inspections.

The available empirical evidence (discussed in Section C) also pointed out some limits of risk-based enforcement. Liu and Yang indicated some undermining of the efficiency of targeting because certain operators confronted with high abatement costs were less responsive to increased enforcement actions. Gray and Shimshack also found that more frequent violators faced higher compliance costs and were therefore less likely to respond to enforcement actions.[89] Helland[90] equally found that the costs of compliance appear critical to the decision to self-report a violation.[91] Moreover, he also found that especially for politically sensitive mills (those creating many employment opportunities for the surrounding community) increased enforcement efforts would not speed up compliance but would lead to strong lobbying by interest groups whose politics aimed for example at preventing the closure of a plant with the possible negative consequences on the surrounding community.[92] This points to the fact that "smarter" enforcement methods cannot fully make up for regulatory design: if regulatory requirements are such that firms will be unwilling to comply regardless of enforcement, targeting will do little to change the situation. The problems described by these

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87   Black & Baldwin, 2010, at pp. 205-206.
88   Mascini, 2016, at p. 529.
89   W.B. Gray & J.P. Shimshack, 'The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence', *Review of Environmental Economics and Policy,* Vol. 5, No. 3, 2011, pp. 19-20.
90   Helland, 1998.
91   *See* Hodges, 2015, regarding the effectiveness of 'no fault' regimes to incentivize self-reporting and improve compliance.
92   Helland, 1998, at p. 152.

authors would remain regardless of targeting practices, and are linked to regulatory design, economic costs of regulation and political context. Moreover, in some cases local regulators did not fully follow the targeting policy, obviously reducing its effectiveness[93] – but this is an implementation issue rather than a weakness of the approach in itself.

Those studies and arguments do point to important limits of smart enforcement – but in fact many of them are limitations of *enforcement in general*, regardless of methods. They are obviously not an argument against targeting, but rather point to the importance of designing not only targeting and enforcement policies in a smart way, but also as part of a broader approach to better regulatory design. This can imply the introduction of guarantees to pursue the targeting policy in a systematic manner,[94] or to a recommendation to design decisions concerning targeting and enforcement at a more centralized level (thus avoiding the interest group mechanisms that can prevent effective targeting as indicated by Helland.[95] Moreover, it is equally important to recognize the resistance against risk-based enforcement based on arguments of legal culture as identified by Rothstein *et al.*[96] Taking into account those limits leads to the conclusion that a targeting approach can be combined with random inspections as well,[97] in line with the actual practice of many inspectorates that do not *exclude* inspections of low-risk objects, but simply make them *less frequent* than that of high-risk ones. This is also in line with literature on tax enforcement that equally showed that random inspections are also necessary to achieve maximum compliance.[98] Behavioural literature has also indicated that randomizing apprehension strategies can exploit the potential offenders ambiguity aversion in order to increase compliance.[99]

D   Concluding Remarks

After Gunningham and Grabovsky coined the term "Smart Regulation" in 1998, it became increasingly clear, both in scholarship as well as at the policy level, that this smart regulation needed to be complemented with smart enforcement. The broad notion of smart enforcement can, as we have shown in this article, appear under various headings (varying from risk-based enforcement to targeting), in some cases representing different notions, in other cases not. We showed that it is not difficult to provide support for such a risk-based enforcement. Already as early as 1982 Bardach and Kagan pointed at the fact that the "good inspector" would not just focus on finding violations, but on solving problems for society. Subsequent literature, from various directions (varying from criminology to Law

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93   Liu and Yang, 2014.
94   Learning from the failure described by Liu and Yang, 2014.
95   Helland, 1998.
96   Rothstein *et al.*, 2013.
97   Mascini, 2016, at p. 529.
98   Gray and Shimshack, 2011, at p. 20.
99   E. Kantorowicz-Reznichenko, 'Any-Where Any-Time: Ambiguity and the Perceived Probability of Apprehension', *University of Missouri-Kansas City School of Law,* Vol. 84, 2015, pp. 27-59.

and Economics) has, using different concepts, supported smart enforcement, whereby obviously the smartness can relate to various moments in the enforcement chain, although most of the literature focuses on inspection and monitoring. The theoretical "Tit for Tat" game strategy provides the basis for targeting, whereby (potential) offenders are divided into different groups and more resources are spent on those groups where (based either on past performance or on *ex ante* risk assessment) the benefits of enforcement are expected to be the largest.

Although the empirical evidence is, as often, not one directional, several studies, especially from the UK, provide examples of how such a risk-based strategy is applied in practice and, although causation is always difficult to measure, there seems to be some evidence of its effectiveness. Policy makers are increasingly interested in risk-based inspections, broadly defined, as we have shown by discussing examples from the UK and from the 2014 OECD Best Practice Principles for Regulatory Enforcement.

Although, as indicated, smart enforcement can cover a variety of different notions and be presented under different headings, a common feature seems to be that it induces agencies to use a variety of tools to obtain better results from enforcement efforts. In this article, we have tried, based on the available literature and the examples of "smart enforcement", to identify a few crucial features that may make smart enforcement successful. One such feature is that smart enforcement is usually pro-active rather than re-active (*i.e.* relying on planning rather than waiting for complaints) and that it is based on specific tools related to the risk profile of particular activities or industries. The risk profile requires combining the likelihood of harm with its potential severity and magnitude. The tools that are developed on that basis focus not only on general planning (*e.g.* of specific risk categories) but also on specific operational activity (with respect to particular firms). The latter obviously also requires reliable data for agencies to use and information sharing between agencies to make evidence-based enforcement realistic. Notwithstanding the theoretical support that can be provided for smart enforcement, and the strong empirical evidence that risk-based systems appear to achieve higher effectiveness and efficiency than non-risk-based ones, there also are some important limits of such a risk-based inspection approach. That is why a risk-based strategy should never be used in an exclusive and simplistic manner (inspecting only high-risk establishments), but rather in a graded way (frequency increasing with risk), and/or combined with random visits.