

Lifestyle Risks

This section discusses the regulation of “lifestyle risks”, a term that can apply to both substances and behaviours. Lifestyle risks take place along the line of “abstinence – consumption – abuse – addiction”. This can concern substances such as food, alcohol or drugs, as well as behaviours such as gambling or sports. The section also addresses the question of the appropriate point of equilibrium between free choice and state intervention (regulation), as well as the question of when risks can be considered to be acceptable or tolerable. In line with the interdisciplinary scope of the journal, the section aims at updating readers on both the regulatory and the scientific developments in the field. It analyses legislative initiatives and judicial decisions and at the same time it provides insight into recent empirical studies on lifestyle risks.

What We Know about the Comparative Effectiveness of Gambling Regulation

Simon Planzer and Heather Wardle*

Towards the end of 2011, the Responsible Gambling Fund published a report which, inter alia, offers an overview of the research gaps in relation to the comparative effectiveness of gambling regulation. In the present article, the authors of the report provide a summary of the main findings. They conclude that hardly any empirical evidence is available that addresses, directly or indirectly, this subject. In view of further research, a set of recommendations is provided.

I. Aim

Following a public tender procedure, the Responsible Gambling Fund (‘RGF’; now, the Responsible Gambling Trust, ‘RGT’)¹ mandated research that was to identify the main research gaps in relation to certain key questions regarding disordered gambling.² One of the fields of interest related to the regulation of gambling. The authors were asked to provide an overview of the research gaps in relation to the comparative effectiveness of regulatory approaches and to generate a set of recommendations to the British Responsible Gambling Strategy Board (‘RGSB’) for further research strategy.³

II. Methodology

A Rapid Evidence Assessment was conducted by the authors of this paper.⁴ This is a compressed and delineated version of a Systematic Review that discusses fewer publications in less detail. In addition to peer-reviewed literature, grey literature was also

considered. Various publicly available databases were used, namely the London School of Economics’ cross searcher database which searches over 100 different databases simultaneously, including PsycMed, PubInfo, Web of Science, International Bibliography of Social Sciences, media reports, communications and various unpublished reports and theses. The search terms included: gambling, regulation, regulatory, policy, legislation in the title or abstract. Those articles identified as ‘likely to be pertinent’ to the broad aims of the project were subject to full substantive review by both authors. Finally, the scope of the review was limited to regulation passed by public authorities, disregarding ‘regulation’ by other actors.⁵

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1 <<http://www.responsiblegamblingtrust.org.uk/>> (last accessed on 16 July 2012).

2 Similar to the practice of other scholars, the notion ‘disordered gambling’ is used as an overarching term for ‘problem gambling’ (sub-clinical) and ‘pathological gambling’ (clinical). For the (revised) clinical criteria of pathological gambling (new: ‘gambling disorder’) see the Diagnostic and Statistical Manual of Mental Disorders (‘DSM’) that is currently under revision. DSM-5 is due for publication in May 2013. <<http://www.dsm5.org/proposedrevision/pages/proposedrevision.aspx?rid=210>> (last accessed on 16 July 2012).

3 The present article is a summarised and adjusted version of the original report. Among other aspects, comments specific to the UK are not considered in this article. The full report is available on the Internet at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2045052> (last accessed on 16 July 2012) as well as on <<http://www.planzer-law.com/>> (last accessed on 16 July 2012). The research for the report was financially supported by the RGF. The authors do not have personal interests in the RGF nor the RGT that would suggest a conflict of interest.

4 This is a recognised assessment methodology recommended by the British Government Social Research Unit.

5 Another report by RAND Europe, which was also mandated by the RGF, inquired into self-regulation at industry or company level. Their report is available on the Internet at <http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR1013.pdf> (last accessed on 16 July 2012).

III. When is a regulatory approach comparatively effective?

A regulatory approach is effective if it has a favourable effect on the development of the prevalence and range of gambling-related harms. Put simply, regulatory approach A is comparatively more effective than regulatory approach B if the former leads to a lower prevalence of disordered gambling and lesser range of gambling-related harms than the latter. Societies may wish to balance this effectiveness with a range of other – potentially competing – values. For example, a regulatory approach that achieves a low disordered gambling prevalence rate by prohibiting all forms of gambling may be considered too heavy handed by those who manage to gamble responsibly.

Within the same jurisdiction, epidemiological studies over several years and decades can be used to assess the development of disordered gambling and whether it varies if/when different regulatory approaches are introduced. A key challenge is that it is difficult to say what would have happened under another regulatory regime. As with many other social research questions, measuring counterfactual change is complex.

One response to this challenge is to assess several jurisdictions with different regulatory approaches and compare their respective prevalence rates. However, factors other than regulatory approaches should be considered too to be considered, e.g. the age and/or spread of the market, cultural differences or socio-economic/demographic characteristics of the population, all of which can effect underlying problem gambling prevalence rates. Such a comparative exercise requires the combination of methodology and knowledge from both social sciences and law. Seemingly similar ‘regulatory approaches’ can differ substantially even though they may use similar legal notions. Therefore, comparing the effectiveness of regulatory approaches is not as straight-forward as expected at first sight.

6 One project was identified that directly addresses the comparative effectiveness of different regulatory approaches. The manuscript for a forthcoming publication is with the authors (Simon Planzer, Heather Gray and Howard Shaffer). The regulatory data and prevalence rates collected during this project are available on the Internet at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2045073> (last accessed on 16 July 2012).

7 Richard LaBrie and Howard Shaffer, “Toward a science of gambling regulation: a concept statement”, 2(2) *AGA Responsible Gaming Series* (2003), pp. 1–7.

IV. The empirical evidence...

The rapid evidence assessment established that there is no published empirical evidence currently available which directly addresses the comparative effectiveness of regulatory approaches to gambling.⁶ Even in relation to studies that (only) indirectly relate to the topic, there is an extreme paucity of empirical evidence. Three pertinent studies were identified and are presented below.

LaBrie and Shaffer were among the first to demand that gambling regulation should be assessed as to whether it is science-informed or steered by other factors such as media sensationalism or perceived threats.⁷ They advocate an approach that is empirically grounded and fits into a general public health framework. They argue that regulation based on motives other than empirical evidence is likely to affect the effectiveness of regulation. What is more, regulatory policies may in such context simply be introduced to counter-balance criticism about gambling expansion, without providing adequate implementation and enforcement. The authors argue that studies comparing different national or regional regulatory approaches will provide valuable insight for policy makers who truly aim to establish effective gambling regulation. They hypothesise that gambling regulation is rarely formulated by reviewing empirical evidence and practical experience; gambling laws fail to maximise utility and are largely inefficient in terms of implementation and enforcement. A scientific approach would yield more effective, efficient and fair laws both for the gambling and non-gambling public and the legalised gambling industry.

As a starting point for their call for a ‘science of gambling regulation’ they use 45 regulatory acts from eleven States in the US. They assess which stages of the public health framework of primary, secondary and tertiary intervention are dealt with in the gambling regulations. Primary intervention topics include: public awareness programmes, prevention, advertising restrictions. Secondary intervention topics include: signage employee training, alcohol service, credit restrictions and loss limits. Tertiary intervention topics include self-exclusion, help lines and treatment. They found that most jurisdictions focused on secondary and tertiary interventions. Only five States’ regulations addressed primary intervention efforts, including Nevada, the most prominent gambling State. While of course it could be argued that treatment efforts are equally important, failure

to implement any prevention efforts does not utilise the full potential of gambling regulation.

This study argues that regulatory efforts among the US States analysed often do not use the full potential of the public health framework as prevention efforts are neglected. The premise that prevention efforts can make gambling regulation more effective is reasonable since preventing harm is likely to be easier than treating harm. The contribution of this article is in stating that fuller perspective should be adopted when framing regulation; one that not only focuses on treatment of problems but the prevention of harm.

Chambers and Wilcox assessed the compliance of operators with the UK's 2005 Gambling Act.⁸ The authors assess 15 major UK online gambling operators that are listed on the London stock exchange to determine what regulatory aspects they adopt and what safety measures they have in place to protect minors and to protect against financial crime. They focus on 15 of the most popular online gambling websites, noting that they are also likely to be among those that minors may have heard of. They assessed whether the companies comply with the Gambling Act's regulations in relation to age restrictions, financial crime (e.g., secure money transfers) and support for people experiencing problems with their gambling behaviour.

The authors found that all 15 companies comply with the age restrictions and were very careful about the age limits of their users. In addition, 26 % of companies allowed for parental control, 93 % for self-exclusion, but only 13 % offered advice as to where to get support for gambling problems. 53 % allowed for deposit limit controls. The authors recommend that this exercise be replicated with smaller operators to assess compliance; they argue that larger operators have a greater interest in compliance because this is interwoven with maintaining a good reputation. However, it could also be argued that smaller companies need a good reputation to become competitive and increase their revenues. In any event, a replication of the study would add to the evidence base. Furthermore, whilst compliance is clearly important, what is more so is proving that these measures are effective in preventing gambling-related harm. A key aspect of ensuring good regulation has to be that the measures mandated are proven to work.

The study of Bondolfi et al. shows the development of disordered gambling prevalence rates in Switzerland prior and posterior to the implementa-

tion of (real) casino gambling.⁹ It compares rates between 1998 and 2005. In this period of time, 19 casinos opened under a concession system. The authors found that prevalence rates for life-time and last-year problem and pathological gambling remained at similar levels in spite of the opening of casinos (1.0 % and 0.8 % respectively). The authors state that their results offer support for the social adaptation model which argues that a population is capable of adapting to exposure to environmental risks.¹⁰ However, it should be noted that their sample sizes in both survey years were very small. Whilst their results do not provide definitive empirical evidence of the efficacy of this regulatory change, they do clearly outline some of the issues that may impact the development of disordered gambling within a jurisdiction.

For example, the authors note that with the introduction of casinos, games of chance (except for lottery games) could no longer be organised outside casinos. Slot machines which were commonplace in unregulated public places like bars could now only be placed in casinos. This reduces the accessibility of these machines and this may have affected disordered gambling prevalence rates. In this context, they underline another finding of the study: there were significantly more problem and pathological gamblers with a probable alcohol problem prior to the concentration of games of chance in casinos, highlighting the importance of considering the context (venue) in which gambling is made available. Finally, the authors note that the preventive measures accom-

8 Clare Chambers and Craig Wilcox, "Gambling on compliance with the new 2005 act: Do organisations fulfil regulations", 23(3) *International review of law, computers and technology* (2009), pp. 2003–15.

9 Guido Bondolfi, Françoise Jermann, F. Ferrero, Daniele Zullino and Christian Osiek, "Prevalence of pathological gambling in Switzerland after the opening of casinos and the introduction of new prevention initiatives", 117(3) *Acta Psychiatr Scand.* (2008), pp. 236–269. Prior to the entry into effect of the current gambling act, 'casino-like venues' in Switzerland could only be run under very strict conditions and small stakes.

10 Exposure theory argues that an increase of an environmental toxin (e.g., increased availability of gambling) leads to a proportionate increase of adverse reactions (e.g., disordered gambling) within the population (dose-response relationship). Adaptation theory postulates that new environmental factors (e.g., gambling offers) may initially lead to an increase of adverse reactions (e.g., disordered gambling); over time, however, individuals manage to adapt and the adverse reactions decrease in the population (Debi LaPlante and Howard Shaffer. "Understanding the Influence of Gambling Opportunities: Expanding Exposure Models to Include Adaptation", 77(4) *American Journal of Orthopsychiatry* (2007), pp. 616–623). This report does not further inquire into the complex field of exposure model versus adaptation model and the relevant numerous prevalence studies. Bondolfi et al.'s study was chosen as it reflects rather recent data and assesses the prevalence rates prior and posterior to a significant change in a regulatory approach.

panying the introduction of casinos may have been effective in early detection of disordered gambling. These measures included staff training, availability of information within the casino about assistance (clinics, support groups, evaluation questionnaires) and identity checks at casino entrances (verification whether the person is black-listed by some casino in Switzerland).

Whilst the authors do not have empirical evidence showing that these were mitigating factors, this does illustrate the complexity of assessing the development of disordered gambling prevalence rates. Several factors may impact this development and the increased exposure to games of chance is only one (important) factor.

In our view, a long-term perspective must be taken when assessing the effectiveness of regulatory approaches. While an early increase of prevalence rates with the exposure to new games is possible, this does not exclude an adaptive process over time, though the mechanisms of this process need to be better explored. Some recent studies have found evidence for such developments.¹¹ It is thus necessary to follow the development over several years and even decades. While evidence supporting the theory of social adaptation has grown in recent years, other

factors such as regulatory approaches must also be considered. In relation to Switzerland, the authors of the study underline the various preventive measures that were introduced by law and the broader changes in the gambling landscape through the concentration of all games of chance in casinos (except for lotteries and betting). However, without further detailed inquiry, it is not possible to tell which regulatory measures were (most) effective and what the impact of preventive measures was compared with the alleged adaptation process.

V. ... and the opinions on regulation

Due to the apparent lack of empirical evidence, we also looked at 'concept papers'. In these papers, scholars present certain regulatory approaches to gambling which they find 'appropriate'. In the absence of reliable empirical data on the comparative effectiveness of different regulatory approaches, these concept papers also reflect the authors' views on gambling more generally.

In line with the limited scope of this article, the publications are grouped into two major 'schools of thought'. Indeed, many of the papers can be situated somewhere on an axis consisting of two poles: one pole advocates a maximum of individual choice while the other pole advocates a maximum of restrictive state intervention. A further distinction is that some scholars tend to see gambling as inherently dangerous while others do not see consumption as such as problematic but only its disordered forms. Finally, another central point lies in the distinction that some scholars advocate a cooperative approach between stakeholders while others advocate an adversarial approach (e.g. between regulator and industry).

Prominent scholars advocating an informed choice approach include Blaszczynski, Ladouceur, Shaffer and Korn¹² while 'more restrictive state intervention' is advocated by Adams, Orford and Light.¹³ Notably though, all these authors generally support the 'public health framing' of gambling. The differences occur in the translation of this framing into (more or less strict) regulatory approaches.

Whether regulatory approaches should be more or less restrictive tends to correlate with the authors' view on gambling more generally. Adams et al. see gambling as inherently dangerous, as an 'addictive consumption industry'. If gambling is thus seen as a kind of environmental toxin that infects the popula-

11 Christian Jacques and Robert Ladouceur, "A Prospective Study of the Impact of Opening a Casino on Gambling Behaviours: 2- and 4-Year Follow-Ups", 51(12) *Can J of Psychiatry* (2006), pp. 764–773.

12 Alex Blaszczynski, "To formulate gambling policies on the premise that problem gambling is an addiction may be premature", 100(9) *Addiction* (2005), pp. 1230–1; Howard Shaffer, "From disabling to enabling the public interest: Natural transitions from gambling exposure to adaptation and self-regulation", 100(9) *Addiction* (2005), pp. 1227–9; David Korn, Roger Gibbins and Jason Azmier, "Framing public policy towards a public health paradigm for gambling", 19(2) *Journal of Gambling Studies* (2003), pp. 235–56; David Korn, "Expansion of gambling in Canada: implications for health and social policy", 163(1) *CMAJ* (2000), pp. 61–64; Alex Blaszczynski, Robert Ladouceur and Howard Shaffer, "A science-based framework for responsible gambling: The Reno Model", 20 *Journal of Gambling Studies* (2004), pp. 301–317.

13 Roy Light, "The Gambling Act 2005: Regulatory containment and market control", 70(4) *Modern Law Review* (2007), pp. 626–653; Peter Adams, John Raeburn and Kawshi de Silva, "A question of balance: prioritizing public health responses to harm from gambling", 104(5) *Addiction* (2009), pp. 688–91; Peter Adams, Stephen Buetow and Fiona Rossen, "Vested interests in addiction research and policy poisonous partnerships: health sector buy-in to arrangements with government and addictive consumption industries", 105(4) *Addiction* (2010), pp. 585–90; Peter Adams, John Raeburn and Kawshi de Silva, "Gambling beneficiaries having their cake and eating it: the attractions of avoiding responsible gambling regulation", 104(5) *Addiction* (2009), pp. 697–698; Jim Orford, "Disabling the public interest: gambling strategies and policies for Britain", 100(9) *Addiction* (2005), pp. 1219–25. See further Jennifer Borrell, "The Public Accountability Approach: suggestions for a framework to characterise, compare, inform and evaluate gambling regulation", 6 *International Journal of Mental Health and Addiction* (2008), pp. 265–281.

tion in proportion to its availability, then restrictive or prohibitive regulation is the consequence likely to be advocated. By contrast, Blaszczynski et al. do not see gambling as inherently dangerous or addictive. They note that most people do not encounter gambling-related harm and should be allowed to make their own informed choices. They further underline primary intervention efforts, in particular public education and prevention strategies. The contrast between more choice and more paternalistic intervention shows the impact of varying conceptualisations of gambling that the contributions hold.

Accordingly, each author's position on this axis between restrictive intervention and individual choice also impacts their views of the role of (non-)collaboration between stakeholders (specifically industry and government relations). Blaszczynski et al. underline the opportunities of a collaborative approach whereas Adams et al. underline the threats and conflicts of interests.

Sparrow's contribution, which addresses online gambling specifically, argues a somehow mitigating approach with a collaborative approach favoured where there are not substantial conflicts of interests that could have detrimental effects on the policy.¹⁴ He argues that instead of a 'one-size fits all' approach to government and industry relations the regulatory responses and the relationship with industry should be commensurate to the level and type of risk involved. With focus on the US, he concludes that a prohibitive or very restrictive approach does not reflect an effective regulatory approach to address gambling-related harm.

Several authors claim that the way gambling is framed (e.g. public health approach) will define the regulatory approaches to gambling. A 'leisure' approach is often contrasted with a 'public health' approach. However, those who advocate a public health approach often have divergent views about how gambling should be regulated to protect the public. Their regulatory preferences reach from prohibitive or restrictive approaches to fairly liberal approaches. Therefore, this distinction is not clear cut.

Many authors seem to suggest that one approach necessarily excludes the other: a leisure approach excludes a public health approach. This black and white contrast generally does not reflect the realities of gambling regulation. Regulators may well combine elements from both approaches. For instance, while the 2005 Gambling Act tends to shape gambling in the UK as a leisure activity, it also incorporates

some elements that reflect paternalistic regulatory intervention, notably with the requirement to protect vulnerable people from harm. Minors experience particular regulatory attention and the way gambling can be advertised is restricted.

This review also shows a gulf between the 'regulatory' discussion in the scientific literature and the regulatory discussion among politicians, regulators and lawyers. The former saturates around (diverging) understandings of a 'public health' approach. The latter, however, debate over the effectiveness of concrete regulatory choices. A central issue is which broad regulatory model is most effective: total ban (prohibition), monopolistic model (operator with exclusive rights), closed licensing system (limited number of licensees and offers), open licensing system (a liberal but still regulated market) or even a system with no authorisation requirements. In particular at EU level, some stakeholders argue that national restrictions primarily serve protectionist-economic interests while the other side argues that prohibitive or restrictive approaches are more effective in addressing gambling-related harm. Other concrete regulatory approaches that are disputed among regulators regard the (detrimental) effect of advertising, whether prohibitive approaches towards players (not just operators) are effective and what the appropriate age limit should be. Furthermore, some commentators question the efficacy of the individual choice agenda, citing that it may be flawed because people may lack the information to make informed decisions or, may even be incapable of making the correct decision. All of this underlines the need for the efficacy of prevention, education and regulatory initiatives to be fully evaluated. This is particularly important in regimes which frame gambling regulation as an individual choice as it is important to ensure that people have the tools to be able to make informed choices about their behaviour.

A closer interaction between normative regulators and empirical researchers is necessary. Scientists may achieve a better understanding of the concrete needs of regulators and the latter of the chances

14 Malcolm Sparrow, "Can the Internet be effectively regulated? Managing the risks", December 2, 2009, available on the Internet at <http://www.house.gov/apps/list/hearing/financialsvcs_dem/sparrow.pdf> (last accessed on 16 July 2012). See further Jamie Wiebe and Michael Lipton, "An overview of Internet Gambling Regulations", Submitted to the Ontario Problem Gambling Research Centre, August 2008, available on the Internet at <<http://www.gamblingresearch.org/applydownload.php?docid=11002>> (last accessed on 16 July 2012).

and limits that empirical research has to offer. One such limitation is that the effectiveness of a regulatory approach may not be easily measurable. Several (regulatory and non-regulatory) factors may impact the outcome. For instance, to compare the developments under different regulatory approaches and investigate the relative impacts of accessibility and adaptation, research efforts ideally take into account data from several jurisdictions covering several years.

The legal side of such research also offers challenges: social scientists are generally not familiar with the legal terminology. In addition, the seemingly 'same' regulatory approach may turn out to be significantly different in one country than in another even though both countries use the same legal terms. Moreover, socio-economic, political and cultural contexts should ideally be taken into account as for instance high poverty or unemployment rates may impact the levels of disordered gambling in a population. Most promising are thus interdisciplinary, cross-jurisdictional, long-term approaches that also incorporate great expertise in complex multi-factorial analysis.

VI. The way forward: Recommendations for further research

Need for hard facts

In view of a 'scientific' discussion largely based on opinions there is an obvious need to work with hard facts. Both the regulatory and the scientific community can contribute to this overriding goal. The example of the 'exposure versus adaptation' discussion may illustrate that point. Instruments to measure exposure have been composed ('RIGE').¹⁵ However, meaningful research can only be provided if the relevant data are available to researchers. To use the example of the RIGE, researchers must have access to reliable data relating to the 'dose' (number of casinos and number of people employed by casinos), 'potency' (number of different types of games available) and 'duration' (length of time since casino gambling was legalised). Without access to hard facts, the discussion will remain opinion-based. There are two sides of the same

coin: the research community must show the will to work with hard facts and the regulator must ensure that the necessary data is accessible. The latter may choose to either collect that data or ensure that operators make that data available to researchers and even the broader public. Regulators facing budget constraints may favour the latter option.

Cooperation between scientists and regulators

In view of the trench between the empirical research community and the normative community, there is an urgent need for a more cooperative approach. The trench can be identified, for instance, by discussions regarding regulatory approaches in the scientific literature that have limited relevance for the needs of regulators. For instance, there is a dominance of labels such as 'public health approach' but the discussion shows that researchers sometimes significantly disagree on the actual content of such labels. The scientific literature further shows that there is little awareness that regulators also need to address risks other than health-related ones such as risks of money laundering or fraud. Moreover, regulators also have to consider (potential) benefits, for instance when the legislator wishes to create economic growth and jobs by the introduction of gambling resorts. Again, this is not a one-way road: it is in the interest of regulators to take steps towards an enhanced cooperation. The need to express the challenges they face in regulating the gambling sector and raise awareness of the concrete regulatory questions to which empirical evidence could greatly contribute. Regulators need to decide on concrete questions such as: What should be the minimum age of legal gambling participation? Should 'play for free' games be restricted? Should operators be required to provide information to the public on the odds of winning? Should operators be required to provide coaching for their staff regarding gambling-related harm and its prevention?

Cooperation between academics from the empirical scientific community and the normative legal community

The world of laws is often complex and a mystery to the broader public. This is not different for scientists. As any other discipline, law has its own terminology and methodology. In addition, gambling regulations must be understood in the bigger system of the rel-

¹⁵ Regional Index of Gambling Exposure ('RIGE'), see Howard Shaffer, Richard LaBrie and Debi LaPlante, "Laying the foundation for quantifying regional exposure to social phenomena: Considering the case of legalized gambling as a public health toxin", 18(1) *Psychology of Addictive Behaviors* (2004), pp.40–48.

evant legal framework. For instance, certain restrictions on gambling advertising may not be specific to gambling but to product advertising in general (e.g. ban on misleading messages). Without cooperating with legal scholars, scientists may overlook regulatory aspects that are evident for lawyers but not at all for non-lawyers. In turn, this may hamper the relevance of empirical work. Legal scholars can thus help to tailor empirical research in a way to accommodate important legal considerations as well as the political context in which the law was enacted.

Long-term and holistic regulatory perspective

Regulation is understood in this report as an environmental factor that impacts people's behaviour.

But the (negative or positive) effects of regulatory changes may only become measurable over time. Parts of the population may for instance not be (immediately) aware of regulatory changes. Research efforts must thus be steered towards assessing the development under a certain regulatory approach (as opposed to focus on a point in time). In addition, a holistic regulatory perspective is necessary. When attempting to measure the effectiveness of a regulatory change (e.g. a shift from a monopolistic system towards a licensing system) it may be important to consider other regulatory changes, too (e.g. slot machines were removed from bars or the minimum age to play changed). Again, cooperating with legal scholars may ensure that important regulatory aspects are not overseen in the empirical work.

Nanotechnology

This section is meant to give readers an insight into the emerging field of nanotechnologies and risk regulation. It informs and updates readers on the latest European and international developments in nanotechnologies and risk regulation across different sectors (e.g., chemicals, food, cosmetics, pharmaceuticals) and policy areas (e.g., environmental protection, occupational health and consumer product, food and drug safety). The section analyzes how existing regulatory systems deal with new kinds of risks and reviews recent regulatory developments with a focus on how best to combine scientific freedom and technological progress with a responsible development and commercialization of nanotechnologies.

Nano-Safety or Nano-Security? Reassessing Europe's Nanotechnology Regulation in the Context of International Security Law

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I. Introduction

The rapid development of nanotechnology over the last decade has resulted in a widespread introduction of engineered nanomaterials (ENMs) into the consumer products of developed countries. Because of the potential toxicity of ENMs, however, concerns for health and environmental safety have led to controversial public debates in many countries as to whether and how the safety of products containing ENMs should be specifically ensured. In Europe, the European Commission signalled the significance of such efforts when it confirmed in 2004 that the obli-

gations to ensure a high level of human health protection and to preserve, protect and improve the quality of the environment under the Treaty Establishing the European Community,¹ would be applicable to nanotechnology research and development.²

In these regulatory debates, however, the role nanotechnology plays in addressing various contemporary security challenges is given little, if any, at-

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1 OJ C-325 (24 December 2002), Articles 152, 153 and 174. As of 6 May 2012, these provisions have been incorporated into the Treaty on the Functioning of the European Union, OJ C-83/47 (30 March 2010), Articles 168, 169 and 191.

2 European Commission, "Towards a European Strategy for Nanotechnology: Communication from the Commission", 2004, p.5, available on the internet at <http://ec.europa.eu/nanotechnology/pdf/nano_com_en.pdf> (last accessed on 16 July 2012).