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From a 'race to AI' to a 'race to AI regulation': regulatory competition for artificial intelligence

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ABSTRACT

Against a background of global competition to seize the opportunities promised by Artificial Intelligence (AI), many countries and regions are explicitly taking part in a 'race to AI'. Yet the increased visibility of the technology's risks has led to ever-louder calls for regulators to look beyond the benefits, and also secure appropriate regulation to ensure AI that is 'trustworthy' – i.e. legal, ethical and robust. Besides minimising risks, such regulation could facilitate AI's uptake, boost legal certainty, and hence also contribute to advancing countries' position in the race. Consequently, this paper argues that the 'race to AI' also brings forth a 'race to AI regulation'. After discussing the regulatory toolbox for AI and some of the challenges that regulators face when making use thereof, this paper assesses to which extent regulatory competition for AI – or its counterpart, regulatory convergence – is a possibility, a reality and a desirability.

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KEYWORDS regulatory competition; artificial intelligence; race to AI; AI regulation; trustworthy AI

1. Introduction

Algorithm-based technologies such as Artificial Intelligence (AI) are increasingly pervading all areas of our lives. AI has become of strategic importance for governments throughout the world, being considered as one of the most transformative forces of our time.[1] Its general-purpose status enables it to generate benefits across a wide array of domains, in turn, expected to enhance not only individual but also economic and societal welfare. It is, therefore, no surprise that a global competition to develop AI-applications has emerged. Many countries and regions are explicitly taking part in a

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[1] See for instance Commission, 'Artificial Intelligence for Europe' (Communication) COM(2018) 237 final, at 1.

'race to AI', striving to advance the technology's use and benefits more rapidly and successfully than others.[2]

China, for instance, adopted its 'Next Generation AI Development Plan' in 2017, with the aim to become a world leader in the field by 'building on China's first-mover advantage in the development of AI'.[3] The European AI strategy, published in 2018, puts forward the EU's goal to 'lead the way in developing and using AI for good and for all'.[4] Furthermore, the American AI strategy, launched by an executive order in early 2019, aims to 'accelerate the nation's leadership in AI'.[5] This type of language can also be retrieved in other national AI strategies.[6] In sum, while each strategy accentuates its own distinct strengths, all countries wish to lead the race, and all countries claim to be leading in at least some aspect of the technology already – be it AI talent, research, start-ups, software or hardware applications, or investments.

Winning the 'race to AI' seems not only motivated by the urge to secure a competitive position on the global market but is at times also portrayed as an almost existential necessity, whereby – besides the classic arguments regarding national security[7] – also economic security is invoked. Indeed, not only the enormous gains that could result from deploying AI,[8] but also the high

[2]This tendency is also reflected in the words publicly uttered by Russian president Vladimir Putin in September 2017: 'Whoever becomes the leader in this sphere will become the ruler of the world'. See also Kai-Fu Lee, *AI Superpowers: China, Silicon Valley, and the New World Order* (Houghton Mifflin Harcourt, 2018); Kathleen Walch, 'The Race for AI Dominance is More Global Than you Think' (*Medium*, 28 August 2018), https://medium.com/cognilytica/the-race-for-ai-dominance-is-more-global-than-you-think-e01a0c34d64e (accessed 2 November 2020); Yuval Noah Harari, 'Who Will Win the Race for AI?' *Foreign Policy Magazine* (Washington, Winter 2019).

[3]For a translation of China's national strategy into English, see www.newamerica.org/cybersecurity-initiative/digichina/blog/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/ (accessed 2 November 2020).

[4]Commission (n 1).

[5]The US national AI strategy is, www.whitehouse.gov/ai/executive-order-ai/ (accessed 2 November 2020).

[6]See e.g. the focus on 'leadership' in Canada's AI strategy, www.cifar.ca/ai/pan-canadian-artificial-intelligence-strategy (accessed 2 November 2020) or in Japan's national strategy, published in 2017 by its Strategic Council for AI Technology (available in English at: www.nedo.go.jp/content/100865202.pdf (accessed 2 November 2020)).

[7]Notably, the 'race to AI' is often also raised in the context of a so-called 'arms race' to AI, the military sector being one of the application fields where AI is both booming and of strategic importance for countries. See in this regard e.g. Tania Rabesandratana, 'Europe Moves to Compete in Global AI Arms Race' (2018) 350 *Science* 474. See also Andrew Philip Hunter, Lindsay Sheppard, et al. 'Artificial Intelligence and National Security – The Importance of the AI Ecosystem' (2018) *Centre for Strategic and International Studies*.

[8]See for instance PwC, 'PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution' (2017), www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf (accessed 2 November 2020); Deloitte, 'Artificial Intelligence Innovation Report' (2018), www2.deloitte.com/content/dam/Deloitte/de/Documents/Innovation/Artificial-Intelligence-Innovation-Report-2018-Deloitte.pdf (accessed 2 November 2020) and McKinsey Global Institute, 'Notes from the AI Frontier: Modelling the Impact of AI on the World Economy' (September 2018), www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai-on-the-world-economy (accessed 2 November 2020).

cost of non-adoption[9] seem to enhance the race-rhetoric, as no country wants to 'miss the AI train'.[10]

AI, however, comes not only with benefits but also with substantial ethical and legal risks. These relate, for instance, to the technology's potential to breach fundamental rights such as privacy and non-discrimination, to inadvertently nudge and manipulate people so as to hinder their self-determination, or to harm people's safety and security.[11] Consequently, the downsides of the development and use of AI are ever more under scrutiny, and governments are urged to adopt not only policies that can stimulate beneficial innovation, but also measures that safeguard people from AI's risks. Increasingly, regulation seems to emerge as a potential answer. In fact, all over the world, regulators[12] at regional, national, international and supranational level have started assessing the desirability and necessity of new or revised regulatory measures to minimise AI's adverse impacts, while at the same time maximising its benefits. A regulatory regime that can adequately balance out these needs and establish legal certainty for the stakeholders involved, could not only ensure trust in the technology but also facilitate its uptake – hence advancing countries' competitive position. The gains of putting in place an appropriate regulatory framework for AI are arguably even more substantial for those regulatory powers benefiting from a regulatory 'first mover advantage'.[13]

This paper argues that, as a consequence of the above, the 'race to AI' is also bringing forth a 'race to AI regulation'. Indeed, a new playground for global regulatory competition seems to emerge,[14] which in the best-case scenario pushes governments – amidst uncertainty as to the technology's

[9]As the 'Policy and Investment Recommendations on AI' of the European Commission's High-Level Expert Group on AI note: 'If no action is taken the EU28 will suffer a deterioration of its innovation capital, which would result in a loss of €400 billion in cumulative added value to GDP by 2030'. See also McKinsey Global Institute, 'Notes from the AI frontier, Tackling Europe's Gap in Digital and AI' (February 2019), www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Artificial%20Intelligence/Tackling%20Europes%20gap%20in%20digital%20and%20AI/MGI-Tackling-Europes-gap-in-digital-and-AI-Feb-2019-vF.ashx (accessed 2 November 2020); Commission, 'Harnessing the Economic Benefits of Artificial Intelligence' (November 2017, Digital Transformation Monitor); Vikram Mahidhar and Thomas H Davenport, 'Why Companies That Wait to Adopt AI May Never Catch Up' (2018) *Harvard Business Review*, https://hbr.org/2018/12/why-companies-that-wait-to-adopt-ai-may-never-catch-up (accessed 2 November 2020).

[10]Commission (n 1).

[11]See for instance Brent Mittelstadt, et al. 'The Ethics of Algorithms: Mapping the Debate' (2016) 3 *Big Data & Society* 1; Karen Yeung, 'Why Worry about Decision-Making by Machine?' in Karen Yeung and Martin Lodge (eds), *Algorithmic Regulation* (Oxford University Press, 2019) 21; Catelijne Muller, 'The Impact of Artificial Intelligence on Human Rights, Democracy and the Rule of Law', Report Prepared in the Context of the Council of Europe's Ad Hoc Committee on AI (CAHAI) (Strasbourg: Council of Europe, 24 June 2020), www.coe.int/en/web/artificial-intelligence/cahai (accessed 2 November 2020).

[12]The term 'regulators' is used throughout this paper to denote those with the power to create and/or enforce regulation. This paper will primarily focus on regulation by governmental organisations.

[13]See Part 4.

[14]This regulatory playground is populated by numerous governmental and non-governmental actors who each, based on their competences, can adopt – or lobby for – (a mix of) the tools at hand.

impact, the impact of regulatory intervention, and the cost of non-intervention – to find the most appropriate balance between protection and innovation. By striving for such balance in their own distinct manners, countries can compete with each other through regulation in order to attract those ingredients that render them a competitive force on the global AI market, whilst exploring the best recipes to simultaneously protect their citizens. This, however, also raises the possibility that instead of a 'race to the top', regulatory competition for AI will unleash a 'race to the bottom' at the cost of adequate protection against AI's risks.

At the same time, recent developments seem to indicate that, for a number of domains, regulatory approaches slowly start converging. Besides the harmonising power of a globalised market, explicit efforts towards the setting of global regulatory standards for AI are underway, potentially leading towards the harmonisation of (some aspects of) AI regulation. Indeed, international organisations such as the OECD, the Council of Europe and UNESCO have joined the regulatory playground, bringing around the table a diversity of countries to work towards a consensus on (certain) ethical considerations raised by AI.

Against the background of these developments, this paper will first offer a bird's eye view of the regulatory toolbox for AI, the various regulatory approaches that can be pursued, and the challenges that regulators might face when making use thereof (Part 2). It will then assess to which extent regulatory competition for AI is a possibility (Part 3), a reality (Part 4) and a desirability (Part 5), before offering some concluding remarks (Part 6).

2. Regulating artificial intelligence: tools and obstacles

2.1. The regulatory toolbox in context

For the purpose of this paper, regulation is broadly defined as a means to intentionally influence and/or constrain the behaviour of actors, be it individuals, groups, or legal entities such as companies. Lawrence Lessig famously identified four different modalities of regulation of which law – traditionally seen as *the* regulatory modality – is only one, the others being: social norms, the market and the architecture or design of technological applications.[15]

By applying those modalities wisely, governments can steer behaviour towards the minimisation of adverse impacts (the 'protective role' of

Given this paper's focus on regulatory competition for AI between countries, the focal point of discussion will be the role played by governments rather than by non-governmental/private organisations.

[15]Lawrence Lessig, 'The Law of the Horse: What Cyber Law Might Teach' (1999) 113 *Harvard Law Review* 501. See in this regard also Roger Brownsword, 'The Technologies of the 21st Century: Regulatory Challenge and Regulatory Opportunity' in *Rights, Regulation, and the Technological Revolution* (Oxford University Press, 2008).

regulation) and the stimulation of beneficial innovation (the 'enabling role' of regulation), ideally leading to enhanced individual and societal welfare.[16] In the context of AI, enabling regulation could for instance consist of government subsidies or tax rebates for companies developing AI-applications, or the adoption of a fast-track migration policy for workers with an AI-related background. Protective regulation could for instance take the shape of mandatory transparency and information obligations for AI developers and deployers, or guidelines that set out how AI can be used ethically in a specific sector or use case.

The distinction between regulation's protecting and enabling role is, however, not one that should be seen as firm, since these roles can overlap and be fulfilled by the same regulatory regimes. Similarly, the boundaries between Lessig's four modalities should not be considered rigidly either. Law can codify social norms, social norms can influence architectural standards, and architecture can shape the market. The different modalities can also be used simultaneously, even within the same field of application, and are hence not exclusive. Importantly, the decision by a government not to regulate certain AI-related aspects by law should also be seen as a form of regulation, since it entails the implicit choice to leave the technology's regulation to the market, to applicable social norms and to the design choices made by those who develop the relevant AI-application.

In addition, within each regulatory modality, various tools can be used to steer actors' behaviour. Regulation by law, for instance, need not only occur through the introduction of new legislation, but can also take the shape of de-regulation (undoing a legislative act) or re-regulation (revising such an act), or even consist of soft-law measures instead.[17] In turn, the legal act in question can be principle-based (focusing on the outcomes or principles that actors should ensure, regardless of the means they deploy to achieve this), rule-based (focusing on processes that need to be followed, regardless of the outcome that arises), or – most typically – a mix of both.[18] Evidently, the choice for one modality or tool over another bears significant

[16]On the balance to be struck between both, see for instance the EPSC (The European Commission's in-house Think Thank) Strategic Note, 'Towards an Innovation Principle Endorsed by Better Regulation' (30 June 2016), https://wayback.archive-it.org/12090/20191129102319/https://ec.europa.eu/epsc/publications/strategic-notes/towards-innovation-principle-endorsed-better-regulation_en (accessed 2 November 2020); and European Commission report prepared by Jacques Pelkmans and Andrea Renda, 'How Can EU Legislation Enable and/or Disable Innovation?' (July 2014), https://ec.europa.eu/futurium/en/system/files/ged/39-how_can_eu_legislation_enable_and-or_disable_innovation.pdf (accessed 2 November 2020). See however also Kathleen Garnett, Geert Van Calster and Leonie Reins, 'Towards an Innovation Principle: An Industry Trump or Shortening the Odds on Environmental Protection?' (2018) 10 *Law, Innovation and Technology* 1.

[17]For an overview of regulatory approaches to AI, see e.g. Wolfgang Hoffmann-Riem, 'Artificial Intelligence as a Challenge for Law and Regulation' in Thomas Wischmeyer and Timo Rademacher (eds), *Regulating Artificial Intelligence* (Springer, 2020).

[18]Pascal Frantz and Norvald Instefjord, 'Regulatory Competition and Rules/Principles-Based Regulation' (2018) 45 *Journal of Business Finance and Accounting* 818.

consequences for the stakeholders involved, for instance in terms of applicable presumptions, burden of proof, cost of compliance or potential liability.

The above-mentioned modalities and tools broadly mark the parameters of the – quite extensive – regulatory playground that regulators find themselves in. This playground, however, also comes with certain responsibilities. Before undertaking new action, it should be expected from regulators that they not only thoroughly understand the landscape of currently applicable regulations, but also the boundaries of their respective toolboxes, typically governed by their jurisdictional competence. For instance, one of the most prominent regulating powers in the world,[19] the European Union, only has those competences specifically attributed to it by its Member States and hence cannot adopt a regulatory measure (on AI or anything else for that matter) outside those delineated boundaries.[20] Second, they are expected – ideally in an evidence-based manner[21] – to identify the most appropriate regulatory tool for the goal to be achieved, and anticipate as much as possible the various (economic, social, legal and other) consequences that may ensue from their (non-)intervention. When conducting such exercises regarding the opportunities and risks raised by AI, regulators face a number of challenges, which will be briefly touched upon here below.

2.2. Regulating AI – not a walk in the park

Over the last years, AI has drawn significant attention from researchers, companies, investors, governments and – thanks to quite some media attention[22] – increasingly also citizens. Yet despite all this attention, there are still as many definitions of AI as there are people talking about it. Indeed, as of today, no common definition for AI exists, though a number of attempts – for instance by the European Commission's High-Level Expert Group on AI[23] – have been

[19] See in this regard e.g. Alasdair R Young, 'The European Union as a Global Regulator? Context and Comparison' (2015) 22 *Journal of European Public Policy* 1233; Anu Bradford, *The Brussels Effect: How the European Union Rules the World* (Oxford University Press, 2020).

[20] The issue of competence also plays a role for instance in the US and other federal states, where competences are typically attributed respectively to the federal level and/or the regional level, and where a breach of those competences can be legally challenged.

[21] See for instance Ron Haskins, 'Evidence-Based Policy: The Movement, the Goals, the Issues, the Promise' (2018) 678 *The ANNALS of the American Academy of Political and Social Science* 8.

[22] See in this regard also Oscar Schwarz, 'The Discourse is Unhinged: How the Media Gets AI Alarmingly Wrong' (*The Guardian*, 25 July 2018), www.theguardian.com/technology/2018/jul/25/ai-artificial-intelligence-social-media-bots-wrong (accessed 2 November 2020).

[23] The High-Level Expert Group on AI (or AI HLEG) is an independent expert group established by the European Commission in June 2018, in the context of the European AI strategy. It was tasked with the creation of AI Ethics Guidelines and AI Policy and Investment Recommendations for Europe. More information on the group can be found at: https://ec.europa.eu/digital-single-market/en/news/call-high-level-expert-group-artificial-intelligence. For the purpose of its deliverables, the group also drafted a definition of AI, see AI HLEG, 'A Definition of AI – Main Capabilities and Disciplines'

made in this regard.[24] It should also be clarified that there is no such thing as one 'AI', but that many different techniques and applications are ascribed under this single umbrella term.[25] To further complicate matters, the scope of applications that tend to be ascribed under the umbrella of AI is continuously subject to change. This is referred to as the so-called 'AI-effect', whereby technologies that were initially deemed 'intelligent' but over time became normalised by habitual use and exposure, lose their 'intelligent' status.[26]

Evidently, the absence of a commonly agreed definition poses certain obstacles. For instance, it makes it very difficult to assess and compare AI investment levels, research advancements or adoption across different countries, as the definitions those countries use are likely to vary.[27] Moreover, governments reporting on their AI policies and progress only rarely make the definitions they use explicit. Countries wishing to boast their 'leading' position in AI might hence apply a very broad interpretation of applications falling under the term, and can easily get away with it. The lack of a unitary definition also forms a more important problem for governments wishing to adopt AI-specific regulation. Governments that, for instance, wish to grant subsidies to SMEs developing or deploying AI, will need a clear definition of what they mean by 'AI', or risk attracting companies they did not actually intend to help. This uncertainty is even more problematic where governments instead aim to adopt measures imposing obligations upon those developing or deploying AI, especially if non-compliance entails a risk of being sanctioned.

A second difficulty relates to the fact that AI is but one (collection of) technical tool(s) amongst others. Many of the risks associated with AI, as well as the benefits promised thereby, may also arise from other types of technology. From this perspective, any regulatory measure focusing solely on AI could be well intended, yet create undesired consequences. For instance, by advantaging the development of AI above other technologies, incumbent AI

(8 April 2019), https://ec.europa.eu/digital-single-market/en/news/definition-artificial-intelligence-main-capabilities-and-scientific-disciplines (accessed 2 November 2020).

[24]For another approach to defining AI, see for instance Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach* (Pearson, 3rd edn 2016). On the current lack of an AI definition, see also Matthew U Scherer, 'Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies' (2016) 29 *Harvard Journal of Law & Technology* 353; Miriam C Buiten, 'Towards Intelligent Regulation of Artificial Intelligence' (2019) 10 *European Journal of Risk Regulation* 41.

[25]See in this regard also Thomas Wischmeyer and Timo Rademacher (eds), *Regulating Artificial Intelligence* (Springer International Publishing, 2020), vi.

[26]See Michael Haenlein and Andreas Kaplan, 'A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence' (2019) 61 *California Management Review* 5. See also Pamela McCorduck, *Machines Who Think* (AK Peters, 2nd edn 2004).

[27]Those who, for instance, wish to compare AI spending levels in different countries, should therefore carefully examine what precisely is being compared. Does it concern investment in self-standing AI-applications and/or in systems integrating a (minor or major) AI-component? Are the applications included truly AI, or does it concern mere advanced statistics?

companies may gain an (unfair) market advantage, to the disadvantage of others working on the same goal with a different technology. To the extent such technologies could achieve the same (or even better) results in certain areas, this will also be to the disadvantage of other stakeholders, including citizens. A similar problem arises when considering protective regulation. The adoption of a strict rule that for instance imposes burdensome obligations on AI deployers to minimise certain risks, would not cover a manifestation of the same risk by other types of technology, and might merely push AI deployers towards the use of other tools to achieve the same problematic end.

Much has been written about the virtues and pitfalls of adopting 'technology neutral regulation', which precisely aims to avoid these issues by shunning rules that target one specific technology.[28] The EU's General Data Protection Regulation (GDPR) is an example of such technology neutral regulation, as it focuses on a particular aim – safeguarding the protection of personal data when processed – regardless of the means used for the processing (a basic computer programme or a complex AI system). This approach also avoids the difficulty of defining AI and shifts the focus towards defining the risk that should be prevented and/or the right that needs to be safeguarded.

Arguably, a regulation that singles out AI as a technology could be justified in those instances where it aims to tackle a risk or benefit arising from a feature linked distinctly to AI, without being (as) present with other technologies. This, however, leads to the question whether such distinct features exist. While the regulation of AI certainly poses challenges for regulators, it can be asked whether these challenges are truly new or whether they merely raise the same questions that other new technologies have raised before. The regulation of any evolving technology is likely to generate tensions between the need for sufficient flexibility so as to evolve along with the technology on the one hand, and the need for predictability and legal certainty on the other hand.[29] At the same time, it can be noted that the features of certain AI applications further contribute to this challenge. In this regard, the self-learning ability and hence potentially unpredictable behaviour of certain systems, the delegation of human authority and control over impactful decisions they make, and the vastness of the consequences that such delegation can entail, are often put forward. In addition,

[28] See for instance Bert-Jan Koops, 'Should ICT Regulation be Technology-Neutral' in Bert-Jan Koops, M Lips, C Prins, and M Schellekens (eds), *Starting Points for ICT Regulation: Deconstructing Prevalent Policy Oneliners* (TMC Asser, 2006); C Reed, 'Taking Sides on Technology Neutrality' (2007) 4 *SCRIPT-ed* 263; Christian Azar and Björn A. Sandén, 'The Elusive Quest for Technology-Neutral Policies' (2011) 1 *Environmental Innovation and Societal Transitions* 135; Mireille Hildebrandt and Laura Tielemans, 'Data Protection by Design and Technology Neutral Law' (2013) 29 *Computer Law & Security Review* 509.

[29] See in this regard Brownsword (n 15), which delves into this question at length.

the opaque and non-transparent decision-making processes of certain AI systems (denoted as 'black box' systems) render it difficult for experts and regulators alike to assess and evaluate the systems' operations, as well as to verify their compliance with standards and regulations.

Notwithstanding the difficulty to translate these features into a uniformly adoptable and clear definitional scope, the European Commission announced its intention to propose AI-specific legislation in the first quarter of 2021.[30] Similarly, the Council of Europe is currently examining the feasibility and potential elements of 'a legal framework for the development, design and application of artificial intelligence, based on the Council of Europe's standards on human rights, democracy and the rule of law'.[31] At this stage, it remains to be seen whether the proposed regulatory instruments will indeed single out AI as a technology and, if so, under which definition.

A third obstacle flows from the above-mentioned fact that there is no such thing as 'one' AI, and that different AI-techniques and applications also generate different benefits and risks. Thus, a rule-based AI-system does not pose the same challenges as an application that is based on deep learning, and an AI-system enabling image recognition does not pose the same challenges as one that processes natural language. In addition, the risks posed thereby are typically also context- or domain-specific. It is, for instance, evident that the use of a predictive AI-system by criminal law enforcers does not raise the same challenges as a system that is implemented in a manufacturing process at a car factory.

Consequently, it is fair to question to which extent it actually makes sense to talk about 'regulating AI', since this may wrongly give the impression that one regulatory measure could be equally applicable and relevant to all types of AI-systems in all sectors and situations. Context and application matter. While this does not mean that all AI regulation necessarily needs to be application-specific, it does mean that the relevance of an all-encompassing AI regulation might be pertinent in some, yet absent in other situations, and that it might lead to unintended – and even undesired – consequences in areas that were not the primary

[30] See in this regard Ursula Von der Leyen, 'A Union That Strives for More: My Agenda for Europe' (July 2019) ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf (accessed 2 November 2020); European Commission, 'White Paper On Artificial Intelligence – A European Approach to Excellence and Trust' (Brussels, 19.2.2020 COM(2020) 65 final, 19 February 2020); European Commission, 'Inception Impact Assessment on the Proposal for a Legal Act of the European Parliament and the Council Laying down Requirements for Artificial Intelligence' (Ref. Ares (2020)3896535, 23 July 2020).

[31] See Council of Europe, 'Terms of Reference for the Ad Hoc Committee on Artificial Intelligence (CAHAI)', 11 September 2019. See also the CAHAI's first progress (CM(2020)90-final), adopted by the Council of Europe's Committee of Ministers on 23 September 2020, setting out the draft table of contents of the feasibility study, https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016809ed062 (accessed 2 November 2020).

regulatory target. The demarcation of the scope of any regulatory measure for AI is thus crucial, not only in terms of delimiting 'AI-systems' as opposed to other technologies, but also to delimit which AI-application or which context is being targeted.[32]

Last, – and this is important as we move the discussion from regulation to regulatory competition – when it comes to regulating AI by law, there is not just one legal regime that is relevant. Indeed, the development and deployment of AI can be stimulated or curtailed by domains as different as tax law,[33] tort law,[34] privacy and data protection law,[35] IP law,[36] competition law,[37] health law,[38] public procurement law,[39] consumer protection law[40] – and the list goes on. Within these different domains, a large number of regulations already apply to AI today. Governments can hence not only use any or all of these different legal domains to compete with each other and influence the behaviour of AI stakeholders towards their enabling and

[32] See in this regard also Buiten (n 24); Wolfgang Hoffmann-Riem, 'Artificial Intelligence as a Challenge for Law and Regulation' in Thomas Wischmeyer and Timo Rademacher (eds), *Regulating Artificial Intelligence* (Springer, 2020).

[33] See for instance Sami Ahmed, 'Cryptocurreny & Robots: How to Tax and Pay Tax on Them' (2018) 69 *South Carolina Law Review* 697; Ryan Abbott and Bret Bogenschneider, 'Should Robots Pay Taxes: Tax Policy in the Age of Automation' (2018) 12 *Harvard Law & Policy Review* 145.

[34] See for instance Steven J Frank, 'Tort Adjudication and the Emergence of Artificial Intelligence Software' (1987) 21 *Suffolk University Law Review* 623; Paulius Cerkaa, Jurgita Grigien, and Gintare Sirbikyte, 'Liability for Damages Caused by Artificial Intelligence' (2015) 31 *Computer Law & Security Review* 376; Sebastian Lohsse, Reiner Schulze, Dirk Staudenmayer (eds), *Liability for Artificial Intelligence and the Internet of Things* (Hart Publishing, 2019); Andrea Bertolini, *Artificial Intelligence and Civil Liability*, study commissioned by the European Parliament's Committee on Legal Affairs (July 2020), www.europarl.europa.eu/RegData/etudes/STUD/2020/621926/IPOL_STU(2020)621926_EN.pdf (accessed 2 November 2020).

[35] See for instance Robert van Den Hoven van Genderen, 'Privacy and Data Protection in the Age of Pervasive Technologies in AI and Robotics' (2017) 3 *European Data Protection Law Review* 338; Christopher Kuner, et al. 'Expanding the Artificial Intelligence-Data Protection Debate' (2018) 8 *International Data Privacy Law* 289; Sam Wrigley, 'Bots, Artificial Intelligence and the General Data Protection Regulation: Asking the Right Questions' (2019) 22 *Trinity College Law Review* 199.

[36] See for instance Colin R Davies, 'An Evolutionary Step in Intellectual Property Rights – Artificial Intelligence and Intellectual Property' (2011) 27 *Computer Law & Security Review* 601; Burkhard Schafer, 'Editorial: The Future of IP Law in an Age of Artificial Intelligence' (2016) 13 *SCRIPTed* 283.

[37] See for instance Ariel Ezrachi and Maurice E Stucke, 'Artificial Intelligence & Collusion: When Computers Inhibit Competition' (2017) 5 *University of Illinois Law Review* 1775; Greg Sivinski, Alex Okuliar, and Lars Kjolbye, 'Is Big Data a Big Deal? A Competition Law Approach to Big Data' (2017) 13 *European Competition Journal* 199.

[38] See for instance Barak Richman, 'Health Regulation for the Digital Age – Correcting the Mismatch' (2018) 379 *The New England Journal of Medicine* 1694; Tokio Matsuzaki, 'Ethical Issues of Artificial Intelligence in Medicine' (2018) 55 *California Western Law Review* 255.

[39] In its 'Policy and Investment Recommendations', the European Commission's High-Level Expert Group on AI made a number of recommendations related to the field of public procurement law (at 20), both as regards enabling the development and deployment of AI (e.g. by using public procurement as an instrument to fund AI-based solutions) and as regards tackling AI's risks (e.g. by introducing selection criteria in the procurement rules and processes requiring AI systems to be trustworthy) (e.g. ensuring that they effectively protect people's personal data, privacy and autonomy).

[40] See for instance Agnieszka Jabłonowska, et al., 'Consumer Law and Artificial Intelligence – Challenges to the EU Consumer Law and Policy Stemming from the Business' Use of Artificial Intelligence' (2018) EUI Working Papers; European Parliament, 'Artificial Intelligence: Challenges for EU Citizens and Consumers' (January 2019), www.europarl.europa.eu/RegData/etudes/BRIE/2019/631043/IPOL_BRI(2019)631043_EN.pdf (accessed 2 November 2020).

protecting goals, they also need to carefully assess to which extent an intervention in these domains is needed, and which impact their intervention in one legal domain might have on another. In other words, a holistic view of the regulatory framework applicable to AI should be borne in mind, without losing sight of regulatory coherency. As a consequence, a meaningful assessment of regulatory competition for AI should ideally consider not merely one area of law, but the regulatory framework as a whole. Such assessment would, however, require much more time and space than this paper allows for, hence the focus here will be limited to regulation directly targeting the development and use of AI in a 'trustworthy' manner.

Trustworthy AI was most notably conceptualised by the European Commission's High-Level Expert Group on AI as an AI-system that is not only 'legal', but also 'ethical' and 'robust'.[41] It has become an increasingly used concept, covering requirements that AI-systems need to meet for instance in terms of transparency, accountability, privacy and non-discrimination.[42] To the extent such requirements are mandatory, they can prevent a company from selling an AI-product or service in that jurisdiction, or alter the conditionality thereof. However, even when merely voluntary in nature, these requirements can still be highly influential if constituting a deal-breaker for customers. The lack of 'trust' in AI-products is ever more highlighted as a component that can be such a deal-breaker – after all, who wishes to invest in or use a technology that cannot be trusted? Furthermore, the lack of trust in AI-systems hampers their uptake and hence their potential benefits. Therefore, the adoption of regulation to ensure 'Trustworthy AI' through various regulatory modalities is prominently on governments' agenda as one of the most direct tools to shape AI stakeholders' behaviour.[43]

The concept of Trustworthy AI is not without controversy. It has, for instance, been argued that trust implies a relationship between peers (namely human beings), and that it should hence not be granted to

[41] In its 'Ethics Guidelines for Trustworthy AI', published in April 2019, the High-Level Expert Group on AI described Trustworthy AI as a foundational ambition, comprised of three components,

> which should be met throughout the system's entire life cycle: (1) it should be lawful, complying with all applicable laws and regulations (2) it should be ethical, ensuring adherence to ethical principles and values and (3) it should be robust, both from a technical and social perspective since, even with good intentions, AI systems can cause unintentional harm.

The European Ethics Guidelines are https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai.

[42] Not only the Commission's High-Level Expert Group's Guidelines, but also the OECD's Recommendations on Ethical AI cover these requirements under the same term. See OECD, 'Recommendation of the Council on Artificial Intelligence' (May 2018) https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449 (accessed 2 November 2020).

[43] See for instance European Commission, 'Building Trust in Human-Centric Artificial Intelligence' (8 April 2019), https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=58496 (accessed 2 November 2020).

machines.[44] Others have noted that the term can be conceptually misleading, given that – within a philosophical context – trust is typically defined as the decision to delegate a task without any supervision regarding the way such task is executed, hence entailing an unwarranted delegation of control.[45] While these arguments raise valid concerns as regards the use of the concept of 'trust' in the context of AI, it should be noted that 'Trustworthy AI' as defined by the above-mentioned Expert Group does not entail the arguments' implications. Instead, the term could easily be – and is frequently – interchanged with 'Responsible AI' or any other term that emphasises the need for adequate oversight and governance mechanisms to ensure that the development and use of AI systems complies with specific legal, ethical and technical requirements.[46] The term itself is hence of less importance than the actual requirements it embodies, as well as the acknowledgment that these requirements concern the behaviour of human beings in the context of AI rather than the systems themselves. As AI-systems are always part of a broader socio-technical environment, their 'trustworthiness' requires the 'trustworthiness' of all actors and processes involved, which also includes the wider context in which the systems are used, their intended purpose, and the business model they are part of.[47]

With the regulatory toolbox for 'Trustworthy AI' in mind, and a better understanding of what this notion entails, we have now paved the way to examine what can be said about the regulatory landscape for AI at the global level. Three questions will be examined: (a) to which extent is it a *possibility* that the regulatory landscape for AI moves towards regulatory competition, (b) to which extent is this already a *reality* and (c) to which extent is either course a *desirability*?

[44] Joanna Bryson, 'AI & Global Governance: No One Should Trust AI' (United Nations University Centre for Policy Research, November 2018), https://cpr.unu.edu/ai-global-governance-no-one-should-trust-ai.html (accessed 2 November 2020); Marisa Tschopp, 'Digital Transformation – Three Wrong Questions about Trust and AI' *Digital-Commerce – Die Post*, 23 September 2020, https://digital-commerce.post.ch/en/pages/blog/2020/trust-in-artificial-intelligence (accessed 2 November 2020).

[45] Mariarosaria Taddeo, Tom McCutcheon, and Luciano Floridi, 'Trusting Artificial Intelligence in Cybersecurity Is a Double-Edged Sword' (2019) 12 *Nature Machine Intelligence* 557.

[46] It should be noted that the term 'Human-Centric AI', which is often mentioned conjunctively with the term 'Trustworthy AI', does not focus as much on (legal, ethical or robustness) requirements that should be met, but instead denotes the fact that AI should be seen as a means to enhance individual and societal human well-being rather than as an end in and of itself. 'Human-Centric AI' can hence be considered as an affirmation of human dignity within this sphere. This is also clarified in the Ethics Guidelines of the High-Level Expert Group on AI (at 37), which notes that a human-centric approach to AI strives to ensure that

> human values are central to the way in which AI systems are developed, deployed, used and monitored, by ensuring respect for fundamental rights, including those set out in the Treaties of the European Union and Charter of Fundamental Rights of the European Union, all of which are united by reference to a common foundation rooted in respect for human dignity, in which the human being enjoys a unique and inalienable moral status.

[47] High-Level Expert Group on AI, 'Ethics Guidelines for Trustworthy AI', 8 April 2019, https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai (accessed 2 November 2020).

3. Regulatory competition: a possibility?

The concept of regulatory competition was first developed by Charles Tiebout in the context of municipalities attracting residents based on local policies.[48] Treating regulation as a commodity, it builds on the idea that competition between different entities with decentralised regulatory power can drive the selection of optimal regulatory measures. By stimulating the experimentation and innovation of regulation through trial and error, such competition – mirrored to the ideal of perfect competition in the market – ideally leads to a discovery of the optimal regulatory measures to accomplish the sought-after aims. Furthermore, under this reasoning, regulatory subjects preferring different aims or regulations can switch towards the regime most suitable to them, akin to a consumer's choice on the market. As governments avidly look for the most appropriate regulation to ensure Trustworthy AI – enabling the technology to deliver its promised benefits while minimising its risks – regulatory competition leading to an outcome with the best possible balance, spurred by a race to the top, sounds rather attractive. But is it feasible?

Literature[49] on regulatory competition indicates a number of necessary conditions for this ideal outcome to arise, including (1) decentralised decision-making power, (2) free information and transparency about the efficiency of various regulatory regimes, (3) the possibility to swiftly change course when a better regulatory solution pops up, (4) and low transaction costs for regulatory subjects (be it persons, companies or goods) to switch jurisdictions. Moreover, (5) the ideal outcome of a race to the top in principle only follows in so far as the regulation that is adopted at the lower level (in this case, national as opposed to global) does not generate significant externalities.[50] Here below, each of the above conditions is briefly discussed in the context of regulatory competition for AI.

First, states still have the competence to develop their own regulations on AI as far as there are jurisdictions concerned. Indeed, no higher instance (such as an international regulatory agency) has yet been created to which such competence has been transferred instead. While a number of international organisations are actively pursuing multilateral consensus on aspects related to Trustworthy AI, as of today, none of these organisations

[48]Charles M Tiebout, 'A Pure Theory of Local Expenditures' (1956) 64 *Journal of Political Economy* 416.
[49]See for instance William W Bratton and Joseph A McCahery, 'The New Economics of Jurisdictional Competition: Devolutionary Federalism in a Second-Best World' (1997) 86 *The Georgetown Law Journal* 201; Catherine Barnard and Simon Deakin, 'Market Access and Regulatory Competition' (Cambridge, April 2001), https://jeanmonnetprogram.org/archive/papers/01/012701.html (accessed 2 November 2020); Claudio M Radaelli, 'The Puzzle of Regulatory Competition' (2004) 24 *International Journal of Public Policy* 1; Young (n 19).
[50]See also Daniel C Etsy and Damien Geradin, 'Regulatory Co-opetition' (2000) *Journal of International Economic Law* 235.

have implemented binding obligations upon states, and none of them can interfere with the decentralised decision-making power of states in this field.

Second, while information about (the efficiency of) respective regulatory regimes in various jurisdictions is accessible in theory, it is far from always transparent in practice. The increasing complexity of regulatory regimes across the globe renders such information opaque, particularly when various areas of regulation (and their intricate interaction with each other) are being considered. Those who can afford the advice of a team of specialised lawyers have quite an advantage in this regard over those who do not – and this holds true not only for regulatory subjects wishing to move from one jurisdiction to another but also for governments aiming to assess and adopt the optimal regulatory regime. It should, however, be noted that several (international) organisations are aiming to enhance transparency on regulatory regimes relating to AI by setting up policy inventories and organised information exchanges.[51]

Third, regulatory agility and flexibility are less present at state level than at Tiebout's originally envisaged municipal level. This is especially the case in federal and supranational regimes, such as the EU where the adoption or revision of regulation requires (not always consensus but at least) cooperation between 27 different Member States. The level of regulatory flexibility is however strongly linked with the nature of the measure that is envisaged, the measure's adoption process, and the regulatory authority that can promulgate it. For instance, the extent to which the measure can be taken by the executive power or by agencies with delegated powers rather than by the legislator has an impact. More generally, the greater the amount of institutional frictions, the slower the decision-making process.[52]

Fourth, from a global perspective, the costs of moving AI resources from one jurisdiction to another (be it AI talent, capital or infrastructure) are unlikely to be negligible. This is especially so for companies developing embedded AI products who typically rely on large factories, but it can also hold true for non-embedded AI producers or service providers in view of the massive energy infrastructures they require for data storage and analysis. Furthermore, legal obstacles might further complicate the possibility to move jurisdictions. As concerns the re-domiciliation of companies, for instance, the ease thereof depends on the re-domiciliation regime in both the originating jurisdiction and destination jurisdiction. As concerns

[51] See in this regard for instance The OECD Artificial Intelligence Policy Observatory, jointly established with the European Commission, https://oecd.ai/ (accessed 2 November 2020).

[52] Of course, speed is not always a good thing, and – normatively speaking – one could argue that slow democracies are still valued higher than swift autocracies. For a more extensive discussion, see e.g. Bryan D Jones, Derek A Epp, and Frank R Baumgartner, 'Democracy, Authoritarianism, and Policy Punctuations' (2019) *International Review of Public Policy*, http://journals.openedition.org/irpp/318 (accessed 2 November 2020).

the relocation of workers – and despite the fact that some regulators aiming to attract AI talent consider adapting their migration policies for this purpose[53] – public discourse is in many countries moving towards a call for tightening (im)migration regimes, rendering it more difficult for regulatory subjects to relocate.

As to the fifth condition for regulatory competition, it is not unlikely that the (non-)adoption of local regulation of AI could lead to negative externalities. Such externalities arise where regulatory actions – or a lack thereof – by one state makes another state worse off, while the first state does not (or only marginally) bears the costs. In principle, if a country decides against the adoption of protective regulation of AI in its jurisdiction (such as imposing a certain level of data quality or respect for privacy), the negative consequences thereof will (also) be felt within its own jurisdiction. Accordingly, it would need to adopt regulation that avoids negative internalities by safeguarding the rights and wellbeing of its own citizens. This, in turn, will also contribute to the avoidance of negative externalities. There are, however, two situations in which this reasoning does not follow. The first is where the AI-system in question is exclusively an export product, and hence its negative consequences are only felt abroad. In such a situation, a country might not feel compelled to take protective measures. Examples hereof concern the use of AI-systems to meddle with foreign elections, to conduct cyber-attacks abroad, or to engage in warfare against foreign states. A second problematic situation arises when the state in question does not consider the consequence to be 'negative'. This can occur when it does not value a certain requirement – for instance individual privacy – in the same way that other states might. In that case too, the necessary incentives to adopt protective regulation might be lacking. In addition, the risk exists that countries are not aware of certain negative internalities or externalities that they ought to tackle – for instance, because they are not easily perceptible or because they are only likely to appear in the longer term. In this regard, the impact that the unbridled use of AI might have on the environment,[54] on human heritage

[53]See Tina Huang and Zachary Arnold, 'Immigration Policy and the Global Competition for AI Talent, Georgetown Center for Security and Emerging Technology (2020), cset.georgetown.edu/research/immigration-policy-and-the-global-competition-for-ai-talent/ (accessed 2 November 2020).

[54]Environmentally hazardous endeavours in State A might have a negative impact on the environment of State B if not appropriately regulated. On AI's environmental footprint, see e.g. Karen Hao, 'Training a Single AI Model Can Emit as Much Carbon as Five Cars in Their Lifetimes' (*MIT Technology Review*, 2019), www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/ (accessed 2 November 2020); Emma Strubell, Ananya Ganesh, and Andrew McCallu, 'Energy and Policy Considerations for Deep Learning in NLP' (2019) 57th Annual Meeting of the Association for Computational Linguistics (ACL), https://arxiv.org/pdf/1906.02243.pdf (accessed 2 November 2020).

and culture,[55] or on the global commons more generally[56] should be considered.

Based on the brief analysis above, the presence of the basic conditions to enable regulatory competition for (Trustworthy) AI, is doubtful. Empirical evidence in this regard would be useful but is currently lacking, rendering it difficult to assess, for instance, the precise ease or difficulty of switching jurisdictional regimes, or the extent of potential negative externalities. Assuming, however, that the conditions are there, and that individual states are indeed set on a 'race to AI', the fear exists that such competition could lead to a 'race to the bottom' rather than a 'race to the top'.[57] Indeed, it has been argued that – spurred by the prospect of profit and pressure from industry – countries could follow the strategy to adopt as little as possible regulation standing in the way of AI's development and economic profit, at the cost of foregoing the protection of individuals and society at large.[58]

4. Regulatory competition: a reality?

In practice, however, this fear does not yet appear to be fully materialised. While countries do seem to be set on a race to AI, such a race is not entirely unqualified, given that 'trust' in AI is increasingly perceived both as a value that is worthy of being pursued as such, and as one that cannot be traded off without economic consequences. Customer trust – whether it concerns a B2B or B2C context – is not only a prerequisite for the adoption of the technology but can also be priced. A study by the Capgemini Research Institute, for instance, indicated that consumers are more loyal to and willing to spend

[55]See for instance the Council of Europe's seminar on culture, creativity and artificial intelligence, and accompanying conclusions on the manner in which AI can impact the human cultural footprint, and the perception of human uniqueness, www.coe.int/en/web/culture-and-heritage/-/e-relevance-of-culture-in-the-age-of-ai (accessed 2 November 2020).

[56]These have also been argued to include cyberspace. See in this regard, for instance, Jeffrey L Caton, 'Beyond Domains, Beyond Commons: Context and Theory of Conflict in Cyberspace' (2012) *4th International Conference on Cyber Conflict* 1.

[57]Importantly, what constitutes the 'top' or 'bottom' rarely boils down to an objective notion, but typically hinges on the normative stance taken by a particular country, including its constitutional framework and (legal) culture. See in this regard e.g. Radaelli (n 49) and Alison J Harcourt, 'Institution-Driven Competition: The Regulation of Cross-Border Broadcasting in the EU' (2007) 27 *Journal of Public Policy* 293. For the purpose of this paper, the bottom denotes a situation whereby the pursuit of AI adoption and innovation steers governments towards leaving citizens (as well as legal entities) unprotected from the risks related to AI, and hence with an increased chance of being unjustly harmed. Conversely, the top denotes a situation whereby appropriate protection is offered from AI's adverse effects, while at the same time ensuring the benefits of the technology.

[58]See for instance Nitasha Tiku, 'Microsoft Wants to Stop AI's 'Race to the Bottom'', (*Wired*, June 2018), www.wired.com/story/microsoft-wants-stop-ai-facial-recognition-bottom/ (accessed 2 November 2020); Sam Biddle, 'Why an "AI Race" Between the U.S. and China Is a Terrible, Terrible Idea' (*The Intercept*, July 2019), https://theintercept.com/2019/07/21/ai-race-china-artificial-intelligence/ (accessed 2 November 2020).

more on companies ensuring ethical AI.[59] This seems to corroborate the EU's mantra that its ethical approach to AI can be a competitive advantage.[60] The role of civil society[61] has been instrumental to help shape this view, and has contributed to the increasing belief by both governmental and industrial actors[62] that the race to AI will in the longer term be benefitted by injecting a proper dose of protective regulation too. Closely linked with this reasoning is also the fear of a technological backlash in the absence of such protection, which seems not only limited to the West.[63]

Of course, this reasoning has not been spared from criticism,[64] particularly in the context of the GDPR – Europe's flagship regulation on data protection which is also highly relevant in the context of AI-systems processing personal data. It has been extensively argued that the GDPR constitutes a competitive disadvantage for Europe, leading it to fall 'even further behind' relative to China and the US when it comes to developing

[59]Capgemini Research Institute, 'Why Addressing Ethical Questions in AI Will Benefit Organisations' (2019), www.capgemini.com/be-en/research-reports/why-addressing-ethical-questions-in-ai-will-benefit-organizations/ (accessed 2 November 2020).

[60]This is for instance clearly found in the European Commission's Communication Building Trust in Human-Centric Artificial Intelligence, mentioned, Commission (n 1): 'Building on its reputation for safe and high-quality products, Europe's ethical approach to AI strengthens citizens' trust in the digital development and aims at building a competitive advantage for European AI companies'. See also the blogpost by Pekka Ala-Pietilä, Chair of the Commission's High-Level Expert Group on AI, stating: 'Ethics and competitiveness go hand in hand. Businesses cannot be run sustainably without trust, and there can be no trust without ethics. And when there is no trust, there is no buy-in of the technology, or enjoyment of the benefits that it can bring,' (2019), https://ec.europa.eu/digital-single-market/en/blogposts/towards-trustworthy-ai-ethics-competitiveness-go-hand-hand (accessed 2 November 2020).

[61]See for instance BEUC, 'Automated Decision-Making and Artificial Intelligence – A Consumer Perspective' (2018), and the joined statement issued by Access Now, BEUC and ANEC, 'AI Ethics Guidance a First Step But Needs to be Transformed Into Tangible Rights for People' (April 2019), www.accessnow.org/ai-ethic-guidance-a-first-step-but-needs-to-be-transformed-into-tangible-rights-for-people/ (accessed 2 November 2020) (all three of which are part of the European Commission's High-Level Expert Group in AI'. See also the report by Algorithm Watch, 'Automating Society Report 2020', (2020), https://automatingsociety.algorithmwatch.org/ (accessed 2 November 2020). This also holds true in the US, where organisations such as the AI Now Institute, an NYU interdisciplinary research institute, have published influential reports about the risks linked to AI, arguing for adequate protection measures by the government (available at: https://ainowinstitute.org/reports.html).

[62]See for instance the individual statements of companies like Microsoft (https://blogs.microsoft.com/on-the-issues/2018/07/13/facial-recognition-technology-the-need-for-public-regulation-and-corporate-responsibility/) or IBM (www.ibm.com/blogs/policy/ai-precision-regulation/), each calling for binding regulation to tackle the risks raised by AI. Moreover, the Policy Recommendations of the European Commission's High-Level Expert Group on AI, which included over 20 companies, explicitly ask regulators to consider the adoption of new legislation for AI-systems with the potential to have a significant impact on human lives, for instance through a mandatory obligation to conduct a trustworthy AI assessment (including a human rights impact assessment); stakeholder consultations; traceability, auditability and ex-ante oversight requirements; and an obligation to ensure by default and by design procedures for effective redress.

[63]See for instance Grace Shao and Evelyn Cheng, 'Growing Backlash in China against A.I. and Facial Recognition' (*CNBC*, 6 September 2019), www.cnbc.com/2019/09/06/ai-worries-about-the-dangers-of-facial-recognition-growing-in-china.html (accessed 2 November 2020).

[64]See for instance, Daniel Castro, 'Bad News, Europe: Consumers Do Not Want to Buy an 'Ethical' Smart Toaster' (*Centre for Data Innovation*, 27 March 2019), www.datainnovation.org/2019/03/bad-news-europe-consumers-do-not-want-to-buy-an-ethical-smart-toaster/ (accessed 2 November 2020).

AI.[65] This criticism, however, did not alter the fact that the GDPR has been one of Europe's most successful regulatory export products,[66] effectively paving the way towards a slow regulatory convergence in this field. Whilst the adoption of similar legislation by other countries has been motivated by various reasons – including not only the importance of privacy, but also the necessity to boost their own capacity to serve Europe's 500 million consumer market – Europe is widely acknowledged to be the regulatory standard-setter when it concerns data protection,[67] and is planning to gain the same status when it concerns Trustworthy AI.[68] Evidently, other world powers are eager to claim their role too.[69]

This development then leads us to the crux of the matter, and to the thesis proposed by this paper: the race to AI is also triggering a race to AI regulation. In this regard, two developments – one at the local level and one at the global level – appear to take place simultaneously.

At the local level, the economic idea of the 'first mover advantage' – whereby companies can gain a competitive advantage on the market by being the first to obtain control of resources or to launch a new product or service[70] – is being transposed to the regulatory arena. In this context,

[65]See for instance M Humerick 'Taking AI Personally: How the EU Must Learn to Balance the Interests of Personal Data Privacy & Artificial Intelligence' (2018) 34 *Santa Clara High Technology Law Journal* 393; Eline Chivot and Daniel Castro, 'The EU Needs to Reform the GDPR To Remain Competitive in the Algorithmic Economy' (*Centre for Data Innovation*, May 2018), www.datainnovation.org/2019/05/the-eu-needs-to-reform-the-gdpr-to-remain-competitive-in-the-algorithmic-economy/ (accessed 2 November 2020).

[66]Indeed, various countries outside the European Union have adopted similar data protection rules, akin to or inspired by the GDPR, which is increasingly being recognised for its high standard-setting in data protection. The European Commission also recognised a number of countries with 'adequate' data protection rules in place (based on the standard of the GDPR), thus enabling the free flow of data to such countries based on an adequacy decision. Even China – a country not traditionally known for its attention to individual's privacy – has recently published a draft regulation setting out limitations on the transfer of personal data outside of China (though this renewed attention for personal data protection is likely also functioning as a guise for domestic protectionism, data being seen an essential commodity in the AI race). See also Mark Scott and Laurens Cerulus, 'Europe's New Data Protection Rules Export Privacy Standards Worldwide' (*Politico*, January 2018), www.politico.eu/article/europe-data-protection-privacy-standards-gdpr-general-protection-data-regulation/ (accessed 2 November 2020).

[67]See for instance Beata A Safari, 'Intangible Privacy Rights: How Europe's GDPR Will Set a New Global Standard for Personal Data Protection' (2017) 47 *Seton Hall Law Review* 809; Laima Jančiūtė, 'EU Data Protection and 'Treaty-Base Games': When Fundamental Rights are Wearing Market-making Clothes' in Ronald Leenes, Rosamunde van Brakel, Serge Gutwirth, and Paul De Hert (eds), *Data Protection and Privacy – The Age of Intelligent Machines* (Hart Publishing 2017).

[68]The statement made by German Chancellor Angela Merkel in June 2019 at the G20 summit in Japan ('It will be the job of the next Commission to deliver something so that we have regulation similar to the General Data Protection Regulation that makes it clear that artificial intelligence serves humanity') is telling in this regard.

[69]See also two recent pieces in *The Atlantic* on the global developments regarding regulation of cybersecurity and data respectively: Samm Sacks, 'Beijing Wants to Rewrite the Rules of the Internet' (*The Atlantic*, 18 June 2019), www.theatlantic.com/international/archive/2018/06/zte-huawei-china-trump-trade-cyber/563033/ and Samm Sacks and Justin Sherman, 'The Global Data War Heats Up' (*The Atlantic*, 26 June 2019), www.theatlantic.com/international/archive/2019/06/g20-data/592606/ (accessed 2 November 2020).

[70]See for instance Marvin B Lieberman and David Montgomery, 'First Mover Advantages' (1988) 9 *Strategic Management Journal* 41; Rajan Varadarajan, Manjit Yadav, and Venkatesh Shankar, 'First-Mover

and with the example of Europe's GDPR still fresh in mind, countries that are the first to adopt regulation on the development and use of AI could arguably gain an advantage over others. The reasoning goes as follows: if country A adopts new regulatory requirements for AI-systems, domestic companies will start learning to abide thereby by necessity. Moreover, any foreign company based in country B that still wishes to serve the market of country A,[71] will need to start abiding thereby too. The companies of country B will however incur costs to ensure compliance with the requirements of country A, a cost that companies in country B who only serve the domestic market do not carry. They will therefore try to eliminate that domestic disadvantage by lobbying the government of country B to adopt similar requirements, ensuring that domestic companies have an equally high burden of regulatory compliance. As a consequence, country B will ultimately adopt similar requirements as country A, but it will be a rule-taker rather than a rule-setter, and its domestic companies will still need to catch up with the new requirements while the companies of country A will already have internalised the relevant costs.

Given its announcement to introduce new binding legislation on AI's ethical aspects – building on the work of the High-Level Expert Group on AI that published AI Ethics Guidelines in April 2019[72] – the EU seems to be moving from a governance approach based on voluntary guidelines towards binding legislation to secure Trustworthy AI. Amidst the wider awakening of countries to the importance of tackling AI's ethical challenges, and in light of the above reasoning, this announcement appears to indicate the intention to enjoy a first mover advantage in this regulatory field.

Europe has, however, not been the only regulatory power to claim a role in AI's governance. Japan,[73] Canada,[74] China,[75] Dubai,[76]

Advantage in an Internet-Enabled Market Environment: Conceptual Framework and Propositions' (2008) 36 *Journal of the Academy of Marketing Science* 293.

[71] Note that this reasoning presupposes a large (and hence attractive) a consumer market which is open to foreign trade. The fact that those conditions are fulfilled in Europe is to the benefit of the GDPR's success. See in this regard also Young (n 19).

[72] Available at https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai.

[73] See the Ethical Guidelines developed by the Japanese Society for Artificial Intelligence in 2017, www.ai-elsi.org/wp-content/uploads/2017/05/JSAI-Ethical-Guidelines-1.pdf, as well as the more recent Social Principles of Human-Centric AI published by the Cabinet Office of the Japanese government in March 2019, www8.cao.go.jp/cstp/english/humancentricai.pdf.

[74] Together with the European Ethics Guidelines for Trustworthy AI, the Montreal Declaration on Responsible AI has been another example of a multi-stakeholder approach towards the creation of ethical guidelines for AI, which also underwent a wide consultation. The Declaration can be accessed (and joined): www.montrealdeclaration-responsibleai.com/.

[75] The Beijing Principles for Ethical AI, published in May 2019, are www.baai.ac.cn/blog/beijing-ai-principles. China has also put itself at the forefront of UNESCO's work on AI in Education. It hosted UNESCO's ministerial conference on the subject in Beijing in May 2019, which resulted in the 'Beijing Consensus on AI and Education', also emphasizing the ethical and human rights implications of AI in this field.

[76] Dubai developed an Ethical AI Toolkit in the framework of its 'Smart Dubai' initiative, including a self-assessment tool for AI developers and operators, www.smartdubai.ae/self-assessment.

Singapore[77] and Australia[78] – to name but a few – have also published (draft) ethics guidelines for AI, signalling to their own companies that building trust is important to secure the technology's long term development and acceptance, but also signalling to the rest of the world that they are taking steps to ensure their products can be trusted – also abroad. While, until today, none of these countries have taken a stance as strong as the EU's promise to bring forth new binding legislation in the field, it is not unlikely that some will follow suit.

The proliferation of national ethics guidelines (complemented by many private and non-governmental initiatives with a similar scope) has been accompanied by a second development, this time at the global level: regulatory convergence. The realisation that many of AI's challenges are global in nature, and the enhanced attention for these challenges across the world, has driven countries to sit around the same table at various international fora. Besides the emergence of bilateral cooperation around AI governance issues (such as for instance by EU-Japan,[79] France-Canada[80] or Germany-India[81]), multilateral initiatives to work towards common regulatory standards are likewise abundant.

In May 2019, the OECD member states along with six partner countries adopted common ethics principles on AI. The adoption followed a drafting exercise by an expert group including representatives of Member States, and constituted 'the first set of intergovernmental policy guidelines on AI, agreeing to uphold international standards that aim to ensure AI systems are designed to be robust, safe, fair and trustworthy'.[82] The OECD guidelines heavily rely on the concept of 'Trustworthy AI' as developed by the European Commission's High-Level Expert Group on AI, which is not surprising given that the Commission itself was one of the OECD's expert group members.

[77] In January 2019, Singapore's Personal Data Protection Commission (working under its Minister for Communication and Information) published a 'Proposed Model Artificial Intelligence Governance Framework'. Singapore's Monetary Authority had already published a more tailored document with 'Principles to Promote Fairness, Ethics, Accountability and Transparency (FEAT) in the Use of Artificial Intelligence and Data Analytics in Singapore's Financial Sector' in November 2018.

[78] Australia published a Discussion Paper on an Ethics Framework for AI in April 2019, with the aim to inform the Government's approach to AI ethics in Australia. The paper was submitted to an open consultation and is: https://consult.industry.gov.au/strategic-policy/artificial-intelligence-ethics-framework/.

[79] See Commission, 'Strengthening EU-Japan Cooperation in Artificial Intelligence, Research and Innovation' (3 May 2019), https://ec.europa.eu/commission/commissioners/2014-2019/ansip/announcements/joint-statements-vice-president-andrus-ansip-and-commissioner-carlos-moedas-takuya-hirai-japans_en, indicating Joint Statements made by Vice-President Andrus Ansip and Commissioner Carlos Moedas with Takuya Hirai, Japan's Minister of State for Science and Technology Policy.

[80] See the announcement by the French government in this regard from 17 May 2019, www.gouvernement.fr/en/artificial-intelligence-canada-and-france-work-with-international-community-to-support-the.

[81] See the recent announcement by the Indian press in this regard: https://economictimes.indiatimes.com/news/politics-and-nation/india-germany-to-explore-partnership-in-ai-during-merkel-modi-meet/articleshow/71760304.cms.

[82] For more information on the OECD's principles, see: www.oecd.org/going-digital/ai/principles/.

Only a month later, in June 2019, the G20 – including jurisdictions as diverse as the EU, the US, China and Russia – formally endorsed a set of ethics principles for AI, drawing on the work of the OECD.[83]

Other fora have not been sitting still either. Earlier in 2019, UNESCO already announced it would also start working on a 'comprehensive global standard-setting instrument to provide AI with a strong ethical basis', claiming its role in the international AI regulatory arena.[84] Furthermore – and going further – in September 2019 the Council of Europe established an ad hoc committee on AI (CAHAI) with the specific task to examine the feasibility of creating 'a legal framework for the development, design and application of artificial intelligence, based on the Council of Europe's standards on human rights, democracy and the rule of law'.[85] It is the first multilateral organisation (barring the EU which has a *sui generis* supranational status) to announce its intention to examine the adoption of binding rules for AI.

At the same time, countries are also stepping up their efforts in international standardisation bodies, which are increasingly including the 'ethical' aspects of AI into their standard-setting scope. China's national AI strategy clearly sets out its intention to actively partake in standard-setting processes in AI-driven sectors. However, this also counts for the US – relying for this purpose particularly on its National Institute of Standards and Technology (NIST) – and the EU, who likewise indicated its aim to contribute 'to relevant standardisation activities in international standards development organisations to promote this [its] vision'.[86]

These international organisations have effectively become new battlegrounds for standard-setting, whereby the worlds' regulatory powers are pushing for the adoption of their home-grown standard as *the* global standard, aiming to secure a competitive advantage for their (already adapted) domestic actors.[87] Interestingly, then, the trend towards regulatory convergence is likewise creating an opportunity for regulatory competition within these harmonising organisations. The creation of a standards subcommittee for AI by the ISO/IEC Joint Technical Committee for IT, for

[83] See the G20 Ministerial Statement on Trade and Digital Economy of June 2019, https://g20trade-digital.go.jp/dl/Ministerial_Statement_on_Trade_and_Digital_Economy.pdf.

[84] A first draft of the standard-setting instrument, in the form of a normative Recommendation on the Ethics of Artificial Intelligence, was published on 7 September 2020 and is https://unesdoc.unesco.org/ark:/48223/pf0000373434.

[85] See Council of Europe, 'Terms of Reference for the Ad Hoc Committee on Artificial Intelligence (CAHAI)', 11 September 2019. See also the CAHAI's first progress (CM(2020)90-final), adopted by the Council of Europe's Committee of Ministers on 23 September 2020, setting out the draft table of contents of the feasibility study, https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016809ed062 (accessed 2 November 2020).

[86] European Commission, 'Building Trust in Human-Centric AI' (Communication) COM(2019) 168 final (8 April 2019).

[87] See Alan Beattie, 'Technology: How the US, EU and China Compete to Set Industry Standards' (*Financial Times*, 24 July 2019), www.ft.com/content/0c91b884-92bb-11e9-aea1-2b1d33ac3271 (accessed 2 November 2020).

instance, sparked a battle for leadership between China and the US,[88] as each country recognised the influence that such standard – even if voluntary – could have on the market position of its domestic companies. Also fora such as the IEEE (mainly industry driven) and ITU (mainly state driven) seem to be strategically used by governments to take the lead in AI standard-setting.[89]

In light of the above, it thus appears that – in reality – the regulatory landscape for AI is trending towards at least a basic layer of convergence. Given the highly globalised and interdependent world economy, the common interest by countries to not only build but also export AI products and services, as well the common aim to ensure the minimisation of the technology's harm to citizens, this is not entirely surprising. While individual states are certainly not shying away from protectionist approaches in the name of protecting national sovereignty and security,[90] the ruthless race to the bottom may thus – at least for now – not be the only strategic route. Instead, while heavily competing for regulatory and standard-setting leadership within international fora, governments' regulatory approaches to secure Trustworthy AI are slowly converging. The question then remains: is this trend desirable?

5. Regulatory competition: a desirability?

Bearing in mind the significant risks that the use of AI can bring forth, for instance in terms of adverse impacts on fundamental rights and democracy, a converging approach towards global requirements that is able to tackle those risks seems to be a welcome development. As people throughout the world are increasingly interacting with AI applications in their day-to-day activities, it is essential that governments take the necessary steps to

[88] Jinghan Zeng, Tim Stevens, and Yaru Chen, 'China's Solution to Global Cybergovernance: Unpacking the Domestic Discourse of "Internet Sovereignty"' (2017) 45 *Politics & Policy* 432; Peter Cihon, 'AI & Global Governance: Using International Standards as an Agile Tool for Governance' (*Digital Technology and Global Order*, 8 July 2019), https://ourworld.unu.edu/en/ai-and-global-governance-using-international-standards-as-an-agile-tool-for-governance (accessed 2 November 2020).

[89] *Ibid*. See also Beattie (n 87).

[90] While not the focal point of this paper, it can be noted that states can also use regulation as a competitive tool to advance their own (economic) position and/or explicitly disadvantage others, for instance by imposing domestic procurement obligations or blocking international data transfers. This does concern the traditional phenomenon of 'regulatory competition' whereby countries compete by adopting the most attractive regulatory policies, but can be rather captured as 'competition by regulation', whereby regulation can be used as an economic weapon. The recent 'trade war' between China and the US has for instance been exemplary in this regard, with regulatory measures ranging from tariff increases, inventive uses of anticorruption laws, to an outright ban on US companies to purchase goods from Chinese company Huawei. See also Louise Moon and Chad Bray, 'Donald Trump's Huawei ban is a more severe threat to global economy than trade war tariffs, economists say', (*South China Morning Post*, 24 May 2019), www.scmp.com/business/companies/article/3011676/trumps-huawei-ban-more-severe-threat-global-economy-trade-war (accessed 2 November 2020).

ensure they are not unjustly harmed thereby, or that any risk of such harm is at the very least minimised. While the regulatory toolbox that governments can use is vast, the calls to address (some of) those risks through regulation by law – indicating scepticism towards the competence of other regulatory modalities such as the market, social norms, and technological design to fulfil the same role – are increasing.

From the perspective of those impacted, convergence can make sure that, wherever in the world one dwells, there are some basic safeguards that can be relied upon. From the perspective of governments, convergence can also establish a level playing field among states, ideally ensuring that no country will forego the adoption of – potentially economically more costly – protective measures in exchange for profit, and hence that no country single-handedly sets in motion a detrimental race to the bottom. In other words, drawing on game theory, the adoption of commonly agreed standards can help maintaining a regulatory equilibrium across states. However, this envisaged equilibrium begs two important questions: (1) at which level is it situated and (2) how stable is it?

Firstly, an equilibrium that only consists of the bare minimum level of safeguards against AI's risks should not be seen as a victory. The search for a consensus between countries with different values might in practice come down to a search for the lowest common denominator of safeguards that each state around the table – even the one with the least protective standards – can live with. This may, in turn, lead to an overall lowering of protection standards for the sake of multilateral agreement, which would not be good news for those adversely affected by the technology. Consequently, regulatory convergence can be deemed desirable only to the extent it leads to an equilibrium that offers an appropriate level of protection to secure respect for fundamental rights, democracy and the rule of law. In addition, such convergence should retain the possibility and incentive for individual countries to adopt a higher level of protection than the commonly agreed standard, at least as regards their own jurisdictions.

Secondly, even if we assume that the equilibrium meets the above conditions, its stability is a non-negligible matter. Given the substantial political interests that are at play in the global race for AI, the equilibrium's stability hinges heavily on the presence or absence of political stability. Evidently, concrete and binding rules – tied to an effective enforcement mechanism in case a state deviates therefrom – will offer more stability than vague or voluntary guidelines. Between these two extremes, more than fifty shades of other solutions exist that states could use to maintain the equilibrium. Of course, even the most binding standards and agreements can be breached, especially in areas where state sovereignty is deemed a priority – such as, for instance, military applications. Nevertheless, the possibility to impose sanctions – coupled with pressure from the national and international

community to comply – could decrease the chance of such breach and would hence be a desirable stabilising feature.[91]

At this stage, though steps in the right direction are being made, any global consensus on a binding set of rules to ensure AI's trustworthiness is still far off. However, if it could be ensured that such consensus is reached (whether through explicit harmonisation or more implicitly through the individual adoption of converging regulation), and if those converging regulatory standards would be sufficiently protective and stable, would that turn the desirability of convergence over competition into a no-brainer? Not quite yet. At least two plausible arguments against convergence are worth considering.

The first concerns the fact that the creation of AI-focused regulation is still at an early stage. AI may not be a new technology,[92] but the increasingly pervasive use thereof is still relatively new. Furthermore, the impacts it can have on us as individuals, groups and societies – and particularly the negative ones – in the shorter and longer term are still uncertain and not yet fully understood. Just as we are still struggling to grasp those impacts, we are also still struggling to understand how regulation – in its broadest sense – can help us deal therewith and what its effects will be. In its policy recommendations, the European Commission's High-Level Expert Group on AI described it as follows: '[…] little evidence is available to inform policy-making, due to the novelty of the technology, the lack of thorough and systematic understanding of its impacts and associated business models, and the unpredictability of its uptake, development and evolution even in the short term'.[93] While academic researchers, civil society organisations and other stakeholders have significantly boosted their efforts to gather evidence in this regard and develop a more comprehensive mapping of the consequences ensuing from (a lack of) AI regulation, information gaps remain.

Against this background, should the adoption of certain regulatory requirements have unforeseen substantial negative effects, these will be felt at a much larger scale and will be arguably more difficult to correct if adopted through harmonisation. In other words: if we would get it wrong,

[91] It can be noted that the stability of international cooperation frameworks on (normative standards for) AI can also depend on the extent to which the countries that engage in cooperation are competing on the global AI market while sharing certain societal and economic values, or whether they are also competing at the level of value-systems. See in this regard Pekka Ala-Pietilä and Nathalie A Smuha, 'A Framework for Global Cooperation on Artificial Intelligence and Its Governance', forthcoming in B Braunschweig and M Ghallab (eds), *Reflections of AI for Humanity* (Springer, 2021), SSRN: https://ssrn.com/abstract=3696519.

[92] The term Artificial Intelligence was famously coined in 1956 at a workshop held in Dartmouth College. Since then, the field of research of AI has known several waves of success, and consecutive 'winters' during which the interest and investment in AI research declined. For a historical overview, see e.g. Nils John Nilsson, *The Quest for Artificial Intelligence* (Cambridge University Press, 2009).

[93] AI HLEG, 'Policy Recommendations for Trustworthy AI' (June 2019), https://ec.europa.eu/digital-single-market/en/news/policy-and-investment-recommendations-trustworthy-artificial-intelligence, 37.

we would get it wrong across the globe. Yet even if we would not get it wrong, but we could get it better, there would not be a competing model out there that can potentially show these better results. The benefits of experimentation through trial and error, of flexibly adopting a different approach if the first one did not yield the expected results, would be much more difficult to achieve in a setting that is harmonised – especially if that setting would contain dissuading sanctions for deviations. Under such reasoning, an approach whereby regulators can learn as they go and have the space to test out different and potentially competing models of regulation – hoping that this could ultimately lead to a discovery of the best regulatory results – would not be possible. Of course, such an approach would not only require affordable testing time but would also need to ensure that the (societal) costs attached to non-intervention or to getting it wrong are not prohibitive.[94] In short: when opting for a harmonised approach, the margin for regulatory competition at state level – and for the benefits that a potential race to the top could provide – decreases.

A second argument can be made in order to caution against regulatory convergence at the global level, in favour of more diverse regulation. The economic, social, legal and political situation of countries strongly differ. Hence, the manner in which countries will be affected by AI – both in positive and negative ways – will inevitably differ as well. While the impact of AI could lead to a global boost in economic growth, its benefits are likely to be distributed unevenly among states.[95] AI can undoubtedly help developing countries to improve their food production processes, education systems and health services, yet at the same time, it can widen the gap between developed and developing countries.[96] It has been argued that in particular AI's impact on labour will be felt differently in the developing world, given the dependence of such economies on jobs that are more easily automated.[97] Moreover, besides increasing inequality amongst countries, AI can also exacerbate inequalities within countries, whereby once again an uneven

[94]Regulatory competition on tax rates to attract citizens towards a municipality, is slightly different from regulatory competition on requirements to ensure that AI-systems do not illegally discriminate with regard to loan applications, do not disproportionally infringe on people's privacy or do not diagnose the wrong disease.

[95]A study by PWC, for instance, indicates that North-America and China will likely see the biggest economic gains from AI in percentage terms. See PWC, 'The Macroeconomic Impact of Artificial Intelligence' (February 2018), www.pwc.co.uk/economic-services/assets/macroeconomic-impact-of-ai-technical-report-feb-18.pdf (accessed 2 November 2020).

[96]See for instance McKinsey Global Institute, 'Notes from the AI Frontier – Modeling the Impact of AI on the World Economy' (September 2018). See also Shakir Mohamed, Marie-Therese Png, and William Isaac, 'Decolonial AI: Decolonial Theory as Sociotechnical Foresight in Artificial Intelligence' (2020) *Philosophy & Technology*, doi:10.1007/s13347-020-00405-8.

[97]See for instance Martin Ford, *Rise of the Robots: Technology and the Threat of a Jobless Future* (Basic Books, 2016). See also Mary L Gray and Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Boston: Houghton Mifflin Harcourt, 2019). A slightly more nuanced view is offered in the Research Paper of the ILO, 'The Economics of Artificial Intelligence: Implications for the Future of work' (2018).

impact can be expected in developed and developing countries.[98] Indeed, research seems to indicate that low- and middle-income countries could be more vulnerable to the negative social impacts of AI.[99] In light thereof, depending on the issue at stake, it may be more appropriate for countries to adopt different regulatory approaches to AI, tailored to their specific problems and needs, rather than overly harmonising regulation (especially if such harmonised regulation would be modelled solely to the situation in developed countries). AI's diverse impacts are likely to require a diverse set of regulatory approaches, which early convergence or harmonisation could potentially hamper.

Neither of the two arguments above against regulatory convergence are, however, conclusively dismissive thereof. Rather, they emphasise the idea that, when it comes to the desirability of regulatory competition or convergence, a black or white approach is not only overly simplistic but also ineffective. Indeed, given the many regulation areas that impact the development and use of AI, and given the many regulatory approaches that can be taken within those areas, it is sensible to assume that some aspects would benefit from global convergence or harmonisation with meaningful requirements, while others would not. For instance, those areas that are prone to lead to negative cross-border externalities when left unregulated can more easily be identified as requiring international cooperation and regulatory harmonisation, while others can be more innocuously left to national regulatory competition. In this regard, the respective mandates and competences of intergovernmental organisations should likewise be considered. Furthermore, a base layer of harmonisation that functions as a common normative framework could also open the door towards (beneficial) regulatory competition within that framework, if only by enhancing transparency, which is one of the necessary conditions thereto, and by establishing a regulatory level playing field.[100]

Consequently, in view of the inherent complexity of a globalised world with national diversity, a model of *regulatory co-opetition*[101] that acknowledges the need for a combination of competition and cooperation, appears more appropriate. As literature on regulatory competition also has clarified,[102] it is too simplistic to perceive the option between regulatory

[98]See for instance Mark Muro and Robert Maxim, 'Big Tech's Role in Regional Inequality', (*Brookings*, 9 October 2018), www.brookings.edu/blog/the-avenue/2018/10/09/big-techs-role-in-regional-inequality/ (accessed 2 November 2020).

[99]Alexa Hagerty and Igor Rubinov, 'Global AI Ethics: A Review of the Social Impacts and Ethical Implications of Artificial Intelligence' (July 2019), https://arxiv.org/abs/1907.07892 (accessed 2 November 2020).

[100]See Radaelli (n 49). See in this regard also Ala-Pietilä and Smuha (n 91).

[101]See Etsy and Geradin (n 50).

[102]See for instance Ao Sykes, 'Regulatory Competition or Regulatory Harmonisation? A Silly Question?' (2000) 3 *Journal of International Economic Law* 257; Radaelli (n 49).

competition versus convergence as necessarily binary. Whilst such distinction in approaches can provide a useful framework to conceptualise certain trends, reality is far richer than what can be grasped thereby, especially when discussing regulatory competition at the global level.[103] The focus should hence shift away from a dualistic choice, towards identifying those areas that are more suited for a converging approach, and those areas that would rather benefit from a diverse set of competing regulations. Being the multi-purpose technology that it is, perhaps AI could even be used to help pinpoint those areas, and hence assist regulators in their quest for an adequate regulatory approach to AI.

6. Conclusion

Regulators across the world have put AI on top of their strategic agendas, set on reaping its benefits for their economies and societies, and triggering a global competition for AI along the way. Yet the significant risks brought forth thereby render it primordial, not only for the sake of harm minimisation but also for AI's acceptance by society, that appropriate measures be put in place to ensure it is designed, developed and used in a trustworthy manner. To achieve the dual goal of enabling AI's opportunities and minimising its risks, regulators have an entire regulatory toolbox at their disposal. Given the increased pervasiveness of AI – and hence of the risks it can entail – it is only normal to expect from regulators that they use this toolbox in the best possible manner so as to (re)shape the technology that in so many ways already started to (re)shape us. An examination of some of the obstacles that regulators face when tempted to adopt AI-specific regulation has revealed that the multitude of AI-applications and their distinct challenges will necessitate tailored policies on the one hand, and a holistic regulatory approach on the other, with due attention to the interaction between the various legal domains that govern AI.

Recent developments at local and global level seem to indicate that the race to AI is not unqualified, as trading off trust over economic benefits is increasingly recognised as hampering AI's benefits in the long run. This allows for cautious optimism for all those fearing an immediate regulatory race to the bottom. However, while regulators are rushing to adopt their own set of requirements for Trustworthy AI, today these are still primarily based on voluntary guidelines and hence not enforceable when actual harm ensues. Whether through competition or convergence, it is the responsibility of regulators – together with all stakeholders involved – to ensure that any race to AI also brings forth a race to AI regulation and that such a race

[103]See also Etsy and Geradin (n 88); J Samuel Barkin, 'Racing All Over the Place: A Dispersion Model of International Regulatory Competition' (2015) 21 *European Journal of International Relations* 171.

will lead to a coherent regulatory framework for AI with meaningful and enforceable safeguards for human rights, democracy and the rule of law.

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