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DESIGNING INNOVATION- FRIENDLY REGULATION

ISSUE PAPER

September 2026

Zach Meyers

Alexandre de Streel

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info@cerre.eu – www.cerre.eu



Executive Summary

Europe's renewed focus on competitiveness has intensified debate about the **relationship between regulation and innovation**. Critics argue that the European Union's extensive regulatory framework imposes costs that discourage investment, slow technological development, and contribute to Europe's weak performance in creating globally competitive technology firms. Others contend that regulation is itself an important industrial policy instrument: one capable of creating markets, building trust in new technologies, co-ordinating investment, and shaping global standards through the so-called 'Brussels Effect'.

This paper argues that **the relationship between regulation and innovation is not inherently positive or negative – it depends on the circumstances in which regulation is adopted and its design**. When it targets genuine market failures, well-designed regulation can increase innovation, for example by de-risking innovation and improving competition, which is an important driver of innovation. Poorly designed regulation can instead raise barriers to entry, entrench incumbents, divert resources into compliance, and discourage experimentation.

Drawing on economic literature, the paper identifies the circumstances in which regulation is most likely to enhance innovation. **Regulation is most likely to succeed where it addresses identifiable market failures that markets cannot resolve efficiently on their own**. This includes situations where dominant firms suppress competition and follow-on or disruptive innovation; where co-ordination failures prevent complementary investments from taking place; where externalities or systemic risks lead markets to underinvest in strategically important technologies; and where regulation can legitimately shift competition towards dimensions such as quality, safety, resilience, or trust that reflect Europe's comparative strengths. However, **regulation can only stimulate innovation where firms have credible pathways towards creating and adopting alternative technologies or business models**. Regulation that merely increases the costs of existing activities, without creating viable alternatives, is unlikely to improve productivity or competitiveness.

The paper also argues that policy makers have often overstated the relationship between regulation and industrial policy. **While the Brussels Effect has sometimes successfully exported European regulatory standards around the world, this has not consistently translated into stronger European industries**. In some sectors — including chemicals and green technologies — European firms have benefited from stringent regulation that rewarded capabilities in which they already enjoyed comparative advantages. In others, and particularly in digital technologies, regulation has often exported European rules without producing globally competitive European firms. Policy makers should therefore be cautious about assuming that regulatory leadership automatically generates industrial leadership.

Whether regulation ultimately promotes innovation depends on regulatory design. Evidence suggests that regulation is most innovation-friendly when it combines ambitious objectives with flexibility over how firms achieve them. Excessively weak regulation may impose compliance costs without changing behaviour, while excessively stringent regulation can deter investment or drive firms from the market altogether. **Effective regulation therefore requires careful calibration of regulatory stringency, credible transition pathways, sufficient implementation periods, and institutional arrangements that allow regulators to learn and adapt as technologies evolve**.



These considerations are particularly important in digital markets, where technological trajectories are uncertain and innovation is often driven by new entrants rather than incumbents. In such environments, overly prescriptive regulation risks locking in existing technologies or business models and reducing experimentation. **Greater reliance on principles-based regulation, combined with meaningful regulatory guidance and dialogue**, can help encourage firms to pursue innovative approaches.

Achieving these outcomes also requires institutional reform. Regulators need stronger incentives to consider innovation alongside their traditional objectives, greater technical capability to understand rapidly evolving technologies, and accountability for delivering regulatory outcomes that support long-term competitiveness. Guidance should function as a genuine safe harbour rather than becoming de facto mandatory rules, while regulatory dialogue should provide firms with meaningful opportunities to obtain clarity and resolve uncertainty before innovations reach the market. Equally, firms must engage constructively with regulators rather than treating compliance solely as an adversarial exercise.

The paper rejects both deregulation as a general solution to Europe's competitiveness challenge and the assumption that regulation is inherently an engine of innovation. Instead, it proposes a more disciplined framework for designing innovation-friendly regulation. If Europe wishes regulation to become a genuine instrument of industrial strategy, greater attention must be paid not only to whether it regulates, but to what it regulates, when it intervenes, and how regulatory institutions operate in practice.



Table of Contents

EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	3
1. INTRODUCTION	4
2. REGULATION AND INNOVATION	6
2.1 A NUANCED RELATIONSHIP	6
2.2 WHEN DOES REGULATION ENHANCE INNOVATION?	7
3. CHOOSING THE RIGHT ECONOMIC ACTIVITIES	10
3.1 MARKET POWER.....	10
3.2 CO-ORDINATION FAILURES	12
3.3 EXTERNALITIES AND RISK.....	13
3.4 SHIFTING THE METRICS OF COMPETITION	14
3.5 ENSURING INNOVATION PATHWAYS.....	15
3.6 LESSONS FOR POLICY MAKERS	17
4. REGULATORY DESIGN	19
4.1 REGULATORY STRINGENCY	19
4.2 TRANSITION PLANNING.....	21
4.3 FLEXIBILITY AND CERTAINTY	23
4.4 REGULATORY GUIDANCE AND DIALOGUE	24
5. HOW TO GET THERE: IMPROVING ABILITY AND INCENTIVES.....	26
5.1 ABILITY AND INCENTIVES OF THE REGULATORS	26
5.2 ABILITY AND INCENTIVES OF THE REGULATED FIRMS.....	28
6. CONCLUSION	30
ABOUT CERRE.....	31
ABOUT THE AUTHORS	32



1. Introduction

The debate about the **relationship between regulation and local innovation in Europe is highly polarised**.¹ The European Commission has long argued that regulation can serve an important role in promoting the invention and take-up of new technologies in Europe, by:

- Setting common standards in Europe;
- Promoting a single European market;
- Helping to build trust in technology; and
- Through the Brussels Effect² – setting global standards which are suited to the strengths of European suppliers.

On the other hand, there is a growing view that the costs and constraints which regulation often imposes on firms, particularly the smaller ones which can often have more innovative potential, exceed its benefits in unlocking opportunities.³ Critics frequently argue that Europe – with its greater propensity to regulate than the US – risks becoming merely a “regulatory superpower” while falling behind in the development of globally competitive firms. On this view, a European industrial policy to support innovation would require regulation to be drastically scaled back.

The **geopolitical context surrounding European regulation has made the role of regulation even more vexed**.

On the one hand, the EU faces growing pressure from the US — including from major technology firms and threats by the US administration itself — to water down regulatory approaches perceived as constraining innovation. However, these players presumably primarily have innovation by US — rather than European — firms at heart. Furthermore, the laissez-faire US approach seems to ignore regulation’s role in actively shaping the path and direction of innovation, instead wrongly assuming that all innovation must be good for society, and therefore that any constraint on whatever technologies or ideas would occur in a perfectly free market is anti-innovation.⁴

This has in turn catalysed resistance to deregulation and strengthened the view among many European policy makers that regulation should not be understood solely as a defensive instrument, but also as **a strategic economic tool capable of shaping markets and strengthening Europe’s industrial position**. This has contributed to a growing willingness within parts of the European policy community to use regulation strategically — including, in certain cases, to the detriment of principles of better regulation — to support European technological ecosystems and reduce dependence on non-EU providers. In sectors such as cloud computing, AI, semiconductors, and platforms, regulation is

¹ In this paper by ‘regulation’ we primarily discuss rules which impose minimum standards on goods and services or directly regulate behaviour in the market in question. This can be distinguished from other rules that impact innovation indirectly, for example tax, subsidies, rules on access to capital and bankruptcy.

² Anu Bradford, *The Brussels Effect: How the European Union Rules the World* (Oxford University Press 2020).

³ Mario Draghi, *The Future of European Competitiveness* (European Commission, September 2024). One notable exception is regulation which removes or lightens costs or barriers, such as section 230 of the Communications Act 1934 (US) (introduced in 1996), which provides immunity to online platforms with respect to content generated by their users. A similar (but more conditional) exemption from liability exists in the EU’s Digital Services Act.

⁴ See Pierre Larouche and Yingchao Yu, who describe innovation (as opposed to invention) as requiring “*a positive impact of that invention on society upon diffusion and adoption, so that the resulting innovation is in line with fundamental rights and public policy*”: Pierre Larouche and Yingchao Yu, ‘Between Permission and Protection: AI as a Challenge to Established Approaches to Law and Innovation’ (SSRN Working Paper No 4981681, 3 September 2024).



increasingly designed not only around consumer protection and market efficiency, but also to actively promote European investment in high-tech sectors. In this debate, there is a growing risk that regulation is captured by industrial interests: protecting and furthering the interests of certain firms rather than of Europe as a whole. Particularly where these firms are incumbents, regulation which aims to stoke European innovation can very easily – by limiting competition and providing protection – end up stifling it.

On the other hand, the EU's imperative to restore competitiveness calls for a policy framework that is more conducive to innovation. This does not necessarily imply deregulation. On the contrary, well-designed regulation can be a powerful driver of innovation, particularly when it promotes competition and facilitates market entry, as discussed below. There is, however, a risk that the current focus on competitiveness and innovation may be used by some firms to advocate for the removal of regulations that promote competition. Where arguments for deregulation are pursued primarily by large incumbents, but are opposed by smaller and younger firms, these arguments should be assessed critically.



2. Regulation and Innovation

2.1 A Nuanced Relationship

The **debate over whether regulation promotes or stifles innovation demands nuance**.⁵ Regulation, of course, can **create costs for regulated firms**. Those costs might divert resources away from research and innovation, create barriers to entry, and cement the position of incumbent firms and sectors, softening the competitive dynamics that help drive innovation. Regulation can also be understood as a qualification to an innovator's property rights – regulation typically limits how a physical or intellectual asset can be used, exploited, licensed, or sold. Property rights can be important for some types of innovation, to help increase the likelihood that innovators can capture enough of the value they create to justify the cost and risk of investing in new ideas.

But regulation does not always dampen innovation – it can also alter incentives and therefore *shift the direction of innovation*, for example in more socially valuable directions⁶ or to promote radical over incremental innovation.⁷

Regulation and standard setting have also played an important role in fostering past European innovations – and could continue to do so, at least in some contexts. For example, Nokia and Ericsson only became global leaders in telecom network infrastructure in the 1990s after the EU mandated the use of the GSM standard, which had been developed in Europe over the 1980s with the close engagement of the two companies, unlike in the US where multiple standards were allowed to compete.⁸ As another example, Europe's leadership in many green technologies is often attributed to regulation such as carbon pricing, which helped shift business investment away from carbon-intensive sectors to greener alternatives – giving Europe a 'first mover' advantage in this strategic sector over its global competitors. More generally, regulation can play an important role in ensuring a single set of rules across Europe (even if EU laws have not always achieved genuine harmonisation in practice). A single European market can help incentivise firms to make innovative investments, because it enables those investments to more easily reach all potential European customers – increasing the rewards if the investment is successful.

Regulation is, therefore, not always in tension with the objectives of more traditional industrial policy tools like subsidies. Regulation can play an important part in creating investable markets, unlocking economic opportunities, and steering economic resources towards certain activities. It can do this in particular markets (e.g., towards responsible forms of AI) or across markets (e.g., putting a price on carbon to shift investment from fossil fuels to greentech). Regulation also serves this function when it tries to deliver digital sovereignty – which, at least arguably, is an example of a market failure where, individually, firms make purchasing decisions which seem efficient but which, in aggregate across the economy, lead to systemic dependencies for Europe on a small number of providers outside the EU.

⁵ Anu Bradford, 'The False Choice Between Digital Regulation and Innovation' (2024) 119 Northwestern University Law Review 377.

⁶ Larouche and Yu, above n 4.

⁷ We do not have scope in this paper to include a discussion about the relative merits of incremental vs radical innovation, other than to note in passing that Draghi in his seminal report was particularly concerned at Europe's lack of radical, deep innovation. In this respect, it is concerning that regulations like GDPR appear to have dampened radical innovation and shifted resources towards more incremental innovations (see Knut Blind, Crispin Miles Niebel and Christian Rammer, 'The impact of the EU General Data Protection Regulation on innovation in firms', ZEW Discussion Paper, No. 22-047, p 6).

⁸ Jacques Pelkmans, 'The GSM standard: explaining a success story' (2001) 8 Journal of European Public Policy 432.



At the same time, there are compelling examples of regulations whose contribution to industrial policy has been underwhelming. While GDPR has helped protect Europeans' fundamental rights, for example, lawmakers' desire to stoke a thriving ecosystem of European privacy-enhancing technologies has not been achieved. More recent tech laws like the AI Act have often been criticised for imposing disproportionate barriers to the success of European AI innovators. As a result – and not always unreasonably – a growing narrative has been forming in Europe that regulation has gone too far by imposing undue complexity and cost and therefore doing more to constrain innovation than to help shape its direction. This narrative is reflected in the European Commission's various Omnibus proposals and its decision to undertake a Digital Fitness Check to look at the overall shape and coherence of the EU's digital rulebook.

2.2 When Does Regulation Enhance Innovation?

Since we can point to examples of regulation both serving European industrial policy objectives and undermining them, an important question for policy makers is **which characteristics of regulation can help ensure new rules contribute to industrial policy? And how, when innovation (particularly local innovation) is a goal of new regulations, can policy makers ensure this is not just an ambition – or an empty justification for new laws – but is actually delivered in practice?** This paper aims to define when, and under what circumstances, regulation can help boost European innovation, particularly in sectors such as cloud computing and AI which are the focus of existing industrial policy tools.

In a seminal 1991 paper, Michael Porter argued that environmental **regulation – even where it involves rules which set tough standards for businesses – can support innovative markets and steer investment towards innovation.**⁹ In the years following that paper, academic debate centred on the question of whether his thesis meant that environmental regulation can:

- Only increase incentives to innovate in certain directions without necessarily triggering 'more' innovation (the 'narrow' version of Porter's hypothesis),
- Actually trigger certain types of innovation to take place which otherwise would not (the 'weak' version of his hypothesis), or
- Improve a firm's – and potentially the economy's – overall productivity (the 'strong' version of the hypothesis).¹⁰

The narrow and weak versions of the hypothesis have a reasonable evidence base.¹¹ At least some meta-analyses support the strong version of the hypothesis,¹² however, the strong version is more controversial. Supporters of the strong version take the view that the benefits of innovation can exceed the costs of regulatory compliance, and that innovation may be increased overall compared with a counterfactual with no regulation. Therefore, instead of simply steering the direction of

⁹ Michael E Porter, 'America's green strategy' (1991) 264 Scientific American 4, 168.

¹⁰ A Dechezleprêtre, et al, 'Do environmental and economic performance go together? A review of micro-level empirical evidence from the past decade or so' (2019) 13 International Review of Environmental and Resource Economics, 1–2, 1; see also Adam B Jaffe and Karen Palmer, 'Environmental regulation and innovation: a panel data study' (1997) 79 The Review of Economics and Statistics 4, 610.

¹¹ See George van Leeuwen and Pierre Mohnen, 'Revisiting the Porter hypothesis: an empirical analysis of Green innovation for the Netherlands' (2017) 26 Economics of Innovation and New Technology 1, 63; and A Ambec and P Barla, 'Can Environmental Regulation be Good for Business? An Assessment of the Porter Hypothesis' (2006) 14 Energy Studies Review 2, 42.

¹² Wanli Zhang, Bin Zhu, Yongling Li and Dan Yan, 'Revisiting the Porter hypothesis: a multi-country meta-analysis of the relationship between environmental regulation and green innovation' (2024) 11 Humanities and Social Sciences Communications 232; Yun Wang, Xiaohua Sun and Xu Guo, 'Environmental regulation and green productivity growth: Empirical evidence on the Porter Hypothesis from OECD industrial sectors' (2019) 132 Energy Policy 611.



innovation, regulation can increase the amount of innovation and overall efficiency of a firm (and of firms generally). For example, environmental regulation may lead to the improved energy efficiency of industrial processes.¹³

Porter was primarily concerned with environmental regulation. **But can regulation play the same positive role in digital as it did in greentech?** There is very little literature examining whether the Porter hypothesis can also apply to digital regulation. However, Porter's work seems to have had a strong influence on the EU's law-making: laws like the GDPR have been defended by the European Commission on the basis that they would promote or unlock innovation. Supporters of the AI Act also argue that it aims to chart a middle path between a protective and a permissive approach, encouraging firms to take a proactive approach towards considering the societal impacts of AI technology.¹⁴ And just as European policy makers saw an opportunity for Europe to be a first-mover in adopting green technologies – both for environmental reasons and as a driver of growth – Europe has an urgent need today to adopt high-end technologies like advanced AI systems which are likely to be the drivers of future economic growth. Proponents of regulation often argue that regulation can help boost take-up of technologies, for example by making legacy technology more expensive (as with carbon pricing) or by increasing the perceived safety and trustworthiness of an emerging technology (as with AI).

The general literature on whether digital regulation can boost innovation often comes up with very similar conclusions to the literature assessing the Porter hypothesis, when it comes to considering the circumstances and design choices which empower regulation to deliver pro-innovation outcomes.

At a high level, even the strong version of Porter's hypothesis appears to have at least some evidence, even if some results have been equivocal:¹⁵ economists generally accept that private firms will often tend to invest less in innovation than would be socially optimal, which is why they tend to accept the need for public support for R&D. By extension, many economists would **support the case for regulation which either de-risks or increases the (relative) reward for innovative investment.**¹⁶

However, in practice there is growing evidence that much regulation imposes more costs than opportunities; raises barriers to entry, limiting competition; and can consequently constrain and stifle innovation. This seems more likely to be true for digital rather than environmental regulation.¹⁷ GDPR, for example, has been deemed responsible for the EU enjoying less availability of venture capital than the US,¹⁸ and is now seen as an important barrier to the development of AI in Europe. Perhaps this is because digital innovation can be faster, less predictable in trajectory, and can often emerge from unexpected sources, such as when ChatGPT emerged from OpenAI, a firm which had not previously been considered a global tech leader. For example, innovation in digital technologies often happens through ecosystems which include academia, open-source communities, entrepreneurs, and platforms – which means that the manner in which policy influences innovation is not always

¹³ Van Leeuwen and Mohnen, above n 11.

¹⁴ Pierre Larouche, 'Legal Framework for an Effective Implementation of the AI Act', CERRE issue paper, February 2025, p 30.

¹⁵ However, some have argued the evidence is at best inconclusive: Xavier Demeulenaere, 'Porter Hypothesis: A critical evaluation of the 'empirical evidence' (2015) UCL Energy Institute paper, even if some studies reveal a positive correlation: Dylan G. Rassier and Dietrich Earnhart, 'Effects of environmental regulation on actual and expected profitability' (2015) 112 Ecological Economics 129.

¹⁶ Jacques Pelkmans and Andrea Renda, 'How Can EU Legislation Enable and/or Disable Innovation' (2014), report for European Commission.

¹⁷ Samuel Goldberg, Garrett Johnson and Scott Shriver, 'Regulating Privacy Online: An Economic Evaluation of the GDPR' (2024) 16 American Economic Journal: Economic Policy 325.

¹⁸ Jian Jia, Ginger Zhe Jin and Liad Wagman, 'The Short-Run Effects of the General Data Protection Regulation on Technology Venture Investment' (2021) 40 Marketing Science 4, 593.



straightforward to predict.

All this means that **policy makers should scrutinise carefully claims that digital regulation is (or will be) pro-innovation** and should carefully consider the circumstances in which the Porter hypothesis is likely to translate to the digital sector. The literature suggests several factors that are key to determining whether regulation can have an overall positive benefit on innovation and productivity. These include:

1. Choosing the right economic activity to regulate: as some sectors are better suited to the use of regulation to trigger innovation, and particularly to productivity-enhancing regulation, than others;
2. Ensuring the right level of stringency and a plausible technological transition path; and
3. Delivering effective, flexible regulatory design.



3. Choosing the Right Economic Activities

Policy makers have often argued that regulation is innovation- or productivity-enhancing – including in cases where that has not been borne out in practice, such as in connection with the GDPR.¹⁹ That suggests policy makers need to give greater attention to the particular circumstances where regulation has at least the *potential* to be innovation-enhancing.

Innovation (and promoting innovative investment) is not the only purpose of regulation: other important purposes include ensuring consumer protection, the protection of fundamental rights, and ensuring technological development is consistent with social values and ethics.²⁰ Therefore, we should not expect all regulation to (have to) be justified as innovation-enhancing. However, it is important that **‘innovation’ (particularly when coupled with claims that regulation will achieve the ‘Brussels Effect’) is not used inappropriately broadly to justify regulations which in fact require different justifications – and that policy makers fully understand the circumstances in which regulation can rightly be assumed to promote innovation.**

It would be reasonable to start the analysis of whether a proposed regulation would promote productivity-enhancing innovation with some scepticism. After all, in some markets, it could generally be assumed that firms do not need any additional, regulatory incentives to create or adopt innovations (beyond general incentives to increase R&D, such as through tax credits, which are adopted at an economy-wide level) since doing so will already be profitable – it will enable a firm to become more efficient and lower its costs, or deliver a higher-quality or new service for which it can charge higher prices. In cases where there is no more specific type of market failure, there is a real **risk of regulatory capture**: that is, regulation may end up being driven by the interests of incumbents, which are to protect their position and make it harder for others to enter and operate in the market (the most disruptive innovators may be young firms which do not have visibility and cannot lobby politicians to have regulation designed with their interests taken into account). There is a growing recognition that regulation can stifle competition (and therefore innovation) by raising barriers to entry and exit.

Therefore, some sort of **well-evidenced market failure associated with an economic activity would seem to be a prerequisite for regulation promoting innovation.** Without offering a comprehensive survey, there appear to be several areas where claims of regulation being pro-innovation are more likely to be justifiable.

3.1 Market Power

The first circumstance where regulation can precipitate or enhance innovation is where **market power means that one (or a few) market player(s) have the incentive and ability to constrain which innovations take place**, or to steer the path of market-wide innovations in ways that (only or predominantly) support these incumbents’ business models and therefore suppress prospects for more radical and disruptive innovation.²¹ In these contexts, **regulation can unlock or speed up**

¹⁹ Marco Bassini, Mariateresa Maggolino and Alexandre de Streel, “Better Regulation and Evaluation for the EU Digital Rulebook”, CERRE Report, January 2025.

²⁰ Karen Yeung and Sofia Ranchordás, *An Introduction to Law and Regulation: Text and Materials* (2024) 2nd ed, Cambridge University Press.

²¹ This does not mean that market power is always bad for innovation. For example, in some cases a firm may need market power to justify making a risky but innovative investment, which could only be profitable if the investment can reach as many customers as possible, and therefore may require the firm to use its existing position to encourage as many customers as possible to use it. Many economists see the



innovation by enabling a greater range of players to innovate, and a wider range of innovation. Examples here include:

- **Telecoms liberalisation** – access regulation and interoperability requirements enabled new entrants and service innovations, ultimately unlocking innovations like the internet. Which would have been potentially inhibited by incumbent telecoms operators – which often tightly controlled what types of devices (such as modems) could be connected to their networks by users.
- **Open Banking** – which aims to allow new types of players (known as ‘payment initiation service providers’) to trigger a transfer from one person’s account to another, or to collect information on a person’s bank accounts (known as an ‘account information service provider’). Open banking rules aim to address the control that one bank has over its customer’s financial information and payments. In doing so, open banking opens up new possibilities for innovation and competition – for example, it adds new functionalities to accounting and personal financial planning software; enables new competition in the retail payments market which is currently dominated by large card companies; and allows insurance and similar firms to more easily access data to make better decisions.
- **The Digital Markets Act** – This law aims to open up certain large digital platforms to ensure that competition and innovation can thrive.²² For example, the law should allow for greater innovation and differentiation in web browser engines, allow third parties to compete with Apple and Android Pay using a smartphone’s payment chip, and ensure many other functionalities on a smartphone are made available to app developers to use.

Of course, the mere fact that these laws *have the potential* to unlock innovation does not mean that they necessarily will – or that the benefits will outweigh the costs. That is a question of regulatory design (which we come to in the next section). However, these examples illustrate that, while strong property rights are generally important to encourage innovation and to ensure that innovators can obtain a sufficient return on their investments, in some cases of market power, insistence on property rights can have a stifling impact on follow-on innovators, and the damage to such innovators (and to consumers who miss out on new innovations) can sometimes exceed the benefits of encouraging primary (or disruptive) inventions.²³

Conversely, regulation may have *negative* impacts on innovation when it raises barriers to participation in a market or prevents inefficient players from leaving the market. For example, much academic literature which concludes that the GDPR has had a negative impact on innovation blames this on the regulation strengthening the position of the largest digital players (who could tolerate the compliance costs) while disadvantaging SMEs.²⁴

relationship between competition and investment as U-shaped, for example: firms which are too dominant and secure do not need to innovate and dissuade challengers from innovating; but a market with many small firms may prevent the scale necessary to make bets on disruptive innovations. See Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith and Peter Howitt, ‘Competition and Innovation: An Inverted-U Relationship’ (2005) 120 *The Quarterly Journal of Economics* 2, 701.

²² P. Larouche and A. de Streel, *The European Digital Markets Act proposal: How to improve a regulatory revolution*, *Rev. Concurrences*, 2021/2, 43-63.

²³ This is especially true if the property rights exceed what is necessary to give the ‘primary’ inventor the incentive to make the investment in the first place.

²⁴ This is an important point made in the Draghi report and there is a growing economic literature on this issue: Francesco Decarolis



3.2 Co-ordination Failures

In some markets, innovation is stifled not by incumbents holding back technologies, but rather by **co-ordination failures between complementary investments – which often must be made at different points in the value chain or by competitors**, but which will only happen if the other investment is happening in parallel. Electric vehicles (EVs) are a classic example: consumers are reluctant to buy EVs without reliable charging infrastructure, while private firms hesitate to invest in charging networks before there is sufficient EV demand.

Well-designed regulation can solve this “chicken-and-egg” problem by creating common standards, interoperability requirements, grid access rules, and public investment frameworks that reduce uncertainty for both producers and consumers. Research on EV charging markets shows that regulatory co-ordination can improve incentives for infrastructure deployment and reduce strategic bottlenecks between utilities and charging providers.²⁵ This problem also applies in digital and telecoms markets. For example, in the early 1990s regulations which mandated the use of the GSM standard enabled Nokia and Ericsson to scale and become global successes, while the US and many other markets had a fragmented market with different players pushing their own solutions. This meant players in those countries were unable to achieve the scale and build up the ecosystem necessary to succeed like Nokia and Ericsson did.

More broadly, **regulation can unlock innovation when it creates predictable governance structures for interconnected systems**. In the EV sector, coordinated rules on charging infrastructure, electricity markets, and grid integration have enabled new business models such as smart charging services, which would be difficult to scale under a purely free-market approach. Studies of EV infrastructure planning emphasise that market design, interoperability, and coordinated regulatory frameworks are essential to integrating transport and energy networks efficiently and encouraging long-term private investment. In digital, this is also the rationale for much of the EU’s data governance rules such as the Data Governance Act and Data Act. The rationale was that many firms wanted access to industrial and cloud data ecosystems, but fragmented standards and incompatible technical architectures created a collective action problem: firms were reluctant to invest in interoperable data-sharing systems unless competitors and partners adopted the same rules. However, it is too early to conclude that these laws have been a success in unlocking new uses of data or in encouraging firms to invest in data sharing.

A market failure clearly will not occur if the market can, in a reasonable timeframe, converge on standards. However, the **timing of standard setting is critical**. If done too soon, standard setting or other intervention can crystallise a suboptimal solution – and it might be better to let the market evolve and develop its own de facto standards. This means there is usually a benefit in not intervening too early and allowing the market at least an opportunity to converge on voluntary standards. In other cases, there is large value in policy makers enforcing (and, if this is necessary too, defining) standards. Regulation to define and mandate the use of standards may have a role to play even if market dynamics would – eventually – lead to the most efficient technology being adopted. This can happen where regulation accelerates the process of adoption compared to a market-led counterfactual, for

and Cristiana Firullo, ‘Unlocking growth: exploring the economic impact of GDPR for tomorrow’s Europe’ (November 2025) and Damien Geradin, Theano Karanikioti and Dimitrios Katsifis, ‘GDPR Myopia: How a Well-intended Regulation Ended Up Favouring Large Online Platforms - the Case of Ad Tech’ (2021) 17 European Competition Journal 1, 47.

²⁵ Arthur J Caplan, ‘Regulating coopetition in an EV charging market’ (2023) 118 Economic Modelling.



example because only one technology standard will succeed and those firms which would move first take the risk of adopting the “wrong” standard which does not succeed (in other words all market players want to benefit from being second-movers rather than first-movers). Porter recognised that regulation can create external pressure to overcome organisational and market inertia.²⁶ The regulatory challenge in this case is identifying the right moment to intervene.

Even where regulatory intervention is warranted and has the potential to enhance innovation, the design **choices – around the nature of the obligations, the institutions and processes for governance and supervision, and how enforcement takes place – matter a lot.** Most obviously, regulatory efforts to coordinate a market run the risk of locking in suboptimal technologies. For example, the EU’s ‘common charger’ rules were criticised for cementing the USB-C standard,²⁷ and making future iterations of the standard more difficult (though in practice it does not yet appear that superior standards have emerged elsewhere in the world, and the common charger rules have reduced uncertainty for manufacturers and accessory developers). Regulators need to consider this risk against the counterfactual of not acting at all, while also ensuring their interventions are as targeted as possible. The broader lesson is that **regulation can accelerate innovation where markets become trapped in inefficient equilibria and firms cannot coordinate voluntarily on open standards.**

3.3 Externalities and Risk

A third example is where the **private sector might have insufficient ability or incentive to support the highest-risk but highest-potential investments.** This can be because available sources of funding demand more certain or short-term returns, a particular problem in the EU where businesses are largely funded through debt rather than equity.²⁸ It can also arise because of externalities. For example, the benefits of innovation (or the costs of the status quo) will often be felt by society or the economy as a whole, or by ‘fast followers’ who can replicate an innovation, rather than those who have created it.²⁹

As a result, firms may take an excessively short-term focus and therefore fail to invest in strategically important and high-value-added sectors of the future. For example, without regulatory intervention such as pricing carbon emissions, firms may have insufficient incentives to invent and adopt newer, greener technologies or ways of doing business.

In these cases, **regulation may be needed to either impose costs on existing ways of doing business (to improve the relative rewards of innovating) or to de-risk new innovative investments – for example, through licensing, through standard setting; by boosting demand (for example with regulation that instils trust in a technology or innovation), granting a period of regulated constraints on competition (such as in liberalisation of telecoms, which was managed in some countries initially with just one or two new entrants allowed) to help those that do enter a market improve their prospects of scaling, or by supporting a single European champion.** We evaluate the costs and merits of different design options in section 4 below.

²⁶ Stefan Ambec and Philippe Barla, ‘A theoretical foundation of the Porter hypothesis’ (2002) 75 Economics Letters 3, 355.

²⁷ Louise Guillot, ‘Apple slams Commission’s plan to standardize smartphone chargers’, Politico, 23 January 2020.

²⁸ Draghi, above n 3.

²⁹ Jeffrey Ding, *Technology and the Rise of Great Powers: How Diffusion Shapes Economic Competition* (2024, Princeton University Press).



The idea that regulation can help ‘price’ externalities is of particular relevance to the question of Europe’s digital sovereignty. At least arguably, Europe’s poor position in certain parts of the ICT value chain arises from individual firms making individually rational decisions to purchase foreign ICT equipment, software, or services. While in isolation, each of those may appear like an efficient choice, in aggregate across the economy these decisions may lead to Europe having excessive and asymmetric dependencies on foreign players which pose systemic risks to the continent’s ability to assert its own values.³⁰

3.4 Shifting the Metrics of Competition

The so-called “Brussels Effect” describes the **European Union’s capacity to externalise its regulatory standards globally** because firms operating internationally often choose to comply with EU rules across all markets rather than maintain multiple production systems. Scholar Anu Bradford argues that this phenomenon allows the EU to shape global market rules even without Europe having globally dominant technology firms or military power.³¹ In sectors where Europe’s comparative advantage lies in quality, safety, reliability, or trustworthiness rather than lowest-cost production, high regulatory standards can **reinforce the competitive position of European firms by shifting competition away from price as the primary comparator and towards values like trustworthiness, durability, and environmental sustainability and accountability**. The underlying logic is that where Europe’s comparative advantage lies in quality rather than price, regulation can help steer markets towards rewarding those attributes. There are many examples where the Brussels Effect has boosted European industries. For example, in chemicals the REACH Regulation helped emphasise chemical safety, supporting the local European industry amidst the growth of Chinese competition. Europe’s New Legislative Framework (NLF) – a set of measures that establish the ‘CE’ marking and a regime for assessing whether a product meets the regulatory requirements to be sold in the EU – has also been internationally influential. The credibility of the EU system has helped support European engineering firms producing goods such as medical and industrial equipment where safety is imperative, helping give European products a greater reputation for quality and safety globally. The EU’s climate laws have also helped boost the European greentech industry internationally, becoming an important export industry as other countries adopted their own climate-related market interventions.

To achieve this, softer regulatory interventions to improve transparency and comparability can be useful in areas where consumers and governments may value certified reliability over lower-cost alternatives.³² In other areas, harder-edged regulatory interventions (like minimum standards to be in the market) may be necessary. REACH, for example, despite being a heavily criticised regulation, at least arguably improved standards for chemicals in Europe to help differentiate European products from emerging lower-quality Chinese alternatives, even if in doing so it increased compliance costs for many chemicals firms.

Regulatory standards can therefore function not only as constraints on innovation, but also as market-shaping instruments that shift the direction of innovation within Europe towards more socially useful directions and which reward firms capable of producing higher-quality goods and

³⁰ Zach Meyers, ‘The role of ‘European preference’ in Europe’s economic strategy’, CERRE issue paper, April 2026.

³¹ Anu Bradford, *Digital Empires: The Global Battle to Regulate Technology* (2023, Oxford University Press).

³² Anticipating the Brussels Effect, Porter concluded in 1990 that strict product, safety and environmental standards could be an advantage if they were to spread internationally: Michael E Porter, ‘The Competitive Advantage of Nations’ (1990) Harvard Business Review 73, 87.



services (which may speak to European strengths). Where compliance itself becomes a valuable commercial asset, **European firms may benefit disproportionately** because they are already embedded within the EU regulatory environment and often possess stronger compliance capabilities than lower-cost competitors, particularly from parts of the world with lower production costs. Once multinational firms adopt EU standards globally — whether on data protection, product safety, environmental sustainability, or cybersecurity — lower-quality substitutes may face higher barriers to entry both inside and outside Europe. Research on regulatory competition suggests that stringent standards can create ‘race to the top’ effects by inducing global firms to upgrade production processes worldwide rather than segment markets. In this sense, the Brussels Effect can support European innovation ecosystems by expanding the global demand for products designed around trust, resilience, and regulatory assurance rather than cost minimisation alone.

The Brussels Effect has had a profound impact on policy outside Europe – either because third countries have adopted European laws and standards (or at least taken them as the starting point for their own laws) or because global companies have adopted European standards everywhere they do business in order to avoid fragmenting their products, services, and business practices. However, **in practice, sometimes the Brussels Effect is not as strong as anticipated and hoped for by EU policy makers**. In cases such as AI governance, European policy makers clearly intended to leverage the Brussels Effect, but the AI Act has not been widely adopted by third countries – meaning Europe’s standards may be more likely to impose a competitive disadvantage. Therefore, policy makers appear to have over-relied on the Brussels Effect in recent years. Moreover, **when the Brussels Effect is at play, it even then sometimes has limited impact on European competitiveness**. For example, while GDPR is a seminal example of the Brussels Effect and was intended to stoke innovation in Privacy-Enhancing Technologies (PETs), in fact the US is now the world’s leading provider and innovator in PETs. This largely seems down to factors like the availability of high-risk capital which can be used to build fast-scaling and high-risk software solutions, and the greater flexibility of labour laws in the US which can enable firms to take ‘big bets’ without incurring significant liability for laying off workers if the bet does not succeed.³³

3.5 Ensuring Innovation Pathways

An important condition for innovation-enhancing regulation is often overlooked. Even where regulation successfully alters incentives, that can only trigger innovation if firms can identify a viable alternative to the status quo and have a credible pathway for transitioning towards it. Regulation cannot create innovation simply by making existing technologies or business models more expensive. Doing so **can only lead to productivity gains if it results in alternative and more efficient production processes or suppliers**. If no realistic substitute exists, firms may simply incur higher compliance costs, reduce investment elsewhere, or – in the worst case – withdraw from the market. The availability of credible alternatives – or at least a credible pathway to such alternatives being developed – is therefore often a precondition for regulation to generate innovation rather than merely imposing economic costs.

The experience of environmental regulation illustrates this point. Carbon pricing and other climate policies did not stimulate innovation solely because they penalised carbon-intensive activities. They

³³ Yann Coatanlem and Oliver Coste, ‘Cost of Failure, Disruptive Innovation and Targeted Flexicurity: more evidence supporting targeted reforms’, 2025, EP@BU Working Paper.



were effective because firms were increasingly able to turn to emerging alternatives, including renewable energy, electrification, energy-efficiency technologies, and new industrial processes. Regulation helped accelerate the adoption and improvement of these technologies by altering relative prices and reducing uncertainty about future demand (and then allowing providers of these technologies to enjoy economies of scale, reducing their production costs). Importantly, firms could see a plausible technological trajectory and anticipate that investment in cleaner technologies would generate returns. Had comparable alternatives not existed, carbon pricing would have been far more likely to function primarily as a tax on economic activity rather than as a driver of innovation.

This insight has important implications for digital regulation. Digital markets are often characterised by greater technological uncertainty and more concentrated innovation capabilities (due to factors like economies of scope) than the environmental sector. Regulators may identify legitimate concerns relating to, say, privacy or technological sovereignty, but it does not necessarily follow that regulatory intervention will stimulate innovation. If regulation seeks to reduce dependence on dominant technologies without credible alternatives being available, firms may have little practical choice but to continue relying on existing suppliers while simultaneously bearing additional compliance costs. In such circumstances, regulation may redistribute costs without materially changing patterns of innovation or investment.

This challenge is particularly relevant where policy makers seek to promote European technological capabilities in areas where foreign firms currently enjoy substantial technological, commercial or market advantages. For example, restrictions, obligations, or procurement preferences intended to encourage the development of European cloud, AI, semiconductor, or digital infrastructure providers may only stimulate innovation if European alternatives are sufficiently mature, competitive, or are capable of becoming so within a reasonable timeframe. Where domestic alternatives remain years from the technological frontier, or where ‘first-mover advantages’ such as the ability to achieve economies of scale or network effects cannot be easily replicated by late entrants, regulatory intervention may instead reduce competitiveness, increase costs for downstream users, and weaken incentives for investment. Regulation may provide a boost for Europe’s technological capabilities in many cases (and in co-ordination with other industrial policies), but in others it may simply penalise firms that have no realistic alternatives. Distinguishing between the two is crucial to ensure that regulation boosts local innovation.

This suggests that **policy makers should evaluate not only whether regulation addresses a genuine market failure, but also whether credible innovation and adoption pathways exist.** Impact assessments should therefore consider the technological readiness of alternative solutions, the likely speed of their development, and the practical feasibility of transition. **In some circumstances, regulation may need to be combined with complementary measures** such as public procurement, standards development, research funding, infrastructure investment, or industrial policy. The most innovation-supportive regulations are often those that not only change incentives but also help create viable routes through which firms can respond to those incentives.



3.6 Lessons for Policy Makers

The key characteristics of these examples are that regulation acts not just as a way to disincentivise certain investments and business models, but also to unlock new ones which the market has not been able to provide (or would not provide as quickly). This reflects more general literature on the Porter hypothesis, which suggests it is valid only where regulation is correcting a market failure or imperfection.³⁴ This conclusion is in some ways intuitive: without a market failure, regulation will involve reallocation of resources from some more productive activity towards compliance, and so pro-innovative regulation needs to offer some ‘offsetting’ benefit (in the form of fixing a market failure) to compensate. This suggests policy makers should **not blithely conclude that all or most regulation will be innovation-enhancing, particularly if it is primarily targeted at prohibiting certain activities, rather than seeking to promote new types of practices or technologies**. In particular, it raises the more general question of **how quickly regulators should intervene**, particularly in markets that are nascent or evolving quickly. Premature regulation – that is regulation that assumes rather than identifies and reacts to market failures – may be more likely to lock in suboptimal standards or technologies and impose more costs than benefits.

This also implies that regulation needs to be **tightly targeted at the specific market failure which has been identified**, particularly given that regulation can generally lead to higher barriers to entry and exit, and therefore dampen competition, dynamism, and innovation. Solutions like asymmetric regulation (where rules are imposed only on certain firms, such as those with market power) can be powerful ways to address market failures without imposing costs on smaller new entrants.

Instead, when policy makers believe regulation will unlock innovation, they should start by clearly defining the reasons why levels of innovation are suboptimal today, determining the point in the value chain where they expect more innovation should happen and identifying precisely how regulation will lead to that outcome. **Impact assessments, in particular, then need to carefully identify and test the causal mechanisms by which positive results for European innovation are expected** from regulation.³⁵ As we have recently explained, regulation may also need to be **coupled with other tools**, such as subsidies or procurement practices.³⁶

Finally, **where policy makers legitimately believe regulation can unlock innovation, they may have a particular expectation that it will do so within Europe**. However, this assumption also requires scrutiny. While regulation has boosted the prospects of some innovative European firms – for example, open banking has supported the fate of European fintechs, and carbon pricing buttressed a number of promising European greentech champions – a number of past regulations have primarily stoked innovation *outside* Europe. For example, privacy-enhancing technologies have, to a large extent, emerged in the US; China is now dominating globally in many green technologies; and many of the biggest beneficiaries of the EU’s Digital Markets Act are American. To be sure, innovation which occurs outside Europe can have strong positive impacts on the European economy, especially where European businesses take up the foreign technology and use it to boost their productivity. But where policy makers’ intention is to stimulate local, European innovation, then policy makers should also

³⁴ Demeulenaere, above n 15; Pierre Lanoie, Jonathan Laurent-Lucchetti, Nick Johnstone and Stefan Ambec, 'Environmental Policy, Innovation and Performance: New Insights on the Porter Hypothesis' (2011) 20(3) *Journal of Economics & Management Strategy* 803, 830.

³⁵ Zach Meyers, Antonio Manganelli and Alexandre de Streel, 'Chartering an EU path to Competitiveness', CERRE Report, January 2026.

³⁶ Meyers, above n 30.



satisfy themselves that European firms are well placed to deliver the innovation – for example because they have a comparative advantage over other parts of the world.

Here, it is impossible to ignore the fact that **US firms tend to be much more prepared to take big risks**, and therefore can often be better placed to innovate, including where that means taking advantage of regulation which aims to stimulate innovation. In part, this may be the result of different corporate cultures and arrangements: in the US, for example, a firm's founders can often direct a firm to take 'big bets', in a way which European firms are less able to do. The availability of patient and risk-tolerant capital in the US also appears to be a significant factor (by comparison, Europe's capital markets tend to be shallower and poorly integrated with each other), along with more flexible labour markets in the US that enable firms to more willingly hire employees for risky ventures. Regulation may of course play a role in promoting risk-taking – for example, by providing more legal certainty about how a new technology will be supervised – but product regulation (at least) is unlikely to be the best way to incentivise European firms to invest in high-risk, high-potential technologies. **Instead, Europe may have to promote different corporate structures, unlock more patient capital, and accept that innovation often involves significant social and economic disruption.**



4. Regulatory Design

4.1 Regulatory Stringency

Of course, just because regulation identifies a bottleneck to innovation and can plausibly serve as a way to unlock that bottleneck, does not mean that it will necessarily do so in practice. **Regulation may still burden innovation – for example, by reallocating resources from “productive” uses to compliance efforts and by increasing barriers to entry and exit (thus limiting competitive pressure).**

This explains the extensive attempts by the European Commission over many years to reduce the burdens of regulation; it is noteworthy, however, that these burden reduction programmes have typically focused on reducing actual costs borne by businesses. While this is no doubt helpful, promoting innovation would also require anticipating what businesses *might do* (i.e., what innovations they might realise if regulatory costs or constraints did not stand in the way) and reducing the costs and constraints with these *potential* activities. **Burden reduction should therefore take on a dynamic dimension: freeing the pathway to future innovations rather than being focused primarily on reducing the costs of businesses operating in the same way they do today.** It would also be important to focus on those regulatory burdens which subdue market entry and exit: since these are key to maintaining competition and market dynamism, which are key drivers of innovation.

This highlights that regulatory design plays an important role in determining whether regulation’s innovative potential is actually achieved and ensuring that the (often necessary) costs associated with regulation can be minimised and more easily outweighed by a regulation’s pro-innovative effects.

One of the most important design questions is what standards – or what stringency – to apply. Early research confirms that stringency is perhaps the most important factor impacting innovation.³⁷ Tests of the Porter hypothesis have often found an inverted **U-shaped relationship between the stringency of regulation and its impact on productivity and innovation**. If regulatory standards are too loose, they impose a deadweight loss: firms must incur administrative and compliance costs but lack sufficient incentives to invest in innovative business models. Therefore, increasing the stringency of regulation creates more incentives for innovation. However, after a certain point of stringency, the costs of compliance are higher than the offsetting innovation impacts³⁸ and/or firms simply ‘give up’ on being able to meet the regulatory requirements and leave the market.³⁹

Determining the right level of regulatory stringency is difficult in environmental regulation, since it is hard to predict in advance how firms will respond to regulatory interventions and the level of stringency required before they change their behaviour, even though in that context there is a relatively well-defined externality. Carbon emissions, pollution, and resource consumption can be measured with reasonable precision, and regulatory objectives can frequently be translated into quantifiable targets. Approaches like carbon taxes and carbon trading can allow policy makers to adjust the level of stringency over time, learning through observation.

³⁷ Nicholas A. Ashford, Christine Ayers and Robert F. Stone, ‘Using Regulation to Change the Market for Innovation’ (1985) 9 Harvard Environmental Law Review 2, 419.

³⁸ Wang et al, above n 12.

³⁹ Pelkmans and Renda, above n 16, 21.



These approaches are, however, even more difficult to apply in contexts like digital regulation because the harms to be avoided are less easily quantifiable (and while policy makers would like regulation to be pro-innovation, this is rarely the primary objective of regulation). Digital regulation typically has multiple objectives which sometimes conflict and are rarely reducible to a single metric. Policy makers may simultaneously seek to protect privacy, competition, consumer welfare, cybersecurity, fundamental rights, media pluralism, and technological sovereignty. Unlike carbon emissions, these objectives are difficult to measure consistently and often involve qualitative assessments. As a result, digital regulators face greater challenges in calibrating interventions, assessing trade-offs, and determining whether regulatory requirements are producing their intended effects. In many cases, the innovation impacts of regulation are therefore considerably more uncertain than in environmental policy.

This means that designing regulation with the right level of stringency is particularly important. Larouche and Yu describe a difference between a “**protective approach**”, which by default precludes certain technologies or practices (within a certain domain) on the basis that they are harmful (or can be assumed to be so unless found otherwise⁴⁰). This, obviously, has the potential (and indeed sometimes the intention) to ban certain innovations or slow their entry into the market⁴¹ – but equally may then encourage firms to find alternative and more socially beneficial innovations or (if the innovation is valuable enough) to prove the innovation is safe, meaning that “*firms will concentrate their research efforts on potential inventions that are likely to survive the testing and authorization process*” to prove they are safe. It may also encourage incremental innovation, where proving safety may be easier, rather than more radical innovation whose impacts may be unpredictable. At the other end of the spectrum, the “**permissive approach**” – adopted in most spheres of economic activity – allows innovations unless and until they are proven unsafe. This can, according to Larouche and Yu, lead to a more diverse and dynamic innovative landscape – at least in some contexts, such as where there is thriving competition – compared to one where innovation is structured by regulation.

Policy makers may, however, as Larouche and Yu note, want to introduce a **more nuanced approach to stringency than either of the two idealised models above**. Some of the options they might adopt include the following:

- At the **lightest-touch point**, the mere **threat** rather than the reality of regulation can sometimes be sufficient to stoke innovation, particularly if there is a high degree of certainty about the policy and therefore firms are willing to spend resources pre-empting how to comply.
- Secondly, policy makers may adopt **lighter-touch regulatory approaches** (such as focusing on disclosure requirements or shifts in liability if something goes wrong) which largely seek to steer customer choices and/or increase the incentives on firms to avoid negative outcomes.
- Thirdly, **harder-edged tools** (such as prohibitions on certain business activities or models) tend to impose the highest compliance costs, often by including regulatory fines and higher reputational damage for non-compliance.⁴² This can be coupled with exceptions to regulatory

⁴⁰ Larouche and Yu, above n 4, 6.

⁴¹ See e.g., Sam Peltzman, ‘An evaluation of consumer protection legislation: the 1962 drug amendments’ (1973) 81 Journal of Political Economy, 1049.

⁴² Pelkmans and Renda, above n 16, 13.



obligations – which can be either hard-wired into the law, or allowed by way of regulatory discretion – or a ‘licensing’ approach, where an innovation has demonstrated net positive impacts.

Tools like pricing (as with carbon markets) can help dynamically adjust stringency in a way that drives behaviour aligned with public policy goals. However, while this can be more easily achieved when costs, benefits, and stringency can be quantified (for example, in carbon pricing), it can be more difficult where regulation aims to protect less quantifiable objectives (such as consumer safety, competition, or fundamental rights). And, of course, since innovation is, by definition, the invention of a new technology or process which did not exist before, the benefits of such innovation can be very difficult to quantify in advance. Similarly, EU policy makers have not always done well at estimating the compliance costs associated with regulation.

Nevertheless, **policy makers should at least attempt to calibrate the degree of regulatory stringency so that it creates incentives for (socially and economically beneficial types of) innovation**, which could lead innovation-forward firms to benefit in the long run over a counterfactual where the regulation (and the innovation it prompts) did not exist. As we note in the following section, a regulatory approach which aims to be reflective, deliberative, and responsive can offer a way to secure the type of flexible and dynamic approach to stringency which was achieved in carbon markets.

This has become more difficult given the geopolitical context, where the US administration is pushing hard for Europe to deregulate or at least lower the stringency of its regulations. It is worth remembering that the desire to simplify regulation and lower regulatory burdens originated within the EU and predates the Trump administration.⁴³ However, increasingly there is a perception that pressure to revisit EU regulation is being externally imposed by the US. Consequently, many European stakeholders are sceptical about whether such deregulation will benefit European innovators – or whether it will simply make life easier for US technology firms that do business in Europe. This has led to the EU’s current regulatory simplification packages receiving significant scrutiny from the co-legislators. It has also encouraged perceptions that Europe’s regulations are being enforced or applied in ways that are political – or at least have inevitable political consequences. As we explain further below, in these circumstances greater independence for the European Commission’s regulatory enforcement teams is essential.

4.2 Transition Planning

One question which is related to stringency is **when to regulate** and how to ensure a **reasonable transition period**.

Regulation can have the effect of forcing at least a degree of homogenisation in the market. That will often be efficient, particularly where it defines minimum standards (thus fostering trust) or where it directs the market to use a particular technical standard; even if the market would eventually settle on one technology, players may significantly underinvest until the ‘winning’ technology is identified in order to avoid wasted and sunk costs. However, regulating early for this reason also has costs – because it risks reducing choices which some consumers value and it can potentially set the market

⁴³ See, e.g., Draghi above n 3; see also the European Council’s ‘Budapest Declaration on the New European Competitiveness Deal’ of 8 November 2024.



down the path of a suboptimal technology. **A balance needs to be struck between moving quickly (to provide a certain basis to encourage investment) and allowing markets and consumers to reach the optimal outcomes themselves.**

Where regulation is decided upon, policy makers will also need to decide whether to provide a **transition period**. New regulatory obligations often require significant organisational, technical, and financial adjustments, particularly where firms must redesign products, modify business processes, develop new compliance systems, or build internal expertise. If implementation timelines are too short, firms may abandon more productive research, development, and growth in order to meet immediate compliance demands. Where a technology is not yet mature, transition periods can avoid ‘deadweight’ costs being imposed for non-compliance when there is not yet an alternative. Well-designed transition periods can therefore reduce disruption while preserving incentives to innovate.

Transition periods are particularly important in the digital sector because technologies, business models, organisational structures, and legal regimes are often highly complex and interconnected. Compliance with new rules may require changes that extend far beyond a single product or service, affecting data governance frameworks, software architecture, risk management systems, contractual arrangements, and relationships with business users. For example, digital rules like the Data Act intersect with other laws like the Cyber Resilience Act and sectoral certification frameworks. Regulators may underestimate the practical challenges involved in implementing business changes at scale. Providing sufficient time for adaptation allows firms to integrate compliance into their normal development cycles, reducing costs and limiting the risk that regulation inadvertently discourages experimentation or the deployment of new technologies.

Compliance deadlines are also opportunities for firms to build their compliance capacity. Compliance capabilities are not distributed evenly across the market. Large incumbent firms may be able to absorb regulatory costs relatively easily, while smaller companies, start-ups, and scale-ups often face significant resource constraints. Without complementary measures to support compliance capacity, regulation may inadvertently reinforce the position of established firms and raise barriers to entry. Guidance documents, regulatory sandboxes, compliance toolkits, standardised reporting frameworks, technical assistance programmes, and opportunities for informal engagement with regulators can all help reduce these burdens and make compliance more accessible.

However, at the same time transition periods come with risks. Not least, they can encourage firms to reallocate resources to lobbying for longer transition periods – or even for the rollback or repeal of regulation – rather than accepting the challenge which regulation imposes. This has been an obvious outcome of the extensive transition period for the EU’s ban on combustion engines for example; in the meantime, car manufacturers seemed more preoccupied with cheating emissions tests rather than responding to the regulatory challenge.⁴⁴ Arguably, a simpler deadline and more onerous but harder-to-cheat goal – such as simply phasing out combustion engines instead of requiring reduction of carbon emissions over time – would have been a better approach. A similar risk exists in the digital sector, for example, where delays to the implementation of the AI Act – on the basis that industry-led standards were not yet ready – have set a precedent which could conceivably encourage regulated

⁴⁴ See John C Cruden, Bethany Engel, Nigel Cooney and Joshua Van Eaton, ‘Dieselgate: How the Investigation, Prosecution, and Settlement of Volkswagen’s Emissions Cheating Scandal Illustrates the Need for Robust Environmental Enforcement’ (2018) 36 Virginia Environmental Law Journal 2, 118.



companies to ‘slow-walk’ standard setting processes in future, with the hope of delaying future regulations from coming into force.

This illustrates the **need for a tough but reasonable and evidence-led approach to setting implementation timeframes. Policy makers must perform a balancing act.** To stimulate innovation, a transition period must be somewhat challenging in order to ensure it encourages innovation before it would have taken place anyway – and minimises opportunities for gaming and lobbying. However, too short a timeframe is likely to impose disproportionate costs or even cause market exit.

4.3 Flexibility and Certainty

Recent academic literature points to a number of ways in which regulatory design impacts innovation.⁴⁵ Among these, **flexibility appears to be one of the most important factors in determining the compatibility of regulation with innovation.**

Environmental innovation often involves improving established industrial processes or developing substitutes for existing technologies. In the environmental sector which fostered the Porter hypothesis, the most notable form of regulation was carbon pricing. Such regulation is in some respects prescriptive (it dictates a price and demands extensive detailed rules on how to measure and account for carbon emissions). But it was outcomes-focused: it directly aligned firms’ financial incentives with carbon reduction, enabling firms to easily ‘internalise’ regulatory goals, while providing flexibility to firms to identify for themselves the most efficient ways to reduce their emissions.

By contrast, digital markets are characterised by rapid technological change, strong network effects, and frequent shifts in business models. Regulatory interventions therefore risk becoming obsolete more quickly or inadvertently favouring particular technological approaches. This creates a greater risk that regulation may lock in existing technologies, business models, or market structures, thereby reducing the scope for experimentation and future innovation – and therefore become a comparative disadvantage for Europe. In this context, regulators should generally favour approaches that preserve flexibility and allow firms to identify novel compliance solutions.

This does not imply that digital regulation should be less ambitious than environmental regulation. Nor does it imply that lawmakers should simply defer all the hard questions to regulators’ guidance, which can simply delay firms obtaining certainty. Rather, it suggests that achieving innovation-supportive outcomes in digital markets requires greater attention to institutional design, regulatory adaptability, and mechanisms that allow learning by both regulators and regulated firms over time.

⁴⁵ For a general overview see Lauge Peter Westergaard Clausen, Maria Bille Nielsen, Nikoline Bang Oturai, Kristian Syberg, Steffen Foss Hansen, ‘How environmental regulation can drive innovation: Lessons learned from a systematic review’ (2022) 33 Economic Policy and Governance 4, 364.



Flexibility could, for example, steer firms towards a ‘responsible innovation’ approach, where they **shift away from a ‘set and forget’ approach to regulatory compliance to one which focuses on internalising regulatory goals so that they are better aligned with corporate goals.**⁴⁶ It would also give firms more flexibility in how they meet regulatory expectations, which should help promote a more innovation-friendly and proportionate risk-based approach. Finally, it could better tackle the interplays and interactions between laws. For example, it is easier to identify and reconcile differences between different principles or outcomes, rather than between two sets of detailed and prescriptive rules.

4.4 Regulatory Guidance and Dialogue

Principles-based regulation requires dialogue – meaning that regulators will have to remain closely engaged in the question of whether or not regulated firms are compliant, and how broad principles apply to constantly evolving technologies and business models, through regulatory dialogue and guidance.⁴⁷ This is easier to achieve in contexts where there is greater trust and a culture of dialogue between regulated firms and regulators – such as in sectors which were previously highly regulated, like financial services – and less easy to achieve in the digital space, where “move fast and break things” has been the traditional mantra. In addition to dialogue, regulators need to provide good **upfront guidance**, since this would provide essential insight into how regulators will assess compliance, which should be **risk-based** rather than taking a ‘zero tolerance’ approach.

In practice, however, neither dialogue nor guidance appear to be working well in the EU digital space overall, reflecting a tendency for both regulators and private sector players to stick with comfortable elements of prescriptive rules rather than accepting the challenges and opportunities of outcomes-focused and principles-based regulation.⁴⁸

First, take guidelines: in practice, **guidance by regulators today can often be extremely detailed and complex**, and unduly risk-averse. Because of the fragmentation of regulators and supervisory authorities across Europe, guidance is very often focused only on a single dimension of a product, service or market (such as data protection), leading to advice which disregards many other relevant public policy and regulatory objectives. Compounding that problem, guidance can be treated by regulated firms (and tacitly by some regulators) as the sole means of guaranteeing compliance. For example, in implementing the AI Act, the European Commission has indicated it may subject AI model developers which do not adhere to the General-Purpose AI Code of Conduct to more intrusive scrutiny. This means guidance can end up merely reproducing the detailed rules which principles-based regulation was meant to do away with, producing prescriptive regulation through the back door.

Secondly, **regulatory dialogue has often been unsatisfactory for all players**, particularly in contexts like the DMA. One reason may be that tech firms do not yet internalise and accept the need for regulation, in the same way that firms in other regulators sectors do and are therefore less willing to proactively engage. But the problem exists on the other side, too: regulators may tend to mistrust tech firms and therefore be unwilling to ever provide a ‘regulatory blessing’. This may be understandable in a context of information asymmetry – and it would be unreasonable, in a situation

⁴⁶ Suleman Bawa, ‘Regulatory flexibility and innovation efficiency: rethinking the role of regulators in evolving innovation systems’ (2026) Science and Public Policy.

⁴⁷ I. Ayres and J Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate* (Oxford University Press, 1992)

⁴⁸ Alexandre de Streel, Richard Feasey and Giorgio Monti, ‘DMA@1: Looking Back and Ahead’, CERRE report, March 2025.



where there is both asymmetry and many risks which neither the firm nor the regulator knows, for firms to expect all regulatory risk to be offloaded. Nevertheless, if regulators take too risk-averse and unbalanced an approach, then this perpetuates the unwillingness of regulated firms to proactively engage in regulatory dialogue: at worst they will be told their practices are non-compliant without having the realistic prospect of a 'tick of approval'. However, without genuine dialogue, innovation slows: either because regulators are not quick enough to review business models and technology deployments, or because firms avoid innovating in ways that would require regulatory dialogue in the first place.



5. How to Get There: Improving Ability and Incentives

5.1 Ability and Incentives of the Regulators

How to address this problem? On **the regulator's side, the right incentives for meaningful dialogue, and for more risk-oriented and proportionate guidance, do not currently exist.** Regulators – understandably – fear getting the blame for taking risks, for example by making concessions (or conceding that a business practice is compliant with regulations). On the other hand, they are not typically held responsible for the much more slow-burning problem of the lack of innovation in Europe. This means they can tend to act in an excessively risk-averse fashion and take expansive views on what regulation requires.

Changing this dynamic requires that **regulators have greater ability and incentive to experiment and move away from a 'zero-risk' approach, or an approach which minimises the particular risks that the regulator considers to fall within its remit – and greater accountability for delivering policy objectives in a way which is as innovation-compatible and supportive as possible.** Several steps are required to achieve this, including:⁴⁹

- Setting a **clearer relationship between regulators / enforcement agencies and politicians**, so that the permissible scope of discretion granted to regulators is clearer and there is less scope for 'blame-shifting'. This is a particular concern at European Commission level, where the enforcer is part of the same institution responsible for proposing, implementing, and evaluating the success of a law. Given the increasing risk that regulation becomes 'captured' by either political or industrial interests, the need for genuine regulatory independence is growing even stronger.⁵⁰
- Ensuring that **innovation is an explicit objective or guiding principle in regulation**, so that implementing and enforcement authorities are required to take it into account when performing their duties. This should ideally help address the risk of regulators thinking in silos and seeing the narrower policy objectives each law seeks to achieve in isolation from their broader economic impacts.
- Ensuring that while protecting regulators' independence, there are **adequate accountability mechanisms and that an external body provides oversight and monitors the 'innovation performance' of regulators.** In this respect, the European Court of Auditors (ECA) or a similar body could perform 'benchmarking' of how national and European regulators perform against their international counterparts. The ECA could consider, in particular, the regulator's responsiveness and how quickly it resolves matters of regulatory uncertainty, though it would need to do so in a way which avoids unintended consequences such as privileging speed over making properly informed judgements.
- Setting up **networks and fora to help ensure innovative best practice is shared** across different regulatory environments and across Member States. For example, the UK

⁴⁹ Meyers et al, above n 35.

⁵⁰ A. de Stree, Breaking up the European Commission, 2026.



Regulators' Network has played a role in helping to identify and promote innovative practices by sector-specific regulators.

- Improving the **capabilities of regulators to understand the technologies and business models** they supervise. Measures to help boost regulators' capabilities here include ensuring adequate resourcing, industry secondments, and flexibility in hiring and remuneration practices where regulators require dedicated skills (such as in AI) that are in high demand in the private sector.

These reforms could help improve the incentives on regulators to ensure innovation plays a more central and meaningful role. At the same time, regulators will then need to act on these incentives and deliver. Examples of how they could do so include:

- Making a proactive shift away from guidelines being prescriptive and treated as the only way to ensure compliance (i.e., treating guidelines as setting out *de facto* mandatory requirements), to a situation where they are instead treated as **safe harbours** which provide firms with certainty about compliance but genuinely leave open opportunities to comply with regulatory expectations in other ways. In other words, firms should not fear a presumption of non-compliance with regulatory requirements simply because they have chosen to deliver the requirements in a different way than guidelines envisage. In this way, guidelines can reach a compromise between the two competing demands of regulated firms: wanting more flexibility but also wanting clarity.
- Offering more meaningful opportunities for regulatory dialogue. Regulators could, for example, learn from DG COMP's approach of issuing "**comfort letters**" or "**no action letters**", to provide assurances to firms that have proactively approached the European Commission for guidance on how competition law applies to their engagement with competitors.⁵¹ As noted above, it would be unreasonable (outside the realms of a dedicated regulatory sandbox) for a regulated firm to completely offload regulatory risk, in a context where neither the firm nor the regulator can fully understand the potential risks. But a more balanced approach to risk by regulators could give firms a stronger basis for engaging in meaningful dialogue.
- Providing **explicit rewards for engagement**. As an example, under the AI Act, the European Commission has issued guidelines (the GPAI guidelines) which explain that those providers who have agreed to comply with the GPAI Code of Practice will "*benefit from increased trust from the Commission*".⁵² Non-signatories, on the other hand, will be subject to more intrusive supervision and "*a larger number of requests for information and requests for access to conduct model evaluations throughout the entire model lifecycle because the AI Office will have less of an understanding of how they are ensuring compliance*".⁵³ Clarifying this beneficial treatment before (rather than after) regulatory dialogue takes place would create positive incentives for constructive engagement. As another reward, a regulator could **prioritise the resolution of issues which have been proactively raised by a regulated firm** rather than by

⁵¹ Hausfeld, 'The European Commission's comfort letters: an adaptation of EU competition law?', 4 May 2021, available at <https://www.hausfeld.com/what-we-think/perspectives-blogs/the-european-commission-s-comfort-letters-an-adaptation-of-eu-competition-law>.

⁵² European Commission, 'Commission Guidelines on the scope of the obligations for providers of general-purpose AI models established by Regulation (EU) 2024/1689 (AI Act)', 19 November 2025, para 91.

⁵³ Ibid, para 92.



its competitors, customers, or consumers.

- Ensuring **enforcement and penalty guidelines give adequate weight** to firms which have proactively disclosed issues and **engaged** in good faith.
- Providing **structured and institutionalised processes for engagement in a ‘safe space’**. This could include, for example, setting up standing technical working groups, advisory forums involving different stakeholders in industry and the regulator. A protective legal framework (such as guarantees of confidentiality and non-use of information for other purposes, which can be supported by clear institutional separation between a regulator’s enforcement functions and those engaged in compliance support) can help promote open dialogue. These have commonly formed part of the successful regulatory process in sectors like telecoms.
- **Obliging regulators in different substantive areas to coordinate with each other**, so that they are not operating in a vacuum and they naturally take into account other public policy and regulatory goals than those that are under their competencies.⁵⁴ In areas of regulatory overlap, regulators should be obliged to issue guidance that is consistent with all applicable laws and make decisions only after consulting other regulators responsible for intersecting legal frameworks.

5.2 Ability and Incentives of the Regulated Firms

On the part of regulated firms, providing incentives for better regulatory engagement can be a particularly difficult challenge. In general, **regulated firms can have limited incentives to engage with regulators** because the very objective of regulation can be to constrain the firm’s profit-making potential or require it to change its business model. But these problems are particularly severe where firms view some regulatory interventions not merely as costly, but as conceptually misguided, politically motivated, technologically uninformed, or strategically protectionist. The willingness of the US government to push these narratives and pressure Europe has sometimes encouraged this resistance. In these circumstances, simply creating more consultation opportunities may not generate meaningful engagement. In this context, **incentives for regulated firms to engage can be improved through offering both ‘carrots’ and ‘sticks’**:

- **Firms should be convinced that regulatory dialogue will reduce uncertainty and lead to proportionate outcomes.** This requires a regulator to provide early and reliable guidance, to apply it consistently, and to provide early warning where it proposes to change policy or enforcement priorities. It also requires that regulators are willing and able to interpret a law flexibly and proportionately. Many of the means to achieve this are already noted above. Offering genuine regulatory certainty and proportionality at least offers some benefit to regulated firms even if they remain sceptical about the intent of the regulation.
- Political science research consistently suggests that actors are more willing to accept decisions they disagree with if they perceive the **process as fair – and if they feel that their input can have a meaningful impact** on the regulatory implementation process. As noted above, ensuring more regulatory independence – particularly at EU level – may therefore significantly

⁵⁴ Z. Meyers and A. de Streel, *A More Coherent EU Digital Rulebook: Substantive and Institutional Issues*, CERRE Issue paper, June 2026.



improve the prospects for regulated firms to feel that engagement and dialogue has value.⁵⁵

- Finally, ‘sticks’ also need to be part of a balanced approach. This means that **failure to engage in bona fide dialogue** – either by not offering up genuine compliance solutions, failing to disclose material information, or otherwise exploiting information asymmetries with a regulator – should **lead to consequences**.⁵⁶

For example, regulators are grappling with very complex markets where the impacts are hard to assess and judge – whereas regulated companies can conduct extensive testing on different compliance options to assess which is most favourable to them. To address this problem there are at least two possible solutions. On the one hand, the **regulator could be granted significant powers** (as in the UK’s digital markets regime) to require firms to conduct testing on different regulatory interventions and disclose the results – which could be a useful tool if the regulator is unconvinced that the regulated firm is offering meaningful compliance proposals. On the other hand, a regulator might need the **ability to revert to detailed, restrictive and prescriptive regulation if regulated firms fail** to engage constructively with a principles-based approach. This should take advantage of the fact that large digital platforms may be relatively insensitive to financial penalties but highly sensitive to uncertainty, operational constraints, and loss of strategic flexibility. The growing trend towards considering social media bans for young people, for example – even if it is not evidence-based – might be considered by some a reasonable response to perceptions that some firms have done too little to proactively engage in regulatory dialogue to reduce the harms caused by social media. In countries like Australia and New Zealand, the ‘threat’ of business-restrictive regulation in telecoms was a key tool to secure voluntary separation of the incumbent telecoms players, while offering advantages to the government in avoiding years of drawn-out litigation.

⁵⁵ Z. Meyers and A. de Streel, A More Coherent EU Digital Rulebook: Substantive and Institutional Issues, CERRE Issue paper, June 2026.

⁵⁶ Jacques Cremer et. al, ‘Enforcing the Digital Markets Act: Institutional Choices, Compliance, and Antitrust’ (2023) Journal of Antitrust Enforcement 11(3), 315-349.



6. Conclusion

The **European Commission's current approach of pursuing Omnibus packages** (which aimed to be the politically non-controversial, simpler changes recommended by Draghi) **addresses some of the reasons that regulation can limit innovation**. These include reducing (somewhat) the degree of complexity, addressing some compliance costs, and allowing more reasonable transition periods under the AI Act. However, they also leave many other problems unaddressed – such as ensuring that regulation (where it intends to unlock innovation) is targeted at genuine market failures, the need to enable more business model flexibility, and ensuring sufficient capacity.

Because the Omnibus packages have been relatively controversial, there is a risk that the European Commission does not now have the political bandwidth (in the Digital Fitness Check) to propose a meaningful rewrite of many laws which have not been well designed.

In particular, there does not yet appear to be well-developed thinking in the European Commission about how to redesign regulatory frameworks so that they provide more flexibility and adaptability, more clarity and concision, and a more balanced set of carrots and sticks. The European Commission correctly concluded that this would represent not merely a technical improvement but also require a political decision about the right shape for more innovation-friendly regulation.

The question for Europe is not whether it should regulate or deregulate, in order to stimulate innovation. The challenge is to ensure that innovation plays a more central role in policy makers' thinking when deciding when regulatory intervention is appropriate and in designing regulatory interventions. The most innovation-friendly regulation is therefore not necessarily always the least burdensome regulation. **Innovation-friendly regulation is generally targeted at genuine market failures, proportionate in its obligations, flexible in its implementation, and supported by capable institutions**. Regulation should be judged not by the number of rules it creates, but by whether it expands the range of productive investments and innovations that firms are willing and able to pursue.

This challenge is becoming more urgent as Europe seeks to compete in artificial intelligence, cloud computing, semiconductors, quantum, cybersecurity, and other strategically important sectors. **In these markets, regulatory design is no longer merely a question of consumer protection or market governance. It has become a question of economic competitiveness and geopolitical resilience**. Europe's success will depend not on choosing between regulation and innovation, but on learning how to use regulation as one component of a broader innovation strategy. After all, while debates continue about whether the US's lighter-touch approach to regulation is a cause of America's better innovation performance, it seems clear that the US has also relied heavily on other tools, such as trade and industrial policy,⁵⁷ to support US innovation leaders.

Achieving this will require moving beyond the current debate between deregulation and regulatory expansion. Instead, policy makers should focus on a more fundamental objective: ensuring that every major regulatory intervention is designed around a clear theory of how it will contribute to innovation, productivity, and long-term European competitiveness, while remaining faithful to the broader social and economic objectives that regulation exists to serve.

⁵⁷ Mariana Mazzucato, 'The Entrepreneurial State: Debunking Public vs. Private Sector Myths' (2013, Anthem Press).



About CERRE

Providing high-quality studies and dissemination activities, the Centre on Regulation in Europe (CERRE) is a not-for-profit think tank. It promotes robust and consistent regulation in Europe's network, digital industry, and service sectors. CERRE's members are regulatory authorities and companies operating in these sectors, as well as universities.

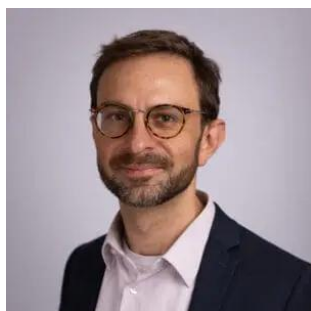
CERRE's added value is based on:

- Its original, multidisciplinary and cross-sector approach covering a variety of markets, e.g., energy, mobility, sustainability, tech, media, telecom, etc.;
- The widely acknowledged academic credentials and policy experience of its research team and associated staff members;
- Its scientific independence and impartiality; and,
- The direct relevance and timeliness of its contributions to the policy and regulatory development process impacting network industry players and the markets for their goods and services.

CERRE's activities include contributions to the development of norms, standards, and policy recommendations related to the regulation of service providers, to the specification of market rules and to improvements in the management of infrastructure in a changing political, economic, technological, and social environment. CERRE's work also aims to clarify the respective roles of market operators, governments, and regulatory authorities, as well as contribute to the enhancement of those organisations' expertise in addressing regulatory issues of relevance to their activities.



About the Authors



Zach Meyers is Director of Research at CERRE, where he has a wide remit, including managing cross-sectoral programmes and projects.

Previously the assistant director of the Centre on European Reform, Zach Meyers has a recognised expertise in economic regulation and network industries such as telecoms, energy, payments, financial services, and airports. In addition to advising in the private sector, with more than ten years' experience as a competition and regulatory lawyer, he has consulted to several governments, regulators and multilateral institutions on competition reforms in regulated sectors. He is also a regular contributor to media.

Zach holds a BA, LLB (with First Class Honours), and a Master of Public & International Law from the University of Melbourne.



Alexandre de Streel is the Academic Director of the digital research programme at CERRE, professor of European law at the University of Namur, and visiting professor at the College of Europe (Bruges) and SciencesPo Paris.

He sits in the scientific committees of the Knight-Georgetown Institute (US), the European University Institute-Centre for a Digital Society (Italy), and Mannheim Centre for Competition and Innovation (Germany).

His main research areas are regulation and competition policy in the digital economy (telecommunications, platforms and data) as well as the legal issues raised by the developments of artificial intelligence. He regularly advises the European Union and international organisations on digital regulation.

cerre



Avenue Louise 475 (box 10)
1050 Brussels, Belgium
+32 2 230 83 60
info@cerre.eu
www.cerre.eu

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