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IF YOU CANNOT PROHIBIT OR DIVIDE IT, GO FOR IT: PROTECTING COMPETITION WHILE PROMOTING TECHNOLOGICAL CHAMPIONS IN THE EUROPEAN UNION

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Abstract: ***Competition protection in the EU faces the question of how to deal with two simultaneous challenges. The first challenge is that modern technologies, especially digital technologies, have definitively become the driving force behind innovation, competitiveness, and the future shape of the economy. Traditional competition models do not fully capture digital, platform-based, and ecosystem markets. At the same time, EU competition policy is to be integrated into a broader industrial strategy aimed at strategic autonomy vis-à-vis powers outside the EU. Both challenges, each in their own way, put pressure on traditional assumptions and criteria for protecting economic competition. The paper seeks to enrich the discussion by proposing a joint solution to these two challenges, rebalancing the traditional concept of competitive rivalry with an alternative concept of competitive uncertainty, which could offer a meaningful response. Using the concept of uncertainty, EU competition policy and law could adequately respond to the need for competition regulation both in the digital environment and in those selected sectors in which the EU wants to ensure its strategic autonomy by supporting the growth of companies and their clusters. An initial analysis of this concept reveals not only its benefits but also its limitations, which argue for its judicious use only in selected sectors.***

Keywords: ***European Union; Competition; Antitrust; Rivalry; Uncertainty; Digitalisation; Industrial Policy***

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1. INTRODUCTION

Competition protection in the EU faces the question of how to deal with two simultaneous challenges. The first challenge is that modern technologies, especially digital technologies, have definitively become the driving force behind innovation, competitiveness, and the future shape of the economy. Traditional competition models do not fully capture digital, platform-based and ecosystem markets.[1] At the same time,

[1] Rastislav Funta, 'Economic and Legal Features of Digital Markets' (2019) 10(2) *Danube: Law, Economics and Social Issues Review* 173; Ana Pošćić and Adrijana Martinović, 'Rethinking Effects of Innovation in Competition in the Era of New Digital Technologies' (2020) 7(2) *InterEULawEast Journal* 245.

EU competition policy is to be integrated into a broader industrial strategy aimed at strategic autonomy *vis-à-vis* powers outside the EU.[2]

Both challenges, each in their own way, put pressure on traditional assumptions and criteria for protecting economic competition. Where allocation efficiency and consumer welfare used to be the focus, interest in transformative innovations should suddenly prevail, at least when it comes to the technological sectors of the future. However, such innovations rarely arise from the fiercest competition, and their globally significant implementers are not usually start-ups.[3] Competition protection must therefore come to terms with the fact that "big is not always bad" and that cooperation between competitors may be necessary for the EU to become home to industrial champions capable of competing globally through technological innovations. [4]

Finding ways to protect competition in the EU without sacrificing it to industrial policy is one of the pressing issues of our time, and the following text addresses this issue in its own way. Its aim is to explain, analyse and, in part, test the hypothesis that in the modern technology sectors on which the EU wants to base its strategically resilient future, we need different criteria for determining whether competition is working than we have used to date.

The direction of further considerations is derived from N. Petit's seminal works on uncertainty as a new central concept for both analysing the state of competition in technological sectors and better guiding the interventions of competition authorities.[5] The contribution is deliberately conceived as a discussion paper rather than as a proposal of a new, ready-made doctrinal framework. Its ambition is not to replace existing concepts of competition, but to test a hypothesis that can be derived from the ongoing European debate, namely that competitive uncertainty may serve as a conceptual interface between competition law enforcement and the emerging EU industrial policy, at least in selected technology-intensive sectors. The paper therefore aims to stimulate critical discussion rather than to provide a definitive model.

Methodologically, the paper combines doctrinal legal analysis of EU competition law (Articles 101 and 102 TFEU, merger control, and selected soft-law instruments) with a critical review of economic and legal literature on dynamic competition and uncertainty. The argument is developed through conceptual analysis and normative assessment rather than empirical testing. The *Siemens–Alstom* merger in the last part of the text is

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[2] Ursula von der Leyen, 'Mission Letter – Teresa Ribera Rodríguez, Executive Vice-President-designate for a Clean, Just and Competitive Transition' (Brussels, 17 September 2024) https://commission.europa.eu/document/download/5b1aaee5-681f-470b-9fd5-aee14e106196_en accessed 30 May 2026; Teresa Ribera, 'Closing Remarks at the Lisbon Conference on Competition Law and Economics' (Lisbon, 24 October 2025) SPEECH/25/2517.

[3] OECD, Competition and Innovation: A Theoretical Perspective (OECD Competition Policy Roundtable Background Note DAF/COMP(2023) 2, 2023) 10–14 https://www.oecd.org/daf/competition/competition-and-innovation-atheoretical-perspective-2023.pdf accessed 30 May 2026.

[4] Francesca Micheletti, 'EU looks to ease the path for industrial champions to take on America' Politico (9 May 2025).

[5] Nicolas Petit, 'Technology Giants, the Moligopoly Hypothesis and Holistic Competition: A Primer' (20 October 2016) *SSRN* https://ssrn.com/abstract=2856502 accessed 30 May 2026; Nicolas Petit, *Big Tech and the Digital Economy: The Moligopoly Scenario* (Oxford University Press 2020); Nicolas Petit and Thibault Schrepel, 'Complexity-minded Antitrust' (2023) 33 *Journal of Evolutionary Economics* 541; Nicolas Petit, Thibault Schrepel and Heiden Bowman, 'Situating the Dynamic Competition Approach' (30 October 2024) Dynamic Competition Initiative (DCI) Working Paper 1-2024, VU University Amsterdam Legal Studies Paper Series https://ssrn.com/abstract=4689177 accessed 30 May 2026; James Pethokoukis, 'Are Big Tech Firms Monopolies? My Long-read Q&A with Nicolas Petit' *AEIdeas* (AEI's Tech Policy Daily newsletter) (18 December 2020) https://www.aei.org/economics/are-big-tech-firms-monopolies-my-long-read-qa-with-nicolaspetit/ accessed 30 May 2026; Walid Chaiehloudj, 'N Petit, "On Big Tech and The Digital Economy"' *Competition Forum* (2021) art N° 0010. https://competition-forum.com accessed 30 May 2026.

used as a thought experiment to examine the practical plausibility and limits of the uncertainty criterion, not as a comprehensive case study. The paper therefore does not seek to generalise its conclusions across all sectors but to identify conditions under which the uncertainty hypothesis may be meaningful.

2. COMPETITION AND ITS PROTECTION IN THE ERA OF THE TECHNOLOGICAL REVOLUTION

In the current debate on the direction of competition protection in the EU, there are a number of conflicting views, but the prevailing trend is clear: EU antitrust, formed in the industrial age, is not quite fit for both the digital, online economy and for global geo-economic competition that does not respect the rules of free trade and fair competition.[6]

If we go deep into the doctrinal assumptions, the conceptual problem of competition protection in today's world is the inadequacy of its dominant notion of competition as a free rivalry between firms addressing the same clients in the same market.[7] This rivalry-based notion, rooted in neoclassical economics[8] and reinforced by Europe´s ordoliberal legacy, prioritises market structure over innovation dynamics. [9]

In contrast to these assumptions, the digital economy has brought about a long-term and globally stable dominance of businesses that remain efficient, invest steadily in innovation, and successfully reach networks of millions of clients, to whom they offer, often free of charge, comprehensive services tied to their platform. Each of the major online platforms has built itself an ecosystem of interconnected services and technology solutions in which it undoubtedly holds a dominant or outright monopoly position.

However, as pointed out by N. Petit and other authors dealing with the economics of complexity and dynamic competition,[10] these so-called Big Tech businesses do not exhibit the ills of traditional industrial monopolies (i.e., economic ills, the same does not apply to the social and political ills caused by them) and cannot be seen as giants enjoying a macro-economically and consumer inefficient *quiet life* by escaping from all pressures, risks, and uncertainties. Breaking them up in the name of opening each of their markets to free competition could prove detrimental to the pace of innovation, as well as to consumer comfort, and would often only mean transferring a narrowed monopoly to

[6] Thierry Breton, 'A Europe that protects, transforms and projects: industrial policy the European way' (Speech, Bruegel Annual Meeting, Brussels, 6 September 2023) SPEECH/23/4369; Marek Martyniszyn, 'Competition Law and Policy in Crisis and the Rise of the Expansive State' (2025) jnaf020 *Journal of Antitrust Enforcement* https://doi.org/10.1093/jaenfo/jnaf020 accessed 30 May 2026.

[7] It means that competition is equivalent to rivalry between providers of mutually substitutable offers addressed to the same buyers, i.e., in terms of products and geography, on the same relevant market; European Commission, Commission Notice on the Definition of the Relevant Market for the Purposes of Union Competition Law [2024] OJ C 1645/1.

[8] Oliver Budzinski and Annika Stöhr, 'Perfect Competition, Market Power, and Contestability' (2024) 29(189) *Ilmenau Economics Discussion Papers* 1, 2–6.

[9] Franz Böhm, 'Democracy and Economic Power' in Reports on Supranational and National European and American Law, Presented to the International Conference on Restraint of Competition (Frankfurt am Main, June 1960, vol I, Verlag C.F. Müller 1960); Peter Behrens, 'The Continuing Relevance of Ordoliberal Thinking in European Competition Policy and Law' (2015) 4 *Antitrust* 104; Manuel Wörsdörfer, 'Brandeis and Eucken: Two Pioneers of the Modern "Big Tech and Antitrust Debate"' (17 August 2023) *SSRN* https://ssrn.com/abstract=4544273 accessed 30 May 2026.

[10] Petit, 'Technology Giants, the Moligopoly Hypothesis and Holistic Competition' (n 5); Petit, 'Big Tech and the Digital Economy' (n 5); Thibault Schrepel, 'Complexity Science for Antitrust Lawyers' *Network Law Review* (14 September 2023) https://www.networklawreview.org/complexity-science-antitrust/ accessed 30 May 2026; Diana L Moss, 'A New Paradigm for Antitrust in the Digital Sector' *Network Law Review* (6 June 2025) https://www.networklawreview.org/ accessed 30 May 2026.

some other entity.[11] This observation, although correct, should not be understood here as a general argument against intervention or structural remedies. It merely highlights the need to examine whether traditional rivalry-based benchmarks are always capable of capturing competitive pressures in a technology-driven environment, rather than assuming their adequacy.

3. EU COMPETITION POLICY UNDER STRATEGIC PRESSURE

From an EU perspective, it is thus not just a question of the concept of competition protection in technology sectors that have characteristics similar to digital platforms, i.e., they are based on fundamental innovations that require large firms at the centre of a collaborative cluster to generate efficiently. At the same time, the EU has seen little success in the sectors shaped by the technological revolution driven by the global online platforms usually called GAMAM (Google, Amazon, Meta, Apple, Microsoft) and other globally successful producers of advanced chips, supercomputers, cloud storage, cybersecurity, artificial intelligence models, etc.

The EU got from the competition in new technologies a feeling of being left behind and even of an existential threat to its position. A strong warning about this was issued in the autumn of 2024 by the well-known Draghi Report on "The Future of European Competitiveness".[12] The EU is therefore faced with the dilemma of how to regulate (in the name of competition and other EU goals and values) the power and influence of technological giants like GAMAM, while at the same time allowing or directly helping their European challengers to grow.

An analysis of the speeches of the European Commission's Vice President, T. Ribera, who is also responsible for the agenda of DG Competition, over the last year (December 2024 – November 2025) clearly shows the "double face" of the current EU competition policy: we must not let the tech giants destroy competition, abuse their position as gatekeepers of networks of vital services, and deprive users of their decision-making autonomy; but at the same time, we must create a regulatory environment in the EU that will produce European technology champions that will help the EU successfully transition not only to a clean and digital economy, but also to strategic autonomy based on its own technological and industrial base.[13] This effort must be guided by a new EU industrial policy, of which competition protection must be a component or even an instrument.[14] Changes to it should be reflected not only in the control of State aid, but

[11] Shankar Parameshwaran, 'Why Breakups Aren't the Best Way to Curb Tech Monopolies' *Knowledge at Wharton* (27 February 2024) https://knowledge.wharton.upenn.edu/article/why-breakups-arent-the-best-way-to-curb-tech-monopolies/ accessed 30 May 2026.

[12] European Commission, The Future of European Competitiveness: Report by Mario Draghi (9 September 2024) https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en accessed 30 May 2026.

[13] Teresa Ribera, 'Speech at the CRA Annual Conference on Competition Policy Adapted to the New Global Realities' (Brussels, 10 December 2024) SPEECH/24/6341; Teresa Ribera, 'Speech at the Forum Europa Brussels Breakfast' (Brussels, 20 January 2025) SPEECH/25/302; Teresa Ribera, 'Remarks at the Press Conference on the Clean Industrial Deal' (Brussels, 26 February 2025) SPEECH/25/651; Teresa Ribera, 'Remarks on the Water Resilience Strategy' (Brussels, 4 June 2025) SPEECH/25/1421; Teresa Ribera, 'Opening Remarks at the International Bar Association Conference in Florence' (Florence, 12 September 2025) SPEECH/25/2099; Ribera (n 2).

[14] Council of the European Union, 'EU Industrial Policy' https://www.consilium.europa.eu/en/policies/eu-industrial-policy/ accessed 30 May 2026; OECD, Procompetitive Industrial Policy – Note by the European Union (OECD DAF/COMP/WD(2024)18, 2024)

also in the control of mergers and in the assessment of cooperation between undertakings.[15]

The EU is therefore looking, at least with respect to the technology sectors of the future, for a new competition protection paradigm in which "big is no longer bad", where it is respected that large efficient innovators create new, subordinate markets for themselves, and that we need cooperation and coordination between companies in order for disruptive innovations to emerge from their clusters. This puts pressure on the notion of ideal competition as a direct rivalry between competitors in each relevant market.

This is why N. Petit and T. Schrepel suggest a shift in emphasis from rivalry to *uncertainty*, primarily in digital environments but potentially wherever businesses and markets exhibit similar complexity: businesses' supply is highly diversified but at the same time interdependent, so businesses compete with each other mainly through innovation, rather across markets or to define the next new market; these are highly technological and dynamic markets where the next breakthrough innovation may cause them to redefine themselves; they are typically characterised by large firms at the centre of clusters or ecosystems, which makes individual sub-relevant markets prone to monopolisation, which is not disrupted by market fragmentation but by the disappearance of one monopoly market and its replacement by a new monopoly market.[16]

Breaking up monopolies in such industries would jeopardise the dynamics of innovation and reduce the user experience, which neither competition policy nor the EU wants, as it, on the contrary, would like to place its companies among the American, Chinese and South Korean technological giants. Thus, *uncertainty* as a criterion for maintaining sufficient pressures to prevent technology giants and their clusters from becoming lazy, from moving to a *quiet life*, could be the right concept to consider, responding appropriately both to the competitive specifics of technology sectors and to the EU's political need to ensure sufficient strategic autonomy in a world where national-egoistic interests have replaced respect for global rules.

4. UNCERTAINTY AND UNDERTAKINGS

A closer acquaintance with the concept of uncertainty should begin with the question of what exactly is meant by *competitive uncertainty* in relation to undertakings and who or what its originators are. On the one hand, competition law should not lead businesses into regulatory uncertainty; it should be a predictable, stabilising anchor. However, this does not preclude that it should, by its consistent prohibitions and orders, ensure undertakings remain subject to competitive uncertainty.

Competition protection in the EU has long been working with the need to keep businesses in a state of competitive uncertainty, and it has a track record of tackling

https://one.oecd.org/document/DAF/COMP/WD(2024)18/en/pdf accessed 30 May 2026; Christine Lagarde, ‘La politique de la concurrence dans un monde en mutation’ (Speech, European Central Bank, 5 November 2024) https://www.ecb.europa.eu/press/key/date/2024/html/ecb.sp241105~c488bdbb64.fr.html accessed 30 May 2026.

[15] Breton (n 6); Cristina Caffarra, ‘Are Letta, Macron and Draghi Making the End of Neoliberalism in Europe?’ *ProMarket* (7 May 2024); Ursula von der Leyen, ‘Opening Keynote Speech at the “One Year After the Draghi Report” Conference’ (Brussels, 16 September 2025) SPEECH/25/2102; Mario Draghi, ‘High Level Conference – One Year After the Draghi Report: What Has Been Achieved, What Has Changed’ *European Commission* https://commission.europa.eu/topics/eu-competitiveness/draghi-report/one-year-after_en accessed 30 May 2026.

[16] Petit and Schrepel (n 5) 551.

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some of the efforts of businesses to reduce this uncertainty, in particular tackling businesses' efforts to exchange information with each other. However, it targets uncertainty mainly in relations with direct competitors, i.e., between undertakings in the same relevant market. If we look at the older as well as more recent European Commission Guidelines, we find numerous references to uncertainty; indeed, it could be argued that the more recent ones are far more explicit than those from the height of the modernisation of EU competition policy in the first decade of the 21st century.

Thus, for example, in the 2004 Horizontal Merger Guidelines,[17] the Commission mentioned the impact of market transparency and communication between undertakings on reducing competitive uncertainty. In the 2011 and even more extensively in the subsequent 2023 Horizontal Cooperation Guidelines the Commission emphasised the extent to which reducing strategic competitive uncertainty is harmful to competition, although it always meant mutual understanding or convergence between competitors.[18] In the same vein, reference can be made to judgments of the Court of Justice of the European Union which support the Commission's recommendation and also concern competitors in the same sector, i.e., on the same market: mobile telephony (C-8/08 *T-Mobile Netherlands*[19]), wood pulp (C-89/85 et al *Wood Pulp*[20]), or bananas (C-286/13 P *Dole Food*[21]).[22]

However, if we accept that we increasingly find ourselves today in contexts where technological needs, combined with majority political will, demand globally scaled enterprises and inter-company cooperation, we need to ask whether this understanding of uncertainty between direct rivals about their current and especially future supply of goods and services is still appropriate and adequate. After all, economic practice has long understood the uncertainty faced by firms in a much more nuanced way. Looking back less than half a century, M.E. Porter popularised in the 1970s his analysis of the five competitive forces, essentially the sources of uncertainty with which firms must cope: supplier power, buyer influence, the threat of new entrants, competitive rivalry, and the impact of substitutes. [23]

These five forces show that for several generations now, companies themselves have considered not only competitive rivalry as a source of uncertainty and the resulting dynamics. Moreover, M.E. Porter has been criticised for the static nature of his concept, which does not explicitly include uncertainty across sectors or uncertainty arising from large and sometimes sudden technological changes.[24] Moreover, in today's turbulent world, a picture depicting the sources of uncertainty would be incomplete without the

[17] European Commission, Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings [2004] OJ C 31/5 paras. 59-50.

[18] European Commission, Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements [2011] OJ C 11/1 paras. 61-62; European Commission, Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements [2023] OJ C 259/1 paras. 280, 378-396.

[19] Case C-8/08 T-Mobile Netherlands ECLI:EU:C:2009:343.

[20] Case C-89/85 Wood Pulp ECLI:EU:C:1993:120.

[21] Case C-286/13 P Dole Food ECLI:EU:C:2014:2437.

[22] A more recent example is the ECJ judgment, Case C-883/19 P HSBC Holdings and Others v Commission, EU:C:2023:11, in which the Court of Justice repeatedly warned against removal of the degree of uncertainty as to the operation of the market in question, with the result that competition between undertakings is restricted, e.g. paras 115, 116, 118 et al.

[23] Michael E Porter, 'How Competitive Forces Shape Strategy' (1979) 57(2) *Harvard Business Review* 137.

[24] Peter Gratton, 'Porter's Five Forces Explained and How to Use the Model: The Fundamentals You Need to Analyse an Industry's Weaknesses and Strengths' *Investopedia* (18 June 2024) https://www.investopedia.com/terms/p/porter.asp accessed 30 May 2026.

inclusion of non-market sources, such as political, climatic or pandemic causes of uncertainty.

In addition to neoclassical market rivalry, it is therefore necessary to consider other sources or levels from which uncertainty exerts a dynamising influence on firms, causing them to seek ways to overcome it and preventing them from enjoying the *quiet life*. If entrepreneurial success depends on new technologies, on the ability to push new solutions globally and to build a powerful and resilient ecosystem around them, then surely the corporate champions of the technology sectors (even though they may come from different relevant markets and be non-competitors in the neoclassical sense) are competing fiercely with each other for the image of a major technology leader, for the strongest possible vertical relationships with key suppliers and customers, for the interest of investors and brain-talents, for accommodating regulation and possibly for protection and public support. [25]

In summary, it can be said that rivalry-based uncertainty has so far been considered a phenomenon specific to certain relevant markets and thus related to direct competition. The CJEU cases mentioned above also confirm that EU competition law has traditionally understood uncertainty as a function of mutual strategic independence within a defined relevant market. Although competitive rivalry therefore still occupies a very important place in this complex network of more or less dynamic and powerful sources of uncertainty, it seems increasingly untenable today to limit the analysis of competition to this aspect alone.

More recent literature now suggests that it is precisely uncertainty that should be monitored and protected across markets, technologies, and ecosystems. Especially the high-tech sectors of the contemporary economy are better suited to the approach of complexity economics, which rejects static models and seeks to approach complex systems in their dynamic, non-equilibrium variability holistically. As one of its pioneers, Brian W. Arthur, said, in an environment defined by innovation and disruption, it is under fundamental uncertainty that businesses make decisions. [26] N. Petit and T. Schrepel, in their seminal article on the complexity-based antitrust, published in 2023, directly derived a new paradigm from these views: "Complexity < - > Uncertainty < - > Competition". [27] And this is also a springboard for the conceptual leap that is necessary if uncertainty is to be considered a broader indicator of competitive pressure that goes beyond direct rivalry.

5. THE APPROPRIATE APPROACH TO ANALYSING COMPETITIVE UNCERTAINTY

The practical question is which additional factors, beyond the threat of new competitors entering, the instability of market shares, and real and probable shifts in demand, should competition authorities include to assess whether a strengthened European champion and its cluster remain exposed to sufficient uncertainty?

[25] Václav Šmejkal, 'Large Online Platforms as a Challenge for Competition Law Doctrine and a Suitable Polygon for Complexity-Minded Antitrust' in GG Sander, A Pošćić and A Martinović (eds), *Exploring Digital Legal Landscapes* (Logos Verlag 2025) 164-165.

[26] W. Brian Arthur, 'Complexity Economics: Why Does Economics Need This New Approach?' in *Complexity Economics* (Santa Fe Institute Press 2021) https://sites.santafe.edu/~wbarthur/Papers/SFI%202019%20CE%20talk.pdf accessed 30 May 2026; W. Brian Arthur, 'Foundations of Complexity Economics' (2021) 3 *Nature Reviews Physics* 136; W. Brian Arthur, 'A General Q&A about Complexity Economics' (March 2021) https://sites.santafe.edu/~wbarthur/ accessed 30 May 2026.

[27] Petit and Schrepel (n 5) 552.

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The recently applied DMA regulation[28] can be an inspiration by highlighting the need to maintain the *contestability* of markets. However, this contestability should not only be understood as the traditional openness of a market to the possibility of contesting the share of the market leader, but also as its vulnerability in relations with all other stakeholders, including across markets. This means taking into account, alongside existing and future, near and distant competitors, the positions *vis-à-vis* suppliers and customers, investors, employees, and regulators, as well as the prevailing complex dynamics of the sectors (growth or decline, prevailing stability or instability, closed or open, investor confidence and willingness) in which it operates or those into which it seeks to expand. Of course, the most important factor in this web of influences and changes should be the circumstances that force each company to take the risk of technologically significant innovation, as this is the basis of dynamic efficiency and the sustained pursuit of it by companies is the strongest source of change and therefore uncertainty. [29]

Breakthrough innovations are to be anticipated, but their success cannot be planned, let alone securely identified as to which of their many sources is reliably the main one. Therefore, it is always difficult to determine whether certain sources of uncertainty are strong enough to tolerate the otherwise unrivalled position of a particular firm (or oligopoly, or cluster) in a particular specifically defined relevant market. Here, lawyers will inevitably have to rely on economists to provide them with as accurate a picture as possible of the firm's relationships, as well as the influences acting on them, including their likely strength, dynamics, upward or downward trends, both at a particular point in time and in the foreseeable future.

For the competition authorities, this comprehensive modelling of market situations is very likely to play a role in (i) ex-ante assessment of the impact of mergers and takeovers[30] and (ii) modelling future remedies to be negotiated with or imposed on undertakings by the competition authorities.

From a lawyer's perspective, however, this search for as accurate a picture as possible of the sources and strength of uncertainty in any particular situation seems too unpredictable and uncertain to lead to the formulation of clear rules and particularly their defensible ex post enforcement in specific situations. Mapping the network of relationships and influences and their expected dynamics is not the same as identifying the harm to competition that can be linked to the conduct of a particular undertaking.

In this regard, it must be acknowledged that the concept developed by Petit and Schrepel—which serves as the initial inspiration—convincingly demonstrates that competition in complex systems depends on the preservation of uncertainty; however, this conceptual framework remains at a fairly high level of abstraction. It is not easy to derive specific criteria from it to determine when the uncertainty that ensures openness or contestability is threatened to such an extent in specific cases that the resulting situation requires intervention by competition law. For this reason, it requires further analysis and the development of practical tests to offer more than just a conceptual guide for enforcement, particularly when it comes to distinguishing on a case-by-case basis

[28] Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act), OJ L 265, 12.10.2022, pp. 1–66.
[29] Petit, Schrepel and Bowman (n 5) 8.
[30] David Bosco and others, 'Submission to the European Commission on Merger Guidelines' (Dynamic Competition Initiative (DCI), EUI Department of Law and Berkeley Haas, September 2025) https://www.dynamiccompetition.com/publications/ accessed 30 May 2026.

between legitimate innovation, on the one hand, and the foreclosure of a market or system's competitive structure, on the other.

However, precisely because we are aware of the work that still needs to be done, it is useful to attempt to outline some initial ideas on how to describe and measure uncertainty in a way that remains understandable and predictable even outside the realm of advanced; and complex modelling. The point is to view the concept of uncertainty from a "more accessible angle."

6. A DEONTOLOGICAL AND CONSEQUENTIALIST VIEW OF UNCERTAINTY

The doctrine has always approached elusive concepts, like *economic competition* itself, from both a deontological and, conversely, a consequentialist perspective. It has either tried to define what competition is or should be, or it has accepted the inherent inevitability of arriving at one-sided definitions only, and rather focused on the consequences and benefits of functioning competition and how to achieve them.[31] The same approach can be used to apply the uncertainty criterion in protecting competition.

In addition to trying to describe as fully and accurately as possible what causes uncertainty for the company, i.e., in the manner of the preceding paragraphs to identify its main characteristics and sources (which would be more in line with a deontological approach, useful to identify the effects of the merger and to formulate remedies), one can focus on the states of the firm, the market and the industry that show that (a) there is uncertainty and (b) the firm is behaving in a way to escape it (both of which would be in line with a consequentialist approach and more suitable for ex-post interventions). If, through this second approach, we can define the main practical manifestations of pro-competitive uncertainty, we would be well on our way to identifying the wanted and unwanted responses of firms to it, and thus to recommending how to properly define prohibitions and injunctions in competition protection.

If we focus on the consequences or manifestations of the maintenance of uncertainty, then at the micro-level of the firm, its obvious indicators are the amount and pace of its investment in innovation, the number of innovations (not just improvements, but actual innovations, or disruptions of its own markets or openings of neighbouring markets) with which the firm enters markets over a certain period of time, their costs, and the ways in which the firm takes care of suppliers and customers. At the macro level of the sector, the main indicator is the dynamics (change, movement) in the numbers and relationships of participants in the sector (competitors, suppliers and customers – always in related markets, not necessarily in a single selected market), growth in investment, innovation and patents; and, conversely, decline in negative reactions and complaints against the firm from its suppliers and customers.

Keeping in mind the factors mentioned above, it would be reasonable to conclude that an enterprise that invests persistently and intensively in innovation, tries to open new markets, surprises its customers with real innovations, and approaches them with improved offerings has not sufficiently escaped from the pressures of uncertainty and is still competing. However, it would be even more important to observe whether the company's behaviour is not focused more on stabilising and defending its positions by refusing to interact with potential competitors or their customers, by making killer acquisitions of potential challengers, by refusing to licence its technologies, by not

[31] Monika Woźniak-Cichuta, 'Teleological Perspective of EU Merger Control and its Interplay with Killer Acquisition on Digital Markets' in Václav Šmejkal (ed), *EU Antitrust: Hot Topics & Next Steps* (Charles University, Faculty of Law 2022) 155.

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sharing its data, by locking in clients it has acquired, by entering into agreements to divide the market or to stabilise market shares, etc., in order to slow down the pace of replacement of existing generations of capacities or products. This conduct is clearly aimed at artificially reducing its own uncertainty to the detriment of everyone else. It harms the dynamism of change, i.e., the inherent uncertainty, and thus ultimately harms competition based on innovation.

7. PRACTICAL ADVANTAGES OF THE NEW ROLE OF UNCERTAINTY

Refinement of the above list of manifestations demonstrating uncertainty would require an audit of hundreds of older competition decisions in order to create an empirically based database of types of conduct and the market contexts correlating with them in terms of their impact on uncertainty.[32] This would serve as the basis for the creation of comprehensive models that also include variables typical of the digital age and its sources of change. However, even the above list, which is rather intuitive and incomplete, clearly shows the main advantages of the consequentialist approach to uncertainty. At first glance, at least two advantages are visible.

The first advantage is the fact that it cannot be difficult for anyone involved in competition law to come up with a list of desirable and undesirable manifestations of competitive uncertainty and related conduct by undertakings, even if only intuitively. In tandem with this, it is clear that, to a large extent, accepting the criterion of uncertainty will not mean a radical departure from existing competition law, but rather its purposeful reinterpretation in the sense of:

- market failure (as a reason and signal for intervention by the competition authority) = failure (substantive weakening) of uncertainty;
- "not excluding competition in respect of a substantial part of the products in question" (Article 101(3)(b) TFEU) = not excluding uncertainty in such respect;
- foreclosure of competition (as abuse of a dominant position) = foreclosure of uncertainty;
- evaluation of coordinated and uncoordinated effects of mergers (within the meaning of Regulation 139/2004 on merger control) as effects for maintaining uncertainty both from the perspective of the merging companies and the markets or sectors affected by them.

Thanks to these parallels, the transition from rivalry to uncertainty can remain justifiable by reference to most theories of harm to competition confirmed by case law. Furthermore, drawing such parallels will make it easier to understand for businesses and their managers and lawyers, and therefore would not necessarily entail a loss of reasonable certainty as to what conduct would be deemed anti-competitive.

The second advantage stems from the fact that efforts to maintain competitive uncertainty should not, by their very nature, be incompatible with a large market share of an undertaking in the relevant market or with close cooperation between undertakings within technology clusters. The transition from rivalry to uncertainty therefore does not pose a threat of increased interventionism in the protection of competition, which would discourage the willingness to invest riskily in innovation with a view to creating new markets. Research has confirmed that this willingness is not consistent with a secure monopoly position, or with the opposite extreme, i.e., a fragmented market full of chaotic

[32] Petit and Schrepel (n 5) 566; Bosco and others (n 30) 56.

uncertainty. [33] In this respect, uncertainty protected by competition law should not be a major problem for investors and innovators. The same applies to the EU if it wants to give free rein to the growth of its own technological champions.

8. COMPLICATIONS ASSOCIATED WITH THE NEW ROLE OF UNCERTAINTY

With all that said, it cannot be denied that at least four aspects complicate the transition from rivalry to uncertainty.

It follows from the above that there is a need to move beyond the framework of narrowly defined relevant markets in terms of products and geography, i.e., beyond an approach that is reductionist and static, insufficiently capturing the factors of uncertainty arising from dynamic changes and from multiple directions.[34] The relevant market is a good tool for measuring direct rivalry and enforcing a competitive market structure that must not be dominated by one or a few companies with a large market share. This tool should not be rejected but combined with other methods that make the assessment of a company's situation more dynamic and at the same time consider more relationships that may influence the situation and increase its uncertainty.[35]

From a legal perspective, identifying distortions of competition will always be somewhat less clear-cut, as illustrated by the key category for intervention (mentioned above) - namely *market failure*. The term *market failure* itself is well understood within a narrowly defined relevant market; it means the suppression of the spontaneous play of market forces within that market, which manifests itself in unnatural developments in prices, market shares, the number of market participants, etc.[36] Will the reduction in uncertainty be equally recognisable if we fundamentally accept that it can also affect a company in the absence of rivals in the relevant market? Will we be able to convincingly identify, measure, and explain this reduction if we want to base the intervention of the competition authority on it?

Rivalry in the relevant market is certainly a purposeful model simplification, but that is precisely why it has several practical advantages. It is measurable, has been tested over decades of application, and its relationship to maintaining competition in a given market is obvious to everyone. Uncertainty lacks this accessible clarity and proven track record. On the contrary, the concept of uncertainty is highly complex in terms of its sources and manifestations, and protecting it will involve similar difficulties as if we wanted to protect the idea of *competition as such* or *fairness* in all circumstances. In this

[33] Pradeep Dubey and Chien-wei Wu, 'When Less Competition Induces More Product Innovation' (2002) 74(3) *Economics Letters* 309, 310-311 https://doi.org/10.1016/S0165-1765(01)00555-9 accessed 30 May 2026.

[34] Katarína Kalesná, 'Relevant Market – Digital Challenges' (2023) 7(1) *Bratislava Law Review* 77, 85 https://doi.org/10.46282/blr.2023.7.1.371 accessed 30 May 2026.

[35] It is more a question for economists whether such a supplement should be the concept of an ecosystem or other types of analysis drawing on the experience of ecology and sociology of complex systems. Michael Jacobides and Ioannis Lianos, 'Rethinking Competition: From Market Failures to Ecosystem Failures' *ProMarket* (12 April 2021) https://www.promarket.org/2021/04/12/competition-market-failure-digital-platforms-ecosystem-regulation/ accessed 30 May 2026; Ioannis Lianos, Klaas Hendrik Eller and Tobias Kleinschmitt, 'Towards a Legal Theory of Digital Ecosystems' (UCL Faculty of Laws Research Paper No 16/2024) https://ssrn.com/abstract=4849340 accessed 30 May 2026; Konstantinos Stylianou and Bruno Carballa-Smichowski, '"Market" Definition in Ecosystems' (2024) *Journal of Antitrust Enforcement* jnae046 https://doi.org/10.1093/jaenfo/jnae046 accessed 30 May 2026.

[36] NSW Department of Industry, Market Failure Guide — A Guide to Categorising Market Failures for Government Policy Development and Evaluation (State of New South Wales, Department of Industry 2017) https://www.productivity.nsw.gov.au/sites/default/files/2025-01/PUB17_509_Market__failure_guide.pdf accessed 30 May 2026.

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regard, despite the intuitive comprehensibility of the manifestations of uncertainty as a goal and the criteria described above, there are necessarily questions about the extent to which uncertainty will be effectively administrable for competition authorities and sufficiently guiding for businesses.

The second question mark associated with the concept of uncertainty is the fact that a decline in the dynamics of the sector, the pace of innovation, the entry of new companies, customers remaining with their tried and tested main supplier, etc., may be the result of structural characteristics of the sector and not necessarily the actions of a specific company that can be punished under competition law.[37] In these cases, where insufficient competition may not be due to the misconduct of a specific offender, but rather to a combination of structural features and factors without a clear causal link to the conduct of individual companies, traditional competition law needs to be supplemented with either some ex-ante regulatory measures or (preferably) so-called new competition tools.[38]

These new tools enable competition authorities in countries where they have been enacted as an extension of their powers to intervene in cases of structural deficiencies in sectors that cannot be attributed to the illegal conduct of a particular undertaking. However, the new competition tools still allow behavioural measures to be imposed on companies in less competitive sectors and, if these prove insufficient, structural measures as well, adjusted over time, or withdrawn—which is essential for maintaining uncertainty.[39] With the help of new competition tools, competition authorities should therefore be able to shake up monopolies, rather than just forcibly break them up or ban them. For traditional competition law, this development is a significant change that is not without controversy, but at the same time, it is now sufficiently well known, described, and, in some cases, already tested.[40]

However, it is worth emphasising that from the perspective of the hypothesis presented here, new competition tools are relevant not as a substitute for traditional enforcement of antitrust rules, but as appropriate instruments and in some respects may even function as institutional safeguards against the risks associated with competition

[37] Insufficient uncertainty may be caused by transparency in the industry, the absence of price competition, network effects that benefit not only the company concerned but also its customers, the tendency of customers to stick with the tried and tested (status quo bias), or even the investment and technological costs of building an alternative to a company that has created a particular sector and imposed its standards on it... in short, phenomena that are common in the digital economy in particular, but not only there.

[38] European Commission, New Competition Tool: Legal Comparative Study of Existing Competition Tools Aimed at Addressing Structural Competition Problems, with a Particular Focus on the UK's Market Investigation Tool (EU 2020) (R Whish); Dong Quichao, 'New Ways to Address Competition Challenges in Digital Markets: Reflections and Enlightenment of the EU's Proposal for a New Competition Tool' (2023) 14(3) *Beijing Law Review* https://www.scirp.org/journal/paperinformation?paperid=127831 accessed 30 May 2026; Luca Arnaudo, 'New Competition Regulatory Tools: Towards a Structure-Behavior-Performance Framework' (2024) 3 *Concurrences* 58; John Bethan, 'Ex-CMA Official Cautions on Adoption of New Competition Tool' *Global Competition Review* (10 October 2024) https://globalcompetitionreview.com/article/ex-cma-official-cautions-adoption-of-new-competition-tool accessed 30 May 2026.; Giuseppe Colangelo, 'Trendy Antitrust for Digital Markets: Are Market Investigations the New Black?' (2024) 15(5) *Journal of European Competition Law & Practice* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4943707 accessed 30 May 2026.

[39] Petit, Schrepel and Bowman (n 5) 16.

[40] Various elements of the new competition tools in the current EEA have already been introduced or are being considered for introduction in Belgium, Bulgaria, Denmark, Finland, Ireland, Italy, Iceland, Luxembourg, Hungary, Germany, the Netherlands, Norway, Austria, Greece, and in 2024/2025 also in the Czech Republic. Pauline Kuipers and Joost van Roosmalen, 'The New Competition Tool: What Is It and Why Do National Regulators Want It?' *Bird & Bird Competition & EU Law Insights* (18 September 2024) https://competitionlawinsights.twobirds.com/post/102jj79/the-new-competition-tool-what-is-it-and-why-do-national-regulators-want-it accessed 30 May 2026.

protection based on uncertainty. Their flexibility and reversibility can compensate for the risks associated with abandoning rivalry as a key primary consideration.

These two complications associated with applying the concept of uncertainty lead to a third warning: in practice, it would only be useful in selected sectors or situations where traditional rivalry is an inadequate concept (the digital economy, other networked and high-tech industries) or unwelcome (the political need for European technological champions and their clusters in key sectors of the future). In addition, it must be recognised that for production that retains traditional industrial features, for most non-strategic manufacturing and service sectors, the neoclassical paradigm with its rivalry in the relevant market can continue to serve very well, and replacing it with uncertainty would only complicate the protection of competition inappropriately.

The Draghi report[41] also recommended that the EU amend competition rules and apply new competition tools in the areas of defence and security, energy and space, digital sector and sectors with network effects or low economic resilience, as well as those with significant projects of common European interest (IPCEI). This means only in those sectors where it is technologically necessary, because only globally significant clusters and ecosystems can thrive in them, and at the same time where it is strategically desirable, because the EU lags the rest of the world in these sectors and is thus existentially threatened.

It is precisely such sectoral restrictions on "novelties" in the criteria and methods of competition protection that make sense and create space for the coexistence of antitrust rivalry and antitrust uncertainty. However, from a lawyer's perspective there is again a question mark: competition law, which has been sector agnostic until now, will fragment into multiple forms of sector- and situation-specific regulation. This will understandably limit its clarity and predictability, as the boundaries between sectors and situations may be unclear, and a single undertaking engaged in multiple activities may be subject to multiple types of competition regulation. However, it must be acknowledged that with the adoption of the DMA regulation, this situation has already arisen, and designated gatekeepers are primarily subject to this regulation with their core platform services and to classic competition law (i.e., Articles 101 and 102 TFEU) with all other goods and services.

The final argument tempering enthusiasm for uncertainty as a criterion for protecting competition is the risk of a higher incidence of *type II errors* (the so-called *false negatives*).[42] These consist of failing to stop genuinely anticompetitive developments in a market. In the case of uncertainty, such a risk may arise if we rely too easily on the assumption that insufficient or absent rivalry between competitors in the market will be compensated for by uncertainty caused by expected technological developments or a shift in demand to other technological solutions. This concern also points to the need to understand uncertainty as a superior criterion only in selected sectors and only in situations where the competition authority has the possibility to intervene in the market with other instruments, i.e., a new competition tool or, where available, ex-ante regulation.

[41] European Commission (n 12) 298-304.

[42] James Rill and Thomas Dillickrath, 'Type 1 Error and Uncertainty: Holding the Antitrust Pendulum Steady' *Competition Policy International, GCP: Antitrust Chronicle* (November 2009, Release 1) 2 https://competitionpolicyinternational.com/assets/0d358061e11f2708ad9d62634c6c40ad/RillNOV-09_1_.pdf accessed 30 May 2026.

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9. A REAL-LIFE EXAMPLE: THE SIEMENS-ALSTOM MERGER REVISITED?

To more closely examine operation in competitive practice, it is possible to test the uncertainty criterion in a specific thought experiment using the case of the most famous blocked merger of European industrial champions in recent times. Although the argument about the usefulness of the concept of uncertainty has more general validity in competition protection, it is merger control that would provide the most opportunities for reconciling the needs of competition protection and the emergence of industrial champions, and thus for the practical application of this concept.

In February 2019, the European Commission's decision to prohibit the merger of major European companies, Germany's Siemens and France's Alstom, in the market for high-speed train and railway equipment caused a media stir.[43] Despite strong support for the merger from Berlin and Paris,[44] the Commission concluded that the merger would have harmed competition in EEA markets for railway signalling systems and high-speed trains (para 1770 of the decision).

At first glance, this is a textbook example of the creation of a global leader of European origin, which raises the question of whether the European Commission would decide the same way today, especially if, instead of focusing on maintaining direct competition in the relevant EEA markets, the Commission assessed the merger from the perspective of maintaining sufficient competitive uncertainty for the merged entity.

From the traditional perspective of maintaining rivalry in the relevant markets for high-speed trains and mainline signalling equipment, the Commission's decision could not have been different:

- Siemens and Alstom were the most significant and closest competitors in the markets mentioned, regularly competing against each other in tenders.
- After the merger, not only would their mutual competition disappear, but their combined share would reach 70-80% of the total market for high-speed rail vehicles and very high-speed rail vehicles in the EEA (plus Switzerland) and 60-70% of the global market, excluding China, Japan, and South Korea.
- In contrast to the merging parties, which are active throughout the EEA and beyond, their competitors have no or only very limited sales of high-speed trains to customers in the EEA other than those located in their home countries.
- The main global competitor China's CRRC which has a larger overall output than the potential merged entity, has never won a contract for high-speed rail vehicles in the EEA. Its turnover (unlike Siemens-Alstom, which is also active outside the EEA) was generated in its home country of China at the time, and its position on the global market remained negligible.
- According to the Commission's findings, Western competitors represented only distant competition for Alstom and exerted virtually no competitive pressure on Siemens.
- Barriers to entry for new competitors are significant in the long term (costs of developing rail vehicles and the obligation to have a suitable track record in order to submit credible bids in tenders, licencing procedures in the EEA,

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[43] European Commission, Case M.8677 – Siemens/Alstom (C(2019) 921 final, 6 February 2019); European Commission, 'Mergers: Commission Prohibits Siemens' Proposed Acquisition of Alstom' (Press Release, Brussels, 6 February 2019) IP/19/881.

[44] Chee Foo Yun and John Revill, 'EU Antitrust Policy under Fire after Siemens-Alstom Deal Blocked' *Reuters* (6 February 2019) https://www.reuters.com/article/world/eu-antitrust-policy-under-fire-after-siemens-alstom-deal-blocked-idUSKCN1PV12M/ accessed 30 May 2026.

relations with operators and suppliers in the EEA, etc.), meaning that no real competitive pressure could be expected in the foreseeable future from the entry of new competitors.

Supporters of the merger pointed out in particular that while the high-speed rail market in the EU is currently saturated and practically not growing, in China, on the contrary, it is expanding, and the Siemens-Alstom merger is necessary for European suppliers to compete with the growing Chinese giant CRRC in markets outside the EU.[45] The main efficiency claims of the merger were therefore based on the increased competitiveness of the merged entity in tenders outside the EEA. The Commission rejected this, pointing out that success in competing for contracts outside the EEA could be increased through outward-oriented cooperation (contractual or joint venture), rather than through a full merger that would leave no chance for anyone else within the EEA.

If we now focus on the Commission's decision specifically through the lens of uncertainty, this term itself is mentioned more than twenty times in the text of the decision, including in contexts relevant to the assessment of competitive pressures. The Commission specifically analysed the uncertainty surrounding the results of tenders on which large contracts for the supply of trains and railway equipment depend, as well as the subsequent long-term cooperation with their operator. However, such uncertainty was found to be inherent in the markets in question, affecting all competitors, but especially smaller competitors more than established, let alone dominant, suppliers. Therefore, it could not be recognised as a determining competitive constraint that could exert decisive pressure on the merged entity. It is important to note that we are still talking here about uncertainty closely linked to rivalry in the markets concerned.

A certain broader perspective was the uncertainty surrounding the further development of ETCS (European Train Control System) standards, which necessitates technical innovation, but from all participants in the sector, and again represents a greater burden for smaller manufacturers and also for non-European manufacturers. The Commission did not consider any of the other possible sources of uncertainty to be sufficiently relevant and addressed them only marginally in its decision. It assumed stable growth in demand for rail transport (given the support for trans-European networks and decarbonisation). It did not assess changes in investor interest at all and explicitly refused to consider the competitive pressures resulting from the shift in demand for transport services to air, road, and river transport as relevant. The Commission considered the unexpected impacts of digitalisation, which could open markets to new players, to be insufficient in relation to the almost complete loss of competitive rivalry.

In terms of the key impact of the merger on innovation dynamics, it was significant that the parties to the merger did not contend that it was necessary to join forces in order to achieve a major technological breakthrough or to overcome technological backwardness compared to non-European competitors. Regarding potential innovation efficiencies, they emphasised rather the streamlining of research and development by merging previously parallel teams, i.e., cost savings. On this point, which is crucial for assessing the dynamic effects of a possible merger, the Commission therefore concluded that pressure on R&D efforts may actually decrease as a result (points 1263-1267 of the decision)! This is the exact opposite of what antitrust should help achieve in uncertain technological sectors.

[45] Konstantinos Esfathiou, 'The Alstom-Siemens Merger and the Need for European Champions' *Bruegel Blog* (11 March 2019) https://www.bruegel.org/blog-post/alstom-siemens-merger-and-need-european-champions accessed 30 May 2026.

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Although the Commission, in its emphasis on identifying sources of uncertainty, could have paid more attention to various broader scenarios for future developments and the position of companies, it is still difficult to argue that its decision should have been the opposite.

- Firstly, it is unclear who or what could effectively undermine the position of the merged entity in the EEA markets, where Chinese competition is highly unlikely to penetrate due to licencing safety and other industry constraints, and where a shift from rail to road or air transport is undesirable and unsupported.
- The second argument for maintaining the Commission's decision is that the merger did not promise a major technological leap forward. It was to take place in a traditional, albeit technology-dependent, sector. However, it was not a matter of the EU's strategic autonomy, which would be urgently needed to counter the lead or dominance of non-European, globally ubiquitous giants.

It is precisely the technological specifics, the strategic needs of the sector, and ensuring Europe's presence in it that are the most important factors that could justify tolerance for a European champion without competition[46] such a champion should, by its very nature, be a new challenger in markets shaped by others, where it would not be able to establish itself without special treatment (involving the achievement of a certain size and innovative capacity). This was certainly not the case with Siemens-Alstom.[47]

Therefore, if we ask three key questions about the proposed merger: 1) Is this a promising technology sector of the future, whose effective development requires tolerance of dominance in the relevant market it has created? 2) Is the EU lagging behind in this sector, to the detriment of its autonomy, security, and sovereignty? 3) Did the merger promise a technological breakthrough and new markets through innovation? The answer in all cases is "no," and even from the perspective of uncertainty criteria or the strategic autonomy of the EU, such a concentration cannot be approved. Mergers and acquisitions with parameters similar to those of the *Siemens-Alstom* case should therefore also be prohibited in the EU, which is developing a new industrial policy and using the criterion of competitive uncertainty to do so. Although the use of the uncertainty approach would not have changed the outcome in the *Siemens–Alstom* case, it would nevertheless have changed the emphasis and structure of the proposed merger assessment , as shown above.

[46] Dullien and Hackenbroich emphasise in this regard, the need to identify those areas (industries, sectors) where the emphasis on efficiency and a level playing field for all does not correspond to the reality of technological transition and geo-economic competition and does not lead to the development of key technological capacities. See: Sebastian Dullien and Jonathan Hackenbroich, 'European Industrial Policy: A Crucial Element of Strategic Autonomy' (IMK Policy Brief No 130, Institut für Makroökonomie und Konjunkturforschung (IMK), Hans-Böckler-Stiftung 2022) 11-12 https://nbn-resolving.de/urn:nbn:de:101:1-2022110813461444367142 accessed 30 May 2026.

[47] Although Siemens and Alstom are widely diversified companies in terms of their products and subsidiaries, they operate in a stable industry where there is no threat of a disruptive technological or generational change that would redefine their markets. Even bearing in mind the importance and technological complexity of railway manufacturing, it should be borne in mind that any engineering industry today would be of comparable importance and technological complexity, and a more liberal assessment of the emergence of European dominants across many sectors would take us far beyond the scope of why it is technologically necessary and strategically desirable in a limited number of sectors to consider replacing rivalry with uncertainty.

10. CONCLUSIONS

An examination of two current "pain points" in European competition protection and an attempt to resolve them, at least in part, by shifting to the uncertainty criterion represents an undoubtedly interesting intellectual exercise with potential for future practical use.

The concept and criterion of competitive uncertainty, which is inherently broader than the concept and criterion of competitive rivalry, could be appropriately applied in dynamic high-tech sectors where it does not make sense to break-up large and successful innovators and where the EU, lagging its main competitors, wants to nurture its own Big Tech companies. For a more accurate approximation, this should therefore include sectors classified as part of the digital and online economy, other network industries, and industries in which technological sophistication gives the EU the necessary strategic autonomy. There, uncertainty may prove appropriate from both a factual and political point of view, as it leads to a more comprehensive view of the situation in technology sectors with high innovation dynamics and opens space for the growth of companies and their clusters.

Conversely, it is not necessary to impose the uncertainty perspective on traditional industry and service sectors, although it cannot be ruled out that advancing digitalisation may, through disruptive innovation, shift some of them into the previous category. The application of the concept of uncertainty should thus remain sector-specific and linked to new forms of competition regulation, for instance, through the new competition tools. When applying it, several risks must be considered, the greatest of which is the weakening of legal certainty and the possible monopolisation of certain relevant markets. Addressing these risks will require not only new powers and tools for competition authorities but also a mental shift on their part—from competition as rivalry to competition as dynamic uncertainty.

A suitable overall conclusion is therefore that the uncertainty criterion is not meaningful as a universal, generally applicable alternative to competition assessment based exclusively on rivalry. Rather, the analysis supports a more modest ambition: uncertainty in competition can serve as an important complementary analytical perspective in selected sectors characterised by technological discontinuity, ecosystem competition, and strategic policy objectives. Outside of these contexts, its use could undermine legal certainty and effective enforcement.

The ambition of further academic research should therefore not be to replace established competition law concepts but to further explore when and how uncertainty can be meaningfully integrated into them without sacrificing their core safeguards. This, of course, requires first identifying sufficient indicators of when a market or system is at risk of falling into stagnation—whether as a result of conduct or simply to the benefit of a particular firm (which thereby escapes the uncertainty that breeds innovation)—that intervention through competition law is necessary.

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